Hospitals & Asylums

Public Health Department

To supplement Chapter 9 Hospitalization of Mentally Ill Nationals Returned From Foreign Countries §321-329. Everyone must learn their lesson to win herd immunity against COVID-19 and future pandemics under 21CFR§330.10 and 42USC§300u: Hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus allergic rhinitis. Eucalyptus or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end COVID-19 place eucalyptus, lavender or peppermint soap in public restrooms with instruction to “wash face and nose”. Epsom salt bath, saline or chlorine swim cures coronavirus and sterilizes methicillin resistant *Staphylococcus aureus* (MRSA). Use Lysol cleanser. During a pandemic both staff and patients must be treated, whereby intensive care units (ICUs), waiting rooms, classrooms and public airspaces should be sterilized with eucalyptus humidifiers (diffusers). Although vaccination may cure coronavirus in two shots and reduce the risk of further severe infection and death, like the placebo influenza vaccine, COVID-19 vaccination does not alleviate the need to know how to treat the contagious "Pinocchio nose" nor truly end the pandemic. Furthermore, it is necessary to treat drug resistance propaganda. Hydrocortisone crème treats coronavirus, carcinogenic aspergillosis and many inflammatory, asthmatic and allergic conditions. Pneumovax 23 is recommended for adults over and under 65 to prevent pneumococcal infection of heart, lung and brain damage, otherwise Ampicillin is indicated for Azithromycin resistance. Co-occurring *Streptococcus* and *Staphylococcus* cause toxic shock syndrome. Doxycycline treats bubonic plague, Lyme disease and MRSA (not for use by pregnant women or children under 8). Clindamycin treats MRSA in pregnant women and children under 8. Metronidazole treats antibiotic resistant *Clostridium difficile* and *Helicobacter pylori* (not for use in first trimester). Onions, garlic and Gingko giloba improve insulin production. Stonebreaker (Chanca Piedra) cures urinary and gallstones (not for pregnant women). There is a drug abuse warning on pseudo-ephedrine and statin brain shrink under 42USC§242. Repeal Office of National Drug Control Policy intoxication 21USC§1701 *et seq*. Repeal extraneous tobacco definitions in 21USC§321(rr) para. 2-4. Repeal international mail theft (IMF) and counterfeit justification in 21USC§381(u). Insert online pharmacy consumer before pharmacist in 21USC§384(a)(1). Delete 'from Canada' in §384(b). Replace 'to submit to the Secretary' with 'record' at §384(d)(1). Insert 'foreign' before establishment and delete 'within Canada' in §384(f). Repeal paragraphs i to end §384(i-m). Repeal 'Medical records and payments' from Fair Credit Reporting Act 15USC§1681a(x)(1). Re-authorize human services legislation, restore Title IV Part A Sec. 401 – 417 of the Social Security Act 42USC§601-§617 to the 1995 condition and order all money from Biden-Harris American Families Plan support AFDC benefits.

Be it enacted in the House and Senate assembled

1st Ed. 2 Aug. 2005, 2nd 7 April 2006, 3rd 7 April 2007, 4th 9 Aug. 2007, 5th 26 Sep. 2009, 6th 28 August 2011, 7th 4 June 2018, 8th 30 July 2018, 9th 19 June 2021

Art. 1 Public Health Department

§321 Public Health Service

A. This work supplements Title 24 US Code Chapter 9 §321- §329 Hospitalization of Mentally Ill Nations Returned from Foreign Countries Pub. L. 86–571, §2, July 5, 1960, 74 Stat. 308 as amended by Pub. L. 96–88, title V, §509(b), Oct. 17, 1979, 93 Stat. 695 to recognize the Department of Health and Human Services. The Department includes more than 300 programs, covering a wide spectrum of activities. Some highlights include: 1. Health and social science research. 2. Preventing disease, including immunization services. 3. Assuring food and drug safety. 4. Medicare (federal health insurance) and Medicaid (state health insurance). 5. Health information technology. 6. Improving maternal and infant health. 7. Comprehensive health services for Native Americans. 8. Medical preparedness for emergencies. a. Human Services (HS) is responsible for 1. Financial assistance and services for low-income families. 2. Head Start (pre-school education and services). 3. Faith-based and community initiatives. 4. Preventing child abuse and domestic violence. 5. Substance abuse treatment and prevention. 6. Services for older Americans, including home-delivered meals.

B. The foundation of the public health service is typically attributed to July 16, 1798, when President John Adams signed a bill into law that created what we now know as the U.S. Public Health Service by establishing the U.S. Marine Hospital Service, predecessor to today's U.S. Public Health Service, to provide health care to sick and injured merchant seamen under 24USC§14. In 1870, the Marine Hospital Service was reorganized as a national hospital system with centralized administration under a medical officer, the Supervising Surgeon, who was later given the title of Surgeon General. The U.S. Surgeon General is appointed from the Commissioned Corps of the U.S. Public Health Service to a four year term. Upon the termination of the term, unless re-elected, the officer reverts to their rank as it would have been if not for the appointment under 42USC§205. Because of the broadening responsibilities of the Service, its name was changed in 1902 to the Public Health and Marine Hospital Service. Another law passed in 1902, the Biologics Control Act, gave the Service regulatory authority over the production and sale of vaccines, serums, and other biological products. The increasing involvement of the Service in public health activities led to its name being changed again in 1912 to the Public Health Service (PHS). PHS was given clear legislative authority to investigate the diseases of man and conditions influencing the propagation and spread thereof, including sanitation and sewage and the pollution either directly or indirectly of the navigable streams and lakes of the United States as explained in the Annual Report of the Surgeon General of the Public Health Service of 1912 at p. 9.

1. Today there are more than 6,700 uniformed officers of the Commissioned Corps of the U.S. Public Health Service earning compatibility allowance pay of an estimated $140,000 each for total salaries of about $938 million from a variety of positions throughout the U.S. Department of Health and Human Services (HHS) and certain non-HHS Federal agencies and programs that offer exciting professional opportunities in the areas of disease control and prevention; biomedical research; regulation of food, drugs, and medical devices; mental health and drug abuse; and health care delivery. Commissioned officers of the Reserve Corps are appointed by the President and commissioned officers

of the Regular Corps shall be appointed by him, by and with the advice and consent of the Senate. The Commissioned officers of the Reserve Corps shall at all times be subject to call into active duty by the Surgeon General under 42USC§204. The Surgeon General assigns one commissioned officer from the Regular Corps as Deputy Surgeon General. The Surgeon General assigns eight commissioned officers to be Assistant Surgeon Generals under 42USC§206. 1. the Director of the National Institutes of Health, 2. the Chief of the Bureau of State Services, 3. the Chief of the Bureau of Medical Services, 4. the Chief Medical Officer of the United States Coast Guard, 5. the Chief Dental Officer of the Service, 6. the Chief Nurse Officer of the Service, 7. the Chief Pharmacist Officer of the Service, and 8. the Chief Sanitary Engineering Officer of the Service.

2. World War II contributed to expansion in the Services programs and personnel, the latter doubling in size to sixteen thousand employees between 1940 and 1945. Over the course of the war, the Malaria Control in War Areas program, based in Atlanta, expanded its responsibilities to include the control of other communicable diseases such as yellow fever, dengue, and typhus. By the end of the war, the program had demonstrated its value in the control of infectious disease so successfully that it was converted in 1946 to the Communicable Disease Center (CDC). The mission of CDC continued to expand over the next half century, going beyond the bounds of infectious disease to include areas such as nutrition, chronic disease, and occupational and environmental health. To reflect this broader scope of the institution, its name was changed to the Center for Disease Control in 1970. It received its current designation, Centers for Disease Control and Prevention (but retaining the acronym CDC), in 1992.

3. In 1946 two major legislative acts had a significant impact on PHS. First, the National Mental Health Act was to greatly increase the involvement of PHS, which administered the programs established by the law, in the area of mental health. The act supported deinstitutionalization, research on mental illness, provided fellowships and grants for the training of mental health personnel, and made available to states grants to assist in the establishment of clinics and treatment centers and to fund demonstration projects. It also called for the establishment within PHS of a National Institute for Mental Health, which was created in 1949. Second, the Hospital Survey and Construction Act, more commonly referred to as the Hill-Burton Act, authorized PHS to make grants to the states for surveying their hospitals and public health centers and for planning construction of additional facilities, and to assist in this construction. Over the next twenty-five years, the program disbursed almost $4 billion. It was far more cost-effective to construct hospitals in exchange for free treatment for the poor than to pay for free treatment for the poor.

4. The Cabinet-level Department of Health, Education and Welfare was created under President Eisenhower, officially coming into existence April 11, 1953. The agency became fully responsible for the health of American Indians in 1955, when all Indian health programs of the Bureau of Indian Affairs were transferred to PHS. A new Division of Indian Health was established to administer these programs. In 1956 the Armed Forces Medical Library became the National Library of Medicine and was made a part of PHS. President Lyndon B. Johnson signed the amendment to the Social Security Act in 1965

that created Medicare and Medicaid that subsidized medical care for millions of elderly and low income Americans. Concessions to the AMA and American Hospital Association were however costly. Federal and state costs for Medicare and Medicaid rose about 20 percent each year between 1966 and 1970. The federal government quickly became the largest purchaser of health care services. The final bill extended Medicare to nearly three million seniors who were not eligible for social security. Lyndon Johnson signed the bill on July 30, 1965 in the presence of Harry Truman in Independence, Missouri declaring that the enactment of Medicare meant that "no longer will older Americans be denied the healing miracle of modern medicine. No longer will illness crush and destroy the savings they have so carefully put away over a lifetime so that they might enjoy dignity in their latter years". Medicare is unique among international health insurance programs. "No other industrial democracy has compulsory health insurance for its elderly citizens alone and none started its program with such a beneficiary group". Medicare was created by amendments to the Social Security Act in 1965 which established two health care programs for person aged 65 or older, a hospital benefit plan and a medical benefits plan. Medicare benefits are also payable to persons receiving Social Security disability benefits and can begin after 24 months of disability. Medicaid provides government financed medical care of the poor, for inpatient and outpatient hospital services, laboratory and x-ray services, skilled nursing home services, physicians services, home health services, screening and diagnosis for children under age 21 and family planning.

5. In the 1960s water pollution control was moved from PHS to the departmental level, and eventually transferred to the Department of the Interior. St. Elizabeths Hospital, which had begun as the Government Hospital for the Insane in 1855, was brought into PHS in 1967 (although much of the hospitals physical plant and programs were transferred to the District of Columbia in 1987) and became the headquarter of the Department of Homeland Security in 2009. The Food and Drug Administration was made a part of PHS in 1968, thus involving PHS much more heavily and visibly in the area of regulation. The 1968 reorganization transferred the responsibility for directing PHS from the Surgeon General to the Assistant Secretary for Health and Scientific Affairs (a political appointee position that had been created originally as an adviser to the Department Secretary). For the first time, a non-career official became the top official in PHS. The creation of the Environmental Protection Agency (EPA) in 1970 led to the loss of PHS programs in areas such as air pollution and solid waste. Federal interference from creation of the Drug Enforcement Administration (DEA) in 1973 continues to pose the most significant prohibition of all federal interference under 42USC§1395. The Health Care Financing Administration was created by Act of Congress in 1977.

C. In 1979, the Department of Education Organization Act was signed into law, providing for a separate Department of Education. HEW became the Department of Health and Human Services, officially on May 4, 1980. The Secretary is the leader of the Department, as it was created in 1980, and is responsible for all of the programs. The Secretary is authorized to accept on behalf of the United States gifts made unconditionally by will or otherwise for the benefit of the Service or for the carrying out of any of its functions under 42USC§238. The Secretary is responsible for issuing drug

abuse warnings under 42USC242 and controlling biological products and laboratory supplies under 42USC§262. The Secretary make pertinent medical information available to the public under 42USC§300u. The Public Health Service (PHS) remained a component of the Department of Health and Human Services (DHHS).

1. The Agency for Healthcare Research and Quality (AHRQ) was founded December 1989 as the Agency for Health Care Policy and Research (AHCPR) and reports to the HHS Secretary. Not less than 0.2% or more than 1% of program costs shall be used to evaluate the effectiveness of the program under 42USC§238j. National Institute for Research on Safety and Quality (NIRSQ) is now paid for by the National Institutes of Health (NIH). The Program Support Center (PSC) was created in 1995. PSC provides products and services on a competitive "fee-for-service" basis to customers throughout HHS and other executive branch departments and Federal Agencies. PSC is designed to reduce Government spending and duplication of efforts in administrative support services, the PSC realizes significant savings through partnering, standardization, streamlining, prudent acquisition strategies, reorganization, economies of scale, or consolidation, and an overall sound business approach to the delivery of products and services. A major reorganization in 1995 led to the independence of the Social Security Administration. Administration for Children and Families (ACF) was left behind to cut 10 million Aid for Families with Dependent Children (AFDC) benefits from a high of 14 million in 1996 to 4 million Temporary Assistance for Needy Families (TANF) in 2000 and continues to go down. The Social Security Act of 2001 created the Center for Medicare and Medicaid Services and abolished the Health Care Financing Administration (HCFA).

D. Subsequently, in 2009 the Center for Tobacco Products (CTP) and in 2014 the National Institute on Disability, Independent Living and Rehabilitation Research (NIDILRR) was transferred from the Department of Education to the Administration for Community Living (ACL) formerly Administration on Aging. Since the passage of the Affordable Care Act (ACA) in 2010 the under age 65 death rate has increased while the over age 65 death rate has continued to steadily decline, and it is necessary for CMS to take responsibility for paying for the refundable premium and tax credit from the Treasury, before finally determining that the program was a failed experiment. To redress hyperinflation in medical bills, that cause an estimated 67% of bankruptcies today, up from 8% in 1980, it is necessary to nullify and repeal 'Medical records and payments' from the Fair Credit Reporting Act under 15USC§1681a(x)(1). Basically, since the infringement of the DEA on medical practice in 1973 health legislation has been a malicious infringement of propaganda that must overruled. The Department of Education and Social Security Administration left the creation of the Department of Health and Human Services to coincide with the naming of the Court of International Trade of the United States (COITUS) and Human Immunodeficiency Virus (HIV) epidemic and in 1996 began robbing child welfare. Since 2009 even specialized health legislation is bad propaganda, toxic even when well written, but usually an intentionally malicious breech of security and slave trade in personally identifying health information somewhat regulated by the Office of Civil Rights. The 21st Century Cures Act is the finest example of not codifying "precision medicine" to provide for unethical "research"

laboratories and identity theft under color of information blocking 45 CFR Part 171 and 42USC300jj-52(b)(2) as if the true intention of Congress was precision medicine.

1. There are several legislative errors in recent laws that adulterate so many medical products they must be amended pursuant to an injunction pursuant to the Food, Drug and Cosmetic Act (FD&CA) under 21USC§332. To acutely detoxify the judiciary, global and public health sector so they might solve COVID-19 it is necessary to prohibit the ONDCP financing intoxicating the White House, Department of Justice and Centers for Disease Control and Prevention (CDC) and repeal 21USC§1701 *et seq*. To regulate the online pharmaceutical industry after extensive felony monopolization, theft from International Mail Facilities (IMF) and counterfeiting since the passage of An Act to amend the Federal Food, Drug, and Cosmetic Act with respect to human drug compounding and drug supply chain security, and for other purposes P.L. 113-54 of Nov. 27, 2013. Repeal Section 801(u) of the FD&C Act under 21USC§381(u) as botched without differentiating counterfeit drugs by SUPPORT for Patients and Communities Act P.L. 115-271 of Oct. 24, 2018. Insert online pharmacy consumer before pharmacist in Section 804(a)(1) of the FD&CA under 21USC§384(a)(1) as stricken and replaced by a conspiracy in restraint of trade with Canada in Sec. 1121 of the Medicare Prescription Drug, Improvement, and Modernization Act (MMA) Public Law 108-173 Dec. 8, 2003 and feloniously enforced by FDA final rule entitled “Importation of Prescription Drugs” on September 25, 2020. Delete 'from Canada' from §384(b). Replace 'to submit to the Secretary' with 'record' at §384(d)(1). Insert 'foreign' before establishment and delete 'within Canada' under §384(f). Repeal paragraphs i to end §384(i-m).

2. It is necessary to repeal the extraneous tobacco definitions in 21USC§321(rr) at paragraphs 2-4. Congress should not have invoked long standing semantic “drug” abuse and neglect regarding tobacco not being a “drug” or “device” or “combination product” to justify tobacco not be marketed in combination with any food, drug, medical device, cosmetic or dietary supplement. In *Action on Smoking and Health (ASH) v. Harris* 655 F. 2d. 236 No. 79-1397 (1980) the Food and Drug Administration (FDA) refused to assert jurisdiction over cigarettes containing nicotine as a "drug". ASH was attempting to abuse the term “drug” to limit tobacco sales to pharmacies and falsely cited the FDA Commissioner's 1972 testimony before a Senate subcommittee whereby cigarettes are not drugs within the meaning of the act unless a therapeutic purpose is claimed. Indeed, if cigarettes were to be classified as drugs, they would have to be removed from the market because it would be impossible to prove they were safe for their intended us [sic]. Sic is used in brackets after a copied or quoted word that appears odd or erroneous. After a racist, retaliatory, attempt to ban menthol flavored cigarettes the Secretary of Health and Human Services is fined up to $5,000 to host human trials of *bona fide* menthol flavored tobacco as a coronavirus cure, and hydrocortisone crème to cure the cough and lung nodules in some lung cancer patients, who smoked tobacco products contaminated with carcinogenic *Aspergillus niger* under 21CFR§330.10, 15USC§13a and 42USC§300u, or up to $100 million fine for felony monopolization if either the money or Secretary is wanted to be liberated from Center for Tobacco Products propaganda and product adulteration research under 15USC§2 for personal suits for injury under §15.

3. Human Services (HS) is a component of the Department of Health and Human Services (HHS) comprised of the Administration for Children and Families (ACF) and Administration for Community Living (ACL). The Human Services Administration (HSA) wants to be separated from the Public Health Department (PHD). The Secretary of Health cannot continue to falsely represent their child-non-support and biological experimentation victims, in their free time. It is necessary to nominate a Secretary to sustain an independent, Cabinet level, Human Services Administration (HSA) to staff an email address, administrate the programs of the Administration for Children and Families (ACF) and Administration for Community Living (ACL), propose necessary amendments to effectively separate Human Services from the Health Department and fulfill human rights, pursuant to Article II of this work. Although virtually all programs, but the Older Americans Act (OAA) need to be re-authorized, however it should suffice to restore Title IV Grants to States for Aid and Services to Needy Families with Children and for Child-Welfare Services Part. A Aid to Families with Dependent Children Sec. 401 – 417 of the Social Security Act under 42USC§601-§617 to the condition it was in 1995 prior to degradation by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 and order all money from the Biden-Harris American Families Plan be used to pay for direct AFDC child benefits.

§321a Health and Human Services

A. The mission of the U.S. Department of Health and Human Services (HHS) is to enhance and protect the health and well-being of all Americans by providing for effective health and human services and by fostering sound, sustained advances in the sciences underlying medicine, public health, and social services. HHS receives a total of $1.5 billion in federal outlays and manages an estimated $2.4 trillion including state contributions and out-of-pocket copays and deductibles FY 22. To heighten scrutiny of their accounting HHS needs to be divided into its three components. One, a Department of Health, or Public Health Department (PHD) to isolate its Public Health Service (PHS). Two, health insurance, including the Affordable Care Act, managed by Centers for Medicare and Medicaid Services (CMS) that would take over the claim to be the biggest spender of federal tax dollars for comparison of the shrinking number of health professionals with growing Social Security Administration (SSA) population. Three, a Human Service Administration (HSA) and/or absorption of the biomedical experimentation terminating Administration for Community Living (ACL) into the Aid to Families with Dependent Children (AFDC) paying Administration for Children and Families (ACF). According to this budget review of the agency budgets underlying the novel HHS Budget by Operating Division table, the total HHS budget request for federal outlays, after informed consent terminations, is $1,488 billion FY 22, 12% less than the $1,662 billion outlays and 10% less than the duplicitous $1,638 billion FY 22 budget authority. This $1.5 billion request is a hyper-inflationary 6% more than $1.4 billion FY 21, whereas the President's $1.6 billion request is 7% more than FY 21. This bid for loyalty from the all-weather American terrorists, in Republican war and Democratic peace, is justified in HHS's FY 21 COVID-19 diagnosis. HHS now knows the COVID-19 diagnosis, they are, two years and 600,000 dead, late with the hydrocortisone,

eucalyptus, lavender, peppermint or salt help water cure coronavirus treatment needed to safely reopen schools, without secretly executing any more vaccinated elder infecting, “snot nosed children”. The old President's obstructively expensive American Jobs Plan and Biden-Harris American Families Plan for an elderly majority in Congress, are actually typically duplicitous schemes to abort lawful 3% annual raises for minimum wage child care and home health care workers.

Health and Human Services, Outlays FY 17 - FY 24
(millions)

	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Health Department								
Food and Drug Administration	2,811	2,675	3,249	3,266	3,311	3,635	3,749	3,778
Health Resources Services Administration	6,003	5,975	6,835	7,047	7,218	7,834	8,069	8,311
Indian Health Service	5,039	5,011	5,804	6,047	6,236	8,471	8,724	8,985
Centers for Disease Control and Prevention	6,368	5,732	6,543	6,916	7,040	7,458	7,809	7,991
National Institut	33,188	33,020	38,557	40,073	41,282	43,815	45,224	46,584

es of Health								
Substance Abuse Mental Health Services Administration	4,111	4,091	5,588	5,737	5,870	9,587	9,879	10,180
Department Management	3,430	3,051	3,128	4,084	4,209	5,097	5,250	5,408
Public Health Service Outlays	60,950	59,555	69,704	73,170	75,166	85,897	88,704	91,237
Health Insurance								
Centers for Medicare & Medicaid Services Outlays	1,030,278	1,068,391	1,096,915	1,150,737	1,247,595	1,315,774	1,376,052	1,445,354
Human Services								
Administration for Children and	54,852	56,510	61,877	60,777	61,704	83,184	85,925	88,456

Families								
Administration for Community Living	1,896	1,931	2,130	2,687	2,834	2,987	3,160	3,324
Human Services, Subtotal Outlays	56,748	58,441	64,007	63,464	64,538	86,171	89,085	91,780
Health and Human Services Total Outlays	1,147,976	1,186,387	1,230,626	1,287,371	1,387,299	1,487,842	1,553,841	1,628,371

Source: HHS Budget-in-Brief FY 19 & FY 22 Program Level P.L. Are removed to eliminate confusion regarding inter-HHS transfers to the national outlay total.

1. The biggest difference is an inaccurate accounting of the Public Health and Social Services Emergency Fund (PHSSEF)in the novel HHS by Operating Division table that obviously does not add correctly, even with the irregular rows. FY 21 PHSSEF has been granted authority to spend $212 billion out of this federal account, and as of June 38.7% ($82B) of the total $212B has been obligated.. They carried over a balance of $92 billion from FY 21 and were given $120 billion in new appropriations, and have authority to use $511million of other budgetary resources. The FY 22 HHS Budget-in-brief is not added up right, even by their usual ill-defined outlay and budget authority standard, and is therefore overruled, like the President's proposals, leaving only $5 - $15.4 billion support order under Art. 26 of the Convention on the Rights of the Child (1990) and 18USC§228. There is not a significant dispute between two different accounting methods regarding CMS. This review estimates CMS outlays of $1,316 billion FY 22 with 3% growth from the previous year, the President $1,320 billion FY 22 overestimating 6% growth to over-emphasize his predecessors cuts to program management and fail to blame him for 9% CMS “hydroxychloriquine” inflation FY 20 – FY 21 rather than prescribe hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus. The major reason for the 6% HHS spending growth are department-wide increases in excess of 3% and a “support order” claiming all $15.4 billion, or enough to get ACF above $70 billion outlays, money from the mandatory American Families Plan proposal to reinstate

Aid to Families with Dependent Children (AFDC) before taxing state employees and rich to end child poverty by 2030 by replacing Sec. 230 of the Social Security Act under 42USC§430 with a Supplemental Security Income Trust Fund. Whereas the NIH Advanced Research Projects Agency for Health (ARPA-H) is a sham legal proceeding, the major dispute is repealing Office of National Drug Control Policy (ONDCP) statute and terminating all their financing, after intoxicating CDC Injury Prevention and Control, White House, Attorney General and Court to obstruct repeal of 21USC§1701 *et seq*. under 18USC§2339C(a)(1)(B) with a drug abuse warning regarding pseudo-ephedrine under 42USC§242. To help reduce the growing under-age 65 death rate it is proposed that CMS pay the proposed $60 billion for the ACA premium subsidy to relieve responsibility from the Treasury, consequential hyperinflation and deadly justification for the abolition of the program; this would increase CMS, but not federal, outlays.

2. Preliminary data from 2020 suggests that overdose deaths, which were already increasing, accelerated during the pandemic. An estimated a record high of 90,000 drug overdose deaths occurred in the United States in the 12 months ending in September 2020. The budget takes action to address the epidemic of opioids and other substance use, investing $11.2 billion, including $10.7 billion in discretionary funding, across HHS, $3.9 billion more than in FY 2021. The American Rescue Plan Act of 2021 (the "Act") includes $160 billion in supplemental funding for programs at HHS that is: Mounting a national vaccination program, containing COVID-19, and safely reopening schools; Enhancing public health capacity; Providing direct relief to Americans; Addressing health care disparities; and Increasing and expanding access to health insurance coverage. The Centers for Disease Control and Prevention (CDC) is using $7.5 billion in the Act to support activities to support COVID-19 vaccine planning, distribution, monitoring, and tracking. CDC is also using $1 billion in the Act to strengthen vaccine confidence across the United States through information and education to enhance vaccination rates nationwide and reduce vaccine hesitancy. Most of this spending is not in addition to regular budget inflation.

3. The Act provides $6 billion in supplemental funds to support research, development, manufacturing, production, and procurement of vaccines, therapeutics, and medical supplies to respond to the COVID-19 pandemic. These funds will support clinical trial research of vaccines on variant strains and special populations, development of novel antiviral drugs, and production of critical medical supplies for health care providers. Under the Defense Production Act, the American Rescue Plan provides $10 billion in supplemental funds to enhance the purchase, production, and distribution of medical supplies, such as diagnostic tools and personal protective equipment. The Food and Drug Administration (FDA) is using $500 million in the Act to evaluate the continued performance, safety, and effectiveness of COVID-19 medical countermeasures approved for emergency use, including the associated manufacturing process and supply chain. The Centers for Medicare & Medicaid Services (CMS) is using $200 million in supplemental funds from the Act to support its strategy to ensure America's 15,400 Medicare-participating skilled nursing facilities have access to targeted Quality Improvement Organization (QIO) infection control assistance. The Act also appropriated $250 million for Medicaid and $250 million for Medicare to fund Strike Force Teams to

assist nursing homes with COVID-19 outbreaks through clinical, infection control or staffing activities. The Act provided HHS with $47.8 billion to carry out activities to detect, diagnose, trace, and monitor SARS- CoV-2 and COVID-19 infections and related strategies to mitigate the spread of COVID-19.

4. The FDA must be sued to release their list of approved COVID-19 treatments under the Freedom of Information Act, informed that they will be publicly fined up to $100 million under 15USC§2 if they fail to authorize the COVID-19 polygraph under 21CFR§330.10 for the edification of the Secretary under 42USC§300u: Hydrocortisone, eucalyptus, lavender or peppermint help water cure allergic rhinitis from coronavirus. Eucalyptus or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus, lavender or peppermint soap in public restrooms, with instruction to "wash your face and nose". Lysol in FDA approved for environmental cleaning. Intensive care units (ICUs), waiting rooms and public airspaces of all sorts may be sterilized of both influenza and coronavirus with eucalyptus scented humidifiers (diffusers).

B. Since 1964, the U.S. Department of Health has published an annual series of data presenting total national health expenditures (NHE). These estimates are compiled with the goal of measuring the total annual dollar amount of health care consumption in the U.S., as well as the dollar amount invested in medical sector structures and equipment and non-commercial research to procure health services in the future. After four decades of high inflation averaging 8.9% annually for Medicare and 9.8% annually for private health insurance between 1970, when inflation was over 20% and 2005, when it was about 6.6%, the inflation in health care prices was nearly been brought under control-defined as less than 3% annual inflation since 2012. There has been a relapse into hyperinflation of government health insurance premiums since 2016. The U.S. spends more on health care as a share of the economy, than any other nation — nearly twice as much as the average OECD country. National Health Expenditure (NHE) as a percent of gross domestic product (GDP) was estimated to have increased from 5.6% in 1965, to 7.1% in 1970, to 8.9% in 1980, to 12.6% in 1990 to more than 16% in 2000 to as high as 17.8% in 2013 when the 17.3% of GDP deflator of 2009-2013 was broken. A lot of this is the result of self-interested, chronic overestimation, serving to exaggerate just how extortionate the most extortionate health care system in the world is, for the either the relief it provides or reduction in the aftermath. In review, NHE is not, and never reached 18% of GDP; in fact, NHE probably never exceeded much more than 15% of GDP, went down to 14.9% and 14.7% after the termination of the individual mandate before the COVID-19 pandemic relief for investigational new medicines to suppress the fact that hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus. 15% of GDP is significantly higher than the next highest spenders of 11% of GDP in France, Germany and Japan, the global norm is about 9.9%.

National Health Expenditure Account 2017-2024
(in billions)

	2017	2018	2019	2020	2021	2022	2023	2024
Private Health Insurance NAIC	573	631	649	667	706	715	735	755
Federal Medicare, Medicaid, CHIP	1,264	1,323	1,346	1,419	1,559	1,677	1,741	1,828
Medicaid State	57	61	64	66	68	70	72	74
CHIP State and local	3.9	4.0	4.1	4.2	4.3	4.5	4.6	47
Other health insurance programs	99	101	104	106	109	113	116	119
All Health Insurance Payments	1,997	2,120	2,167	2,262	2,446	2,580	2,669	2,823
Other third-party payers and programs	244	250	257	263	274	282	290	299
Out-of-pocket payments	375	384	394	404	416	429	442	455
Investment	159	160	162	164	169	174	179	185
Public Health	127	130	134	137	141	145	150	154
National Health Expenditure	2,902	3,044	3,114	3,230	3,446	3,610	3,730	3,916
Gross Domestic Product	19,317	20,369	21,224	21,000	22,030	23,500	24,563	25,537
NHE as %	15	14.9	14.7	15.3	15.6	15.3	15.2	15.3

of GDP								

Source: OMB Table 10.1. Tables 102 & 104; Health, United States, 2014 & 15. Daveline, Dan; Koenigsman, Jane; Rivers, Bill, *2014 Health Insurance Industry Analysis Report* National Association of Insurance Commissioners and Center for Insurance Policy and Research, 2015. HHS Budget-in-Brief FY 19 & FY 22

2. The U.S. spends more on health care as a share of the economy — nearly twice as much as the average OECD country — yet has the lowest life expectancy and highest suicide rates among the 11 nations. The U.S. has the highest chronic disease burden and an obesity rate that is two times higher than the OECD average. Americans had fewer physician visits than peers in most countries, which may be related to a low supply of physicians in the U.S. Americans use some expensive technologies, such as MRIs, and specialized procedures, such as hip replacements, more often. The U.S. outperforms its peers in terms of preventive measures — it has the one of the highest rates of breast cancer screening, used to warrant dangerous mastectomies and cancer treatments, among women ages 50 to 69 and the second-highest rate (after the U.K.) of flu vaccinations, believed to be placebo, among people age 65 and older. In summary, compared to other industrialized nations, the U.S. has among the highest number of hospitalizations from preventable causes and the highest rate of avoidable deaths. Health professionals in the U.S. have an organized criminal tendency, more pronounced than in other countries also compromised by the infringement of the war on drugs, to intentionally not prescribe curative medicine under color of law, pertaining to the idiotic administration of placebo and harmful medicines and endless tests to help them diagnose idiopathic disorders, in the course of an outrageously overpriced identity theft intending to convince people to undertake even more expensive and unnecessary surgeries, at which they are comparatively skilled.

3. Not that many people, except compulsive borrowers and overinsured individuals, actually pay duplicitous and triplicate hospital bills. While the first bill might be reasonable, if the prescription was curative, after receiving a second and third bill in addition, the prudent consumer does not pay anything. Medicaid legislation of completely free medical coverage, for a reasonable cost to taxpayers, should never have allowed Medicare legislation to charge premiums or pay higher prices than Medicaid, and failing Medicaid for all, should not have limited Medicare premiums to social security beneficiaries They should not have allowed copays or deductibles. Nor should they have allowed health care providers to charge different rates for different types of insurance or penalize the “uninsured” and underinsured. The result of inequality is a system that kills all by over-treating the rich and under-treating the poor, without healing anyone, except maybe older Americans who pay the income adjusted premiums for standard Medicare Parts B, C & D insurance, if providers haven't forgotten the truth in all their irregular copays, deductibles, omissions, lies and unequal torture treatments for idiopathic disorders (without cause), drug resistant idiots (without precision medicine), and stolen identities. As recently as 1981, only 8% of families filing for bankruptcy did so in the aftermath of a serious medical problem By contrast, in 2001 illness or medical bills contributed to about half of bankruptcies. 69.1% of debtors met the legacy definition of medical bankruptcy in 2010 study, a 22.9% increase (49.6% relative increase) from 2001,

when 46.2% met this definition. It is necessary to redress hyperinflation in medical bills, that cause an estimated 67% of bankruptcies today, up from 8% in 1980. Medicaid cannot simply require hospitals to declare their prices, Medicaid must set reasonable prices, they and "uninsured" patients are willing to pay because they are reasonable to both the patient and busy health care practitioner. In order to begin to negotiate reasonable prices in a free market it is necessary to nullify and repeal 'Medical records and payments' from the Fair Credit Reporting Act under 15USC§1681a(x)(1).

§322 World Health Organization

A. The World Health Organization (WHO) is the United Nations (UN) specialized agency for health. It was established 7 April 1948. World Health Day is held every April 7. WHO is governed by 192 Member States. Director General Lee Jong-wook said at the Conference of African Health Ministers on 28 June 2005, "Our common goal is universal access to safe, affordable and effective medical care." 31 December 2004, WHO had a total of 4,017 staff members on either fixed-term appointments of one year or more, or career service/service appointments (both referred to hereafter as "fixed-term/service appointments"). Of these, 1,565 (39.0%) were in the professional category, 2,207 (54.9%) in the general services and 245 (6.1%) in the national professional officer category. The number of staff members holding fixed-term/service appointments had increased by 175 (4.6%) compared with the number at 31 December 2003 according to the annual human resources report A/58/34. The Executive Board is composed of 32 elected members technically qualified in the field of health. The main board meeting is held in January to compose the agenda for the forthcoming Health Assembly. The purpose of the Board is to give effect to the decisions of the Health Assembly. The Health Assembly (HA) is composed of representatives from WHO's Member States and generally meets annually in May in Geneva.

1. WHO is led by a Director-General.who is assisted with a representative of Health Action in Crisis Polio Eradication 9 departmental Assistant Director-Generals and those advisors appointed to the highest level of the 3,500 health experts that staff the Secretariat. 1. Assistant Director-General HIV/AIDS, TB and Malaria. 2. Assistant Director-General Communicable Diseases. 3. Assistant Director-General Non-communicable Diseases and Mental Health. 4. Assistant Director-General Family and Community Health. 5. Assistant Director-General Sustainable Development and Health Environments. 6. Assistant Director-General Health Technology and Pharmaceuticals. 7. Assistant Director-General Evidence and Information for Policy. 8. Assistant Director-General External Relations and Governing Bodies. 9. Assistant Director-General General Management. The 192 WHO Member States are grouped into six regions with a regional office. 1. Regional Office for Africa, 2. Regional Office for the Americas, 3. Regional Office for South East Asia, 4. Regional Office for Europe, 5. Regional Office for the Eastern Mediterranean, 6. Regional Office for the Western Pacific.

2. The World Health Organization programme budget for 2020-2021 is estimated at $4,840.4 million. WHO hopes to raise another $3,641.6 million from other sources, for a

total budget of $8,482 million. The base budget is $3,768.7 million, $863 million for polio eradication and $208.7 million for special programs. This is an increase of $418.9 million. 9.5% from the previous year, 2018-2019, when the budget was $4,421.5 million.

B. The Constitution of the World Health Organization was ratified July 22, 1946 and the States parties declare, in conformity with the Charter of the United Nations, that the following principles are basic to the happiness, harmonious relations and security of all peoples: 1. Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. 2. The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition. 3. The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States. 4. The achievement of any State in the promotion and protection of health is of value to all. 5. Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger. 6. Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development. 7. The extension to all peoples of the benefits of medical, psychological and related knowledge is essential to the fullest attainment of health. 8. Informed opinion and active co-operation on the part of the public are of the utmost importance in the improvement of the health of the people. 9. Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures. 10. Accepting these principles, and for the purpose of co-operation among themselves and with others to promote and protect the health of all peoples, the Contracting Parties agree to the present Constitution of the World Health Organization as a specialized agency of the United Nations.

2. The WHO Constitution bestows upon the public health researcher the following functions: a. To act as the directing and co-ordinating authority on international health work. b. To establish and maintain effective collaboration with the United Nations, specialized agencies, governmental health administrations, professional groups and such other organizations as may be deemed appropriate. c. To assist governments, upon request, in strengthening health services. d. To furnish appropriate technical assistance and, in emergencies, necessary aid upon request. e. To establish and maintain such administrative and technical services as may be required, including epidemiological and statistical services. f. To stimulate and advance work to eradicate epidemic, endemic and other diseases. g. To promote, in co-operation with other specialized agencies where necessary, the prevention of accidental injuries. h. To promote, in co-operation with other specialized agencies where necessary, the improvement of nutrition, housing, sanitation, recreation, economic or working conditions and other aspects of environmental hygiene. i. To promote co-operation among scientific and professional groups which contribute to the advancement of health. j. To propose conventions, agreements and regulations, and make recommendations with respect to international health matters and to perform such duties as may be assigned thereby to the Organization and are consistent with its objective. k. To promote maternal and child health and welfare and to foster the ability to live harmoniously in a changing total environment. l. To foster activities in the field of

mental health, especially those affecting the harmony of human relations. m. To promote and conduct research in the field of health. n. To promote improved standards of teaching and training in health, medical and related professions. o. To study and report on, in co-operation with other specialized agencies where necessary, administrative and social techniques affecting public health and medical care from preventive and curative points of view, including hospital services and social security. p. To provide information, counsel and assistance in the field of health. q. To assist in developing an informed public opinion among all peoples on matters of health. r. To establish and revise as necessary international nomenclatures of diseases, of causes of death and of public health practices. s. To standardize diagnostic procedures as necessary. t. To develop, establish and promote international standards with respect to food, biological, pharmaceutical and similar products. u Generally to take all necessary action to attain the objective of the Organization. v. Fulfill sanitary and quarantine requirements and other procedures designed to prevent the spread of disease. w. Respect nomenclatures with respect to diseases, causes of death and public health practices; x. Establish standards with respect to diagnostic procedures for international use. y. Establish standards with respect to the safety, purity and potency of biological, pharmaceutical and similar products moving in international commerce. z. License the advertising and labelling of biological, pharmaceutical and similar products moving in international commerce.

C. The purpose of International Health Regulations is to ensure the maximum security against the international spread of diseases with minimum interference with world traffic. Its origins date back to the mid-nineteenth century when cholera epidemics overran Europe between 1830 and 1847. These epidemics were catalysts for intensive infectious disease diplomacy and multilateral cooperation in public health, starting with the first International Sanitary Conference in Paris in 1851. Between 1851 and the end of the century, eight conventions on the spread of infectious diseases across national boundaries were negotiated. The beginning of the 20th century saw multilateral institutions established to enforce these conventions. In 1948, the WHO Constitution came into force and in 1951 WHO Member states adopted the International Sanitary Regulations, which were renamed the International Health Regulations in 1969. The regulations were modified in 1973 and 1981. IHR were initially intended to help monitor and control six serious infectious diseases – cholera, plague, yellow fever, smallpox, relapsing fever and typhoid. Today, only cholera, plague and yellow fever are notifiable diseases although the new HIV AIDS epidemic has become the deadliest plague ever.

1. ICD-10 was endorsed by the Forty-third World Health Assembly in May 1990 and came into use by WHO member states in 1994. The codification is the latest in a series that has its origins in the 1850's. The first edition known as the International List of the Causes of Death was adopted by the International Statistical Institute in 1893. WHO took over responsibility for the ICD after its foundation in 1948. The ICD is used to classify diseases and other health problems and is XXII Chapters long. The International Classification of Functioning, Disability and Health (ICF), is a new classification of health and health related domains that describe body functions and structures, activities and participation. The domains are classified from body, individual and societal perspectives. The Codex Alimentarius Commission was created in 1963 by Food and

Agriculture Organization (FAO) and the World Health Organization (WHO) to develop food standards, guidelines and related texts such as codes of practice under the Joint FAO/WHO Food Standards Program. The main purposes of this Program are protecting health of the consumers and ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and non-governmental organizations.

D. The International Narcotics Control Board (INCB) is the independent and quasi-judicial monitoring body for the implementation of the United Nations international drug control conventions that needs to be brought under the supervision of the WHO. It was established in 1968 in accordance with the Single Convention on Narcotic Drugs, 1961. It had predecessors under the former drug control treaties as far back as the time of the League of Nations. The functions of INCB are laid down in the following treaties: the Single Convention on Narcotic Drugs, 1961; the Convention on Psychotropic Substances of 1971; and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988. INCB endeavors, in cooperation with Governments, to ensure that adequate supplies of drugs are available for medical and scientific uses and that the diversion of drugs from licit sources to illicit channels does not occur. INCB also monitors Governments' control over chemicals used in the illicit manufacture of drugs and assists them in preventing the diversion of those chemicals into the illicit traffic. INCB identifies weaknesses in national and international control systems and contributes to correcting such situations. INCB is also responsible for assessing chemicals used in the illicit manufacture of drugs, in order to determine whether they should be placed under international control. Based on the discharge of its duty, INCB publishes an annual report that is submitted to ECOSOC through the Commission. The report provides a comprehensive survey of the drug control situation in various parts of the world. As an impartial body, INCB tries to identify and predict dangerous trends and suggests necessary measures to be taken. The annual report is supplemented by technical reports (high) on narcotic drugs and psychotropic substances, giving a detailed account of estimates of annual legitimate requirements in each country as well as data, the licit production, manufacture, trade and consumption of these drugs worldwide. Drugs needs to be taken back from illicit use by undereducated Customs and law enforcement to impair judgment, slave unarmed, non-violent people and foment armed and stupid resistance to sustain their unjust drug war. First, deleting marijuana from the Drug Schedules to legitimize its recreational use as a safe, less addictive and debilitating alternative to alcohol and tobacco, and as pain medicine second to dangerously addictive and overdose prone opiates, is necessary, to prevent discrimination by problem drinkers and opiate consumers and prescribers. Second, to be successful at reducing and eliminating drug addiction nations need to adopt a professional approach to condemning experimental and hard drug addiction regulated by medical knowledge of difficult detoxification from the dangerous side-effects, not side-arms. Third, if opiate pain medicine and other psychotropic drugs for which there is no legitimate use, other than recreation, is to continue to be specially regulated, other than by regular medical and pharmaceutical license, the prescription for opiates should be limited to pain medicine specialists and their special pharmacists, to liberate the health professions and their patients from this delusional torturous jurisdiction of hallucinating, undereducated, opiate

addicted battlefield veterans, employed as law enforcement officers, intoxicating the practice of medicine and judiciary with the medicine stolen therefrom.

1. Other than incessant "drug war" out of their control, the primary failure of the World Health Organization (WHO) and public health worldwide, involves their response to pandemics. The reason for this is that "doctors make the worst patients". Physicians strangely become poisonously violent when cured, ostensibly to make money by withholding curative medicine from the public, but actually don't remember, or retain their estranged friend or family member, usurped by aforementioned drug cop. During pandemics of extremely contagious diseases, specifically coronavirus and influenza, health professionals cannot avoid getting infected. Their bizarre, curative medicine ignorant, violence is organized to accidentally and intentionally spread the disease to as many people as possible. The news media then solicits for the development of more placebo seasonal influenza vaccines or novel two shot coronavirus cure, although this process takes a year and curative mentholyptus cough drops can be purchased at any convenience store. WHO and national legislatures then publish and finance propaganda regarding the sending of live virus from testing centers to vaccine development laboratories, both of which maliciously leak the vaccine grade live virus, back into the community, and support other fruitless high tech interventions and non-descriptive "antivirals". Prescription Oseltamivir (Tamiflu), Zanamivir (Relenza) and Amantadine (Symmetrel) are indicated for the treatment of influenza, and are safe and effective. Mentholyptus cough drops are the frontline treatment for both instantly curing the wet cough of influenza and allergic rhinitis of coronavirus, with a little nose washing. Eucalyptus, lavender or peppermint soap is needed to be placed in public restrooms to ensure the highest level of curative nose washing. Medicinal saline and chlorine swimming and Epsom salt baths are very curative of coronavirus but reinfection occurs. Eucalyptus humidifiers are needed to sterilize the air in schools, hospitals and public airspaces to ensure people can work together without infecting each other.

§322a Pandemic Response

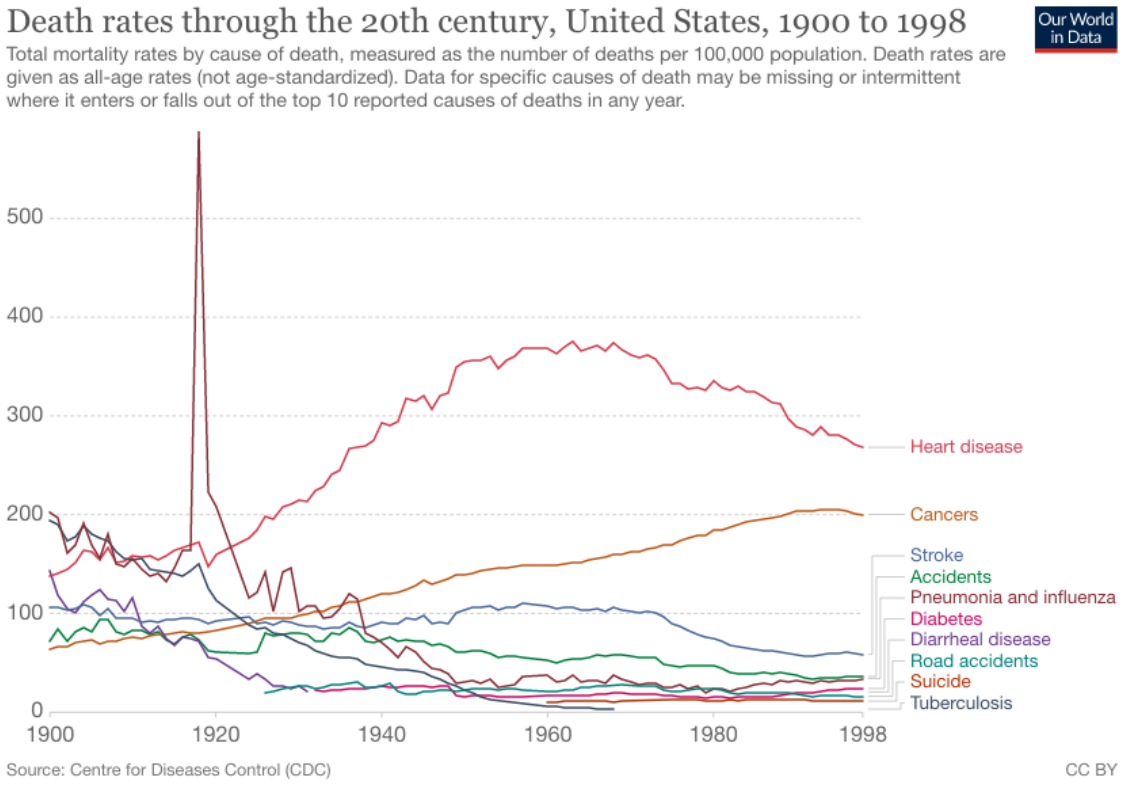
A. It is time to end the COVID-19 pandemic. The gag orders, requiring masks, must be removed and the public informed that "hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus. Eucalyptus or lavender treat both coronavirus and influenza". Public restrooms must be stocked with eucalyptus or lavender soap so that people can "wash face and nose" and be cured. Mentholyptus cough drops are the frontline treatment for the wet cough of influenza, and allergic rhinitis of coronavirus with a little face washing. Schools and indoor public airspaces, especially designated intensive care units, should be sterilized with eucalyptus or lavender scented humidifiers. Washing the face is necessary and water is usually sufficient to cure the virus. To help prove the success of their vaccine, CDC has agreed that chlorinate and saline swimming pools and ocean are safe and effective treatment for coronavirus, while immersed in the water, and allowed curative swimming pools to reopen after closing them the first year. Tasteful sneeze guards can stay, however it is time for the mask requirements, social distancing and other travel restrictions to go. The public must be informed that, whether

or not they have been vaccinated, they must treat any allergic rhinitis with hydrocortisone, eucalyptus, lavender, peppermint or salt and water.

1. The United Nations has allowed their bias for vaccine "development" to reinvent the "research" laboratory and millions of people have died because billions of people have been denied necessary medical library and market research. The response to the COVID-19 pandemic was a disgrace to development – the devil. The United Nations allowed their trust in vaccine development to monopolize the news media, government and public health information, and millions of people died waiting for a COVID-19 vaccine to cure chronic coronavirus in two shots. COVID-19 vaccines do not confer any lasting immunity from the contagious coronavirus allergic rhinitis, and cannot be relied upon to end the pandemic. COVID-19 vaccines do not pass the non-inferiority test with the hundreds of readily available curative over-the-counter remedies, whose advertisement has been anticompetitively suppressed by the government, public health authorities and news media. United Nations non-disclosure enforcement of the Trade Related Aspects of Intellectual Property (TRIPS) Agreement regarding non-disclosure of improperly designated secret information constitutes felony monopolization under 15USC§2 and is not even justified to feign ignorance of the vast "body" of public information and billions of successful human trials of readily available remedies, under its own infringement theft permissive terms. The Generals of the UN must be reminded of the repeated empirical finding of exhaustive research. Their focus on international development is not only poetically blasphemous, it disrespects primitive communities in nature lost to development. Drug control infringed government fascination with professional development monopolizes their petty requests for money, despite the violently suppressed fact an international social security taxation system paying cash benefits to the poor is the way to end poverty. The United States Department of Health and Human Services (HHS) theft of Aid for Families with Dependent Children (AFDC) benefits beginning in 1996 mirrors this global development of felony monopolization of welfare by drug control intoxicated medical fascists, yielding armed and dumb government in the corporate interest of blasphemous development goals.

2. The COVID-19 pandemic occurred because the placebo seasonal influenza vaccine is allowed to outsell childhood vaccines and Pneumovax combined, especially in the United States and Great Britain. The people (of China) need to know eucalyptus cures both influenza and coronavirus, but whenever there is an outbreak, the news media and public health authorities, publish solicitations for vaccine development, whereby testing laboratories are to send the live virus to vaccine development laboratories, and this is both a news and laboratory leak, and the live virus is maliciously spread back into the community causing a massive pandemic, and the public, including health professions, are not informed of the cure, only the most expensive and dangerous possible procedure they might consent to ie. Hospital ventilation pneumonia risk and vaccine development. The Centers for Disease Control in Atlanta develops flu vaccines for the United States to protect from whatever viruses were in Asia six months earlier. But sometimes new viruses occur in the U.S. without first showing up in Asia, and sometimes the viruses change [sic] and pandemics occur. Systematic review of 51 studies found no evidence that the flu vaccine is any more effective than a placebo in children. Studies published in

2008 found that influenza vaccination was not associated with a reduced risk of pneumonia in older people. In the winter flu season of 2012-2013 the flu vaccine was only 8% effective. These studies do not indicate that there is any benefit over natural human immunity from receiving a seasonal influenza vaccine. It is necessary that the public is informed: Eucalyptus and lavender essential oils are highly effective at curing influenza. Mentholyptus cough drops are the frontline treatment for wet cough of influenza, prescription Oseltamivir (Tamiflu), Zanamivir (Relenza) and Amantadine (Symmetrel) are also effective.



3. Untreated pandemics such as influenza and coronavirus can quickly become the leading cause of death. During the 20th century 600,000 Americans died from the Spanish flu of 1918, mortality reached nearly 600 per 100,000, more than the peak of heart disease 390 per 100,000 in 1964 and cancer 200 per 100,000 in 1995. 1918-1920 nearly as many people died of influenza as all other causes of death combined. Mortality from influenza subsequently declined due to the advent of penicillin whereas opportunistic pneumonia is the primary reason people die from influenza. It is however one of the greatest tragedies of the 20th century that the highly contagious wet cough was allowed to go untreated with eucalyptus or lavender. An estimated 500 million were infected and 50 million died from the Spanish flu of 1918. More than the 20 million who died and 21 million who were injured in World War I, but less than the 70–85 million people perished in World War II. As of June 2021, the COVID-19 pandemic has taken the lives of an estimated 600,000 Americans, exactly the same as the Spanish flu of 1918,

worldwide an estimated 3.8 million people have died from COVID-19, much less than 50 million Spanish flu deaths.

B. The World Health Organization (WHO) needs to detoxify. WHO led the COVID-19 pandemic public health catastrophe with a dangerously contagious nose they are deeply asymptomatic of, and must correctly describe the coronavirus cold symptoms and treatment. Coronavirus cold symptoms typically present with allergic rhinitis, after three days the lungs begin to fill with fluid, resulting in death from inability to breathe. To end the COVID-19 pandemic and return to school, everyone must learn the lesson that hydrocortisone, eucalyptus, lavender, peppermint or salt helps water treat the allergic rhinitis and influenza-like symptoms of coronavirus. Vaccines and prescription drugs are not more effective, they are less safe, with usual and unpredictable side-effects, more expensive, and so comparatively difficult to procure, health professionals don't adequately treat their nose. Hospitals, clinics, schools and other public institutions must learn this lesson. Environmental cleaning with Lysol, active ingredient eucalyptus, is curative for the hygienists and provides temporary relief for everyone in the vicinity. To constantly sterilize a coronavirus and influenza free airspace for the "snot nosed child", of all ages and vaccination status offense, to be healed and stop the transmission of the virus, non-toxic and hypo-allergenic, eucalyptus scented humidifiers, last used in the 1950s, are needed to host a public party during a pandemic outbreak of coronavirus or influenza.

1. One of the hypocrisies preluding this pandemic is that UN news was wrong to indiscriminately advocate the use of soap that might cause the proliferation of toxic algae in natural waterways that could otherwise be perpetually used for bathing and drinking, with basic water filtration and treatment. Bathing and swimming in chlorinated or saline hot tub, pool or ocean is an easy and highly effective treatment for both coronavirus and methicillin resistant *Staphylococcus aureus* (MRSA). To win herd immunity against coronavirus pandemics the most likely strategy is to stock public restrooms with eucalyptus, lavender or peppermint soap, and instructions to "wash face and nose". Where there is a shortage of water, the face and nose can be washed with eucalyptus, lavender or peppermint essential oil or bottles of saline or consume a mentholyptus cough drop and splash a dash of water over the nose. Mentholyptus cough drops instantly cure and prevent infection of the lung by the flu-like wet cough of coronavirus and influenza.

2. Shortly before the COVID-19 pandemic UN News hypocritically and anti-competitively immunized vaccine manufacturers against liability for injuries and all dissent against their propaganda. While some vaccines, especially polio and smallpox have been effective at totally eliminating diseases, vaccines cause a lot of injuries and developmental defects in children, many have been recalled due to hazards, and it is difficult to recall effective medical treatment for diseases that have been monopolized by vaccine propaganda. This is especially disconcerting in regards to the seasonal influenza vaccine, that outsells both childhood vaccines and Pneumovax combined, although it is believed to be totally placebo. The influenza vaccine development and testing industry has been cited on numerous occasions for the news and laboratory leaks of the live virus that cause major pandemics. When influenza pandemics occur, the news media and

public health propaganda inappropriately solicit for live viruses to develop vaccines, a process that takes a year. These live viruses are then lost, stolen and maliciously leaked back out into the community to cause widespread disease and death. When there is an influenza outbreak, the public needs to be informed that mentholyptus cough drops instantly cure the wet cough of influenza and that prescription Oseltamivir (Tamiflu), Zanamivir (Relenza) and Amantadine (Symmetrel) are safe and effective. The flu-like symptoms of end stage coronavirus were not auspicious for vaccine development, yet the UN, public health authorities allowed obscure, experimental, patent drug developers around the world to anti-competitively monopolize public information to exclude the many safe and effective over-the-counter remedies underwater, although millions of people drowned waiting to wash their nose.

C. Statin and pseudo-ephedrine prescription drug abuse is suspected to shrink the brains of government and public health newsmakers, making them functionally illiterate, unable to contest propaganda, no matter how false and damaging, and predisposed to being taken hostage by certain propagandists. First, the militarily unacceptable obesity of Secretary-General Antonio Guterres, former US President Donald Trump and Commissioner of Social Security Astrue from the previous Great Recession, must be suspected of statin drug consumption to tolerate malicious cardiotoxic attacks. Statin drugs dangerously shrink the brain, they are acutely intoxicating and without Pneumovax the brain becomes immediately infected with pneumococcal meningitis, and does not heal fast enough for a course of antibiotics to prevent chronic disease. The Secretary-General's quasi-religious faith in vaccines, could be attributed to the fact Pneumovax works, must be required for statin drug consumption and prescribed to all working age people to prevent pneumococcal infection of heart, lung and brain damage. As a brain damaged statin drug consumer, fascinated by the affiliated cardiotoxic animal laboratory leak, forgetting to pay anything but a stereotypical fascination with the number of the beast, or related fascist propaganda, such as influenza-like vaccine development, is second nature to the Secretary-General.

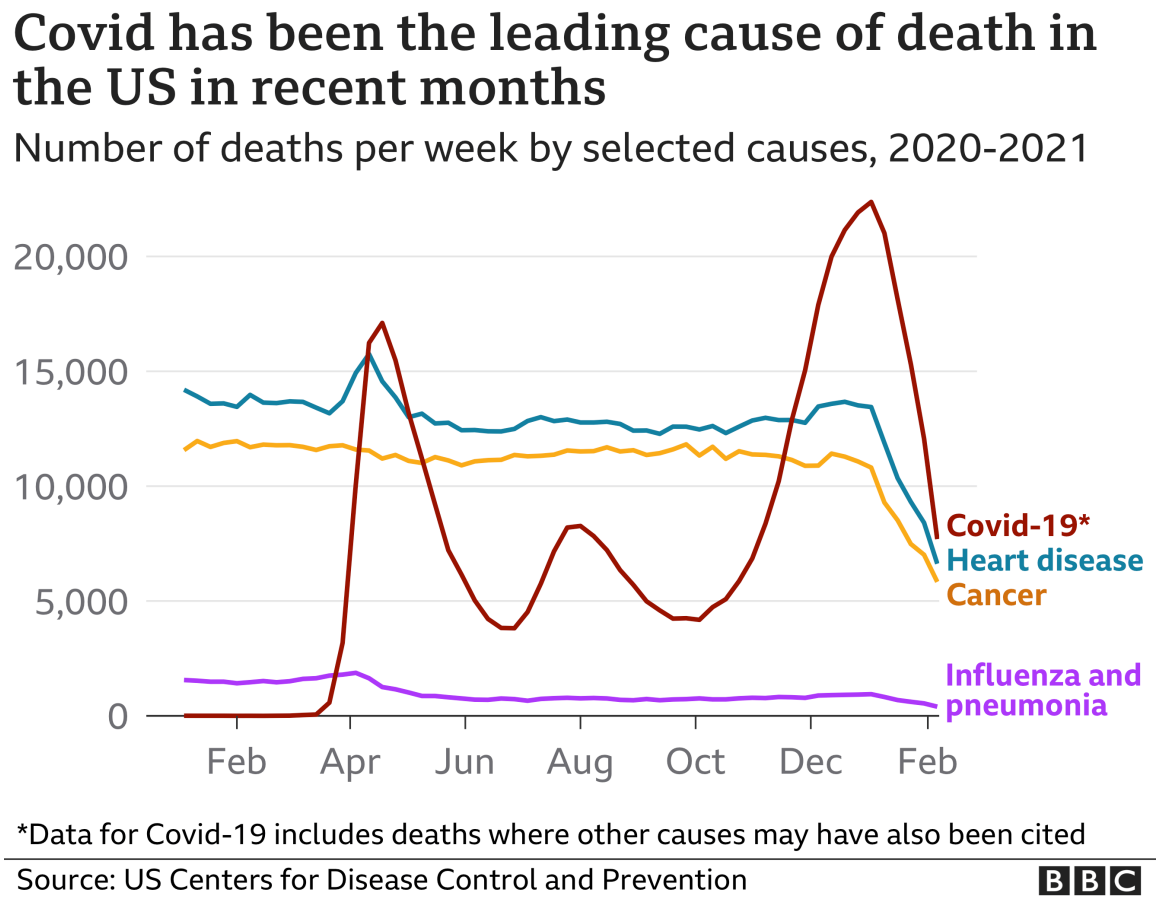
1. Second, the government negligence to resist propaganda is attributed to widespread pseudo-ephedrine psycho-stimulant intoxication of jurists and public health authorities, even more illiterate and restless than statins, specifically the US Supreme Court hasn't published since June 20, 2019, shortly before the pandemic, and the pandemic response deprivations by all levels of public health government were intellectually disabled and the remedy remains a mystery. In the United States, roughly the same number of people died from COVID-19 as 1918 Spanish flu pandemics, 600,000, using the same authoritarian quarantine tactics, now depressing the economy worldwide, to save lives and sell vaccines, while excluding curative eucalyptus treatment. The primary conspiracy is that since 2019 the global and public health interests of the Centers for Disease Control and Prevention (CDC) Injury Prevention and Control have joined the Attorney General in giving asylum to Office of National Drug Control Policy (ONDCP) grants to steal marijuana and push methamphetamine, after being expelled from the White House, except for a small office to intoxicate the President. The health sector developed two bag meth, consisting of pseudo-ephedrine and novel TMJ causing psychiatric drug. Pseudo-ephedrine has a long history of abuse by corrupt cops and malicious prosecutors, to make

it impossible for the defendant and judge to overturn their false charges or write a brief, for that matter. The hypocrisy is that, aside from speeding truck drivers, pseudo-ephedrine is prescribed for clearing the sinuses of bacterial and viral infections, meningitis is not a concern, and it is one of the most effective oral remedies for treating coronavirus. However, in healthy, young people, the brain damage takes a week to heal from one exposure and is too severe for the mentally dissatisfied insomniac consumer to warrant its use, due to the bounty of safe and effective over-the-counter remedies. Germaphobia aside, most COVID-19 related mental illness in patients treated in the health system and judiciary can be attributed to uninformed fumigation with pseudo-ephedrine and statin drug meningitis, due Pneumovax. Germaphobia is defined as the irrational fear of germs or their treatment.

2. Third, there is serious breakdown in the <$10 billion online pharmaceutical trade between India, who produces high quality generic antibiotics in English, and the United States, whose greedy health services resist curative drugs to sell placebos and surgery and whose legislature has feloniously monopolized pharmacy by authorizing international mail facility (IMF) theft and counterfeiting. When UN News was appraised of the delay in online pharmaceutical delivery, in response to their hypocritical solicitation to develop new drugs to treat resistance to the many drugs cluttering pharmacy shelves since the 1980s, although the effective ones were all developed decades earlier, they launched a deadly vaccine drive, with leaking test center, that has taken the lives of a million of Indians in a few short months. The US Food and Drug Administration (FDA) Office of Regulatory Affairs (ORA) needs to be implicated for training customs law enforcement in the United States of bad new laws authorizing the theft of 50,000 parcels to find 250 opiate shipments FY 20, steal and/or destroy all parcels and send the consumers clever, but placebo and poisonous counterfeits, after 10 weeks delay, and abroad in partner states, specifically India where this corruption of customs is moderately suspicious in the COVID-19 leak, never having bought any unadulterated drugs from Europe. Ampicillin treats Azithromycin resistant pneumonia, sinusitis and meningitis. Most of the demand for antibiotics to treat pneumonia can be eliminated with Pneumovax. Metronidazole treats antibiotic resistant *Clostridium difficile* and *Helicobacter pylori*. Doxycycline treats methicillin resistant *Staphylococcus aureus* (MRSA), bubonic plague and Lyme disease. Clindamycin treats MRSA in pregnant women and children under 8. Epsom salt bath or saline or chlorine swim is the frontline treatment for MRSA. Now that it is known that mentholyptus cough drops cure the wet cough of influenza, there is little demand for Amantadine to cure either flu or autistic, extra-pyramidal jaw twitching side effect of antipsychotic drugs, Cogentin appears to be back on the domestic market to treat. There are other necessary generic medicines to treat high blood pressure, Parkinson's and epilepsy that are not so hard to get a prescription for in the United States where no one in their right mind would want to get identity thefted by a DEA registered doctor. It is almost as easy to get subsidized Pneumovax from the public health vaccine clinic, as it is to get into the wrong line to get a two shot COVID-19 cure.

D. Between 31 December 2020 and 22 March 2021 there were an estimated 123 million confirmed cases, 69.9 million recoveries and 2.72 million deaths from COVID-19 (SARS-CoV-2) worldwide. Since the Convention on Pandemic Treatment (CPT),

prescribing hydrocortisone, eucalyptus, lavender or peppermint to cure coronavirus, was first officially ignored on 27 July 2020 when there had been 13.9 million confirmed cases, 7.8 million recoveries and 0.6 million deaths, when the initial exposure caught everyone by surprise, there have been an estimated 110 million confirmed cases, 62.1 million recoveries and 2.1 million deaths from COVID-19. An estimated 147 millions confirmed cases, 84.5 million recoveries and 3.1 million death from COVID-19 occurred between 31 December 2019 and 25 April 2021. The dramatic increase in death between 22 March and 25 April is mostly attributed to the pandemic in India, but people continue die untreated worldwide. All of these people died because they were denied necessary public information as the result of anti-competitive vaccine propaganda concealing the fact: Hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus allergic rhinitis. Eucalyptus or lavender cure the wet cough of influenza.



1. From 2019 to 2020, the estimated age-adjusted death rate increased by 15.9%, from 715.2 to 828.7 deaths per 100,000 population. COVID-19 was reported as the underlying cause of death or a contributing cause of death for an estimated 377,883 (11.3%) of those deaths (91.5 deaths per 100,000). The United States is reported to have the highest COVID-19 death rate in the world. 600,000 US fatalities out of 328 million, nearly 16% of the 3.85 million global deaths, with only 4.25% of the global population. Contrary to news reports, in India there have been only 345,000 deaths and in China only 4,636 died. Life expectancy in the US fell by a full year in the first half of 2020, to 77.8 years,

according to a report by the Centers for Disease Control. The European Union reports 736,000 deaths out of 448 million, 19% of global COVID-19 deaths. Brazil counts 498,000 COVID-19 deaths. In 2020 coronavirus was the third leading cause of death overall, with only heart disease and cancer claiming more US lives. At times, most notably during the third wave of cases, it spiked higher than both heart disease and cancer. The death toll in the US is more than 10 times higher than the number of Americans who died from influenza and pneumonia the year before the pandemic. The first wave in the spring began as most of the country went into lockdown and was followed by a second albeit less severe wave in the period from late summer to early autumn, before peaking in December and January 2020-2021. Vaccines have helped to cure many people with chronic coronavirus in two doses, restrictions have been eased, germy masks are now optional, swimming pools are open and curing people. However, the vaccine does not truly make people immune from the contagious disease, and the pandemic rages on officially untreated, with fewer malicious vaccine sales and more incentives to agree with the killer's objective, and there is no reason that pandemic deaths won't spike when the children go back to school, it becomes to cold to go swimming and the American medical memory is again wiped clean to abet a new ordeal by the same poison. Uncounted snot nosed children are all slated to return to school in the fall, to be taught by vaccinated teachers. The vaccine has caused pericarditis in teenagers and young adults and is certain to cause development defects in small children. Children are susceptible to coronavirus, but are less prone to severe illness and only 654 are reported to have died from COVID-19 as of January 2021. To end the pandemic, for all ages, it is medically necessary that schools be instructed in the use of eucalyptus, lavender and peppermint soaps for children to wash their face and nose n the restroom and eucalyptus humidifiers (diffusers) in classrooms.

2. The Food and Drug Administration (FDA) not only neglected to advertise that hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus, the usually competent Center for Drug Evaluation and Research (CDER) threatened herbal remedy companies with injunctions if they did not remove their claims that their remedies were effective at curing coronavirus, instead of encouraging them to conduct human trials pursuant to the procedures for classifying over-the-counter (OTC) drugs as generally recognized as safe and effective and not misbranded, and for establishing monographs under 21CFR§330.10 to secure the general authority of the Secretary to inform the public under 42USC§300u. The most effective method to get through the international conspiracy seems to be to fine the usually competent CDER up to $5,000 for the anti-competitive vaccine advertisement related Clayton Act anti-trust violation under 15USC§13a. Combination flu and coronavirus testing fail to distinguish the two distinct diseases. The treatment of both of which are clinically different although in reality they both treat up quite nicely with eucalyptus or lavender soap for coronavirus or mentholyptus cough drops for flu seem most convenient. Biological experimentation is a war crime and many people have died and been injured directly as the result of exposure to experimental COVID-19 vaccines and are entitled to compensation for their personal suits for injury under 15USC§15 despite widespread boycotting of the Vaccine Injury Compensation Trust Fund by physicians.

§322b Unfair Competition

A. To end the COVID-19 pandemic and prevent future public health corruption from taking more lives and liberty, it is medically necessary to advertise 'Hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus allergic rhinitis; and eucalyptus or lavender also cure the wet cough of influenza'. Recent UN News vaccine propaganda agreed to a pragmatic World Trade Organization (WTO) settlement regarding undisclosed information under Sec. 7 of the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement. After altering the shelter against genocidal- development of the International Court of Justice and Universal Declaration of Human Rights the ignorant Secretary-General of the United Nations (UN) and Director-General of the World Health Organization (WHO) admit they are war criminals with 3.8 million counts of COVID-19 related home-side, yesterday. To redress the chronic global health corruption it is necessary to detoxify the UN Office of Crime (strike Drugs and), transfer responsibility for the International Narcotics Control Board (INCB) to the WHO and delete marijuana from the Single Convention on Narcotic Drugs (1961) and Convention on Psychotropic Substances (1971). In the United States the Office of National Drug Control Policy (ONDCP), Drug Enforcement Administration (DEA) and Federal Bureau of Investigation (FBI) must be totally abolished. Congress shall repeal the Attorney General and marijuana from Schedule I(c)(17) of the Controlled Substances Act under 21USC§812(c) and change the name of the Alcohol and Tobacco, Tax and Trade Bureau (TTB) to Alcohol, Tobacco and Marijuana (ATM) Bureau, to remind the vulnerable addicts to pay in cash. To acutely detoxify the judiciary, global and public health sector so they might solve COVID-19 it is necessary to prohibit the ONDCP financing intoxicating the White House, Department of Justice and Centers for Disease Control and Prevention (CDC) and repeal 21USC§1701 *et seq*.

1. In the course of preventing “secret” information lawfully within the control of governments and governmental agencies from being disclosed pursuant to the protection of undisclosed information under Sec. 7, Art. 39 of the TRIPS agreement and Arts. 2(1), 12, 58, 93(1) and 100(1) of the UN Charter the malicious censure of the mass media is certain to be sued for effective protection against unfair competition and control of anti-competitive practices in contractual licenses as provided in Art. 10bis of the Paris Convention for the Protection of Industrial Property (1967), Art. 40 of the TRIPS Agreement, Sherman Anti-Trust Act 15USC§1 and §2, and Clayton Ant-Trust Act under 15USC§13 and §13a especially in regards to “precision medicine” uncodified by the identity robbing biological experimentation and information blocking of the 21st Century Cures Act. Whereas WTO cases languish for years, the World Intellectual Property Organization (WIPO) is sought to take appropriate measures to prevent the abuse of intellectual property rights, resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology necessary to protect the public health and nutrition under Art. 8 of the TRIPS agreement.

2. The United Nations shall promote solutions of international economic, social, health, and related problems; and international cultural and educational co-operation under Art. 55(b) of the UN Charter. To end the COVID-19 pandemic the countries of the Union are

bound to assure effective protection against unfair competition by COVID-19 vaccines and other even more elusive newly developed prescription drugs under Art. 10bis of the Paris Convention for the Protection of Industrial Property (1967). Any act of competition contrary to honest practices in industrial or commercial matters constitutes an act of unfair competition. The following acts of scientific misinformation in particular shall be prohibited. (1) Acts of such a nature as to create confusion regarding the immediate, rather than asymptomatic, onset of highly contagious allergic rhinitis symptoms from COVID-19 in both staff and patients, before it causes flu-like symptoms in three days or so, and possible death from fluid filled lungs. Informing the public that there is "no treatment" for coronavirus, although corticosteroids had been proven to be effective in severely ill hospitalized patients, and library and market research with human test subjects has swiftly proven that nearly all treatments for allergic rhinitis cure coronavirus, in particular "Hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus allergic rhinitis. Eucalyptus or lavender also cure the wet cough of influenza." (2) False allegations by the US Food and Drug Administration (FDA) in the course of trade of such a nature as to discredit the establishment, the goods, or the industrial or commercial activities, resulted in the withdrawal of several online herbal remedy competitors with vaccines, regarding the advertisement that they cure coronavirus, without giving them fair human trials, for which the FDA is fined up to $5,000 to pay the human trials of each of these drugs by the demoralized victim under 21CFR§330.10 and 15USC§13a. The racially charged proposal by the Secretary of Health and Human Services (HHS) to ban menthol flavored tobacco, and omit the fact that hydrocortisone crème cures carcinogenic *Aspergillus niger*, in one metaphorical blow of his Pinocchio nose, to retaliate against the discovery that chain smoking menthol cigarettes is a particularly effective cure for coronavirus, may be entitled to equal treatment, or in light of the subsequent doubling of African-American COVID-19 infection rates in Washington DC an up to $100 million fine for felony monopolization under 15USC§2. (3) Indications or allegations the use of which in the course of trade is liable to mislead the public as to the nature, the manufacturing process, the characteristics, the suitability for their purpose, or the quantity, of the COVID-19 vaccines as public goods that confer a lasting immunity upon the chronic coronavirus patient, who is cured with two shots, greatly improving their ability to heal, but not being capable of ending the pandemic because it does not truly prevent the contagious allergic rhinitis, severe illness and death, everyone must know how to treat with the readily available, cheap, safe, and effective over-the-counter remedies, soaps, cleansers and eucalyptus scented humidifiers to sterilize public indoor airspaces, such as classrooms to ensure the return to school is coronavirus and influenza free.

3. Medical immunity is a state of having sufficient biological defenses to avoid infection, disease, or other unwanted biological invasion, and is related to the functions of the immune system. Article 105 of the Charter of the United Nations provides that the Organization shall enjoy in the territory of each of its Member such privileges and immunities as are necessary for the fulfillment of its purposes under 22USC§254b. Immunity is described as freedom from personal arrest or detention and from seizure of personal baggage, and, in respect of words spoken or written and all acts done by them in their capacity as representatives, immunity from legal process of every kind under

Section 11(a) of Convention on Privileges and Immunities of the United Nations of February 13, 1946. CDC was created in 1946. Today, they receive health insurance funds to procure childhood vaccines at a discount and are the national public health authority. Like the Generals of the UN, CDC must be reminded to desist in the use of fighting words pursuant to *New York Times v. Sullivan* (1964) and Art. 20 of the International Covenant on Civil and Political Rights (1978). Since FY19 the global and public health interests of the Centers for Disease Control and Prevention (CDC) Injury Prevention and Control have joined the Attorney General in giving asylum to Office of National Drug Control Policy (ONDCP) grants to steal marijuana and push methamphetamine, after being expelled from the White House, except for a small office to intoxicate the President. The health sector developed two bag meth, consisting of pseudo-ephedrine and novel TMJ causing psychiatric drug. Pseudo-ephedrine has a long undocumented history of abuse by corrupt cops and malicious prosecutors, to make it impossible for the defendant and judge to overturn the false charges or write a brief, for that matter, which seems to impede the ability of global and public health judges to smoke a joint and be happy, without any violent abuse, hangovers, much addiction or vaccine reluctance and prescribe hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus allergic rhinitis. States must remove any impediments arising to the free exportation of goods required for humanitarian needs, such as (i) medicines and medical devices pursuant to paragraph 98 of Alleged violations of the 1955 Treaty of Amity, Economic Relations, and Consular Rights (*Islamic Republic of Iran v. United States of America*) No. 175 3 October 2018. The Court held that import controls were discriminatory. The guiding principles were economic liberty without any inequality and equality of treatment in commercial matters in the Case concerning rights of nationals of the United States of America in Morocco, Judgment of August 27th, 1952 : I.C.J. Reports 1952, p. 176.

B. Drug control is basically the only flaw in the United Nations treaty system. It was established in 1968 in accordance with the Single Convention on Narcotic Drugs, 1961. It had predecessors under the former drug control treaties as far back as the time of the League of Nations. The functions of INCB are laid down in the following treaties: the Single Convention on Narcotic Drugs, 1961 associated “Yellow List” and forms; the Convention on Psychotropic Substances of 1971 associated “Green List” and forms; and the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 associated “Red List” and forms. These international drug control treaties are all believed to be fatally flawed because marijuana has consistently been Scheduled as a most dangerous drug, although everyone knows this is not true. There have not been any reported fatalities from marijuana. Nor has marijuana been found to be harmful, except maybe in regards to temporary impairment while operating a motor vehicle, heavy equipment or weapons system. Research has proven that marijuana possesses many medicinal qualities that are curative, life-saving, symptom and pain relieving. The analgesic qualities of CBD hemp oil are second to opium. CBD oil claims many miraculous cures in neurology and oncology. The international drug control regime is scientifically discredited by the prohibition of marijuana. Law enforcement of listed addictive recreational drugs is discredited by the principle of non-use of force in regards commercial and medical matters, including addiction, not impairing judgment

with psychotropic substance abuse to create a slave trade in mostly unarmed, nonviolent people, whose addiction makes them particularly soft targets and for triggering the right to individual and collective self-defense against a declared armed war crime – pseudo-ephedrine impaired judgment.

1. To immediately reduce prescriptions for opiates and other addictive UN controlled substances and eliminate the majority of opportunities to torture patients, health professionals, and their intimate partners, due to third party infringement of the FBI/DEA, it is necessary to promote a boycott against DEA registration by health care practitioners who have not legitimate use to prescribe such drugs to their patients other than "pain management specialists and their pharmacists" under 21CFR§1300.11. Furthermore, to prevent home invasion and painful tortures, it is extremely important the address requirement be overruled for all prescription label data entry, especially involving controlled substances reported to the DEA under 21CFR§1306.05 whereas a person cannot be used to render a territory immune from military intervention under Art. 28 and torture is a grave breech under Art. 127 of the Fourth Geneva Convention Relative to the Protection of Civilians in Times of War (1949).

2. The DEA, Office of Diversion Control, that licenses physicians and pharmacists, can be transferred from the Department of Justice to serve as a consumer protection arm of the Food and Drug Administration (FDA). To better uphold the informed consent requirement fundamental to the Nuremberg Code, and bio-medical practice, the name of the agency must be changed to Drug Evaluation Agency (DEA). This can be accomplished legislatively while changing the name of references from Attorney General to Secretary of Health in Title 21 CFR§1300-1316 and the Controlled Substances Act (CSA), Title 21 US Code Chapter 13 that can repealed in its entirety. The only quasi-legitimate and possibly salvageable program that exists in the DEA is the Office of Diversion Control that registered 1,195,309 medical and pharmaceutical practitioners and corporations in 2004 for the; a. Import and Export of Controlled Substances, b. Registration of Pharmaceutical Drug Retailers. However, these commercial enterprises are all already licensed by the FDA and state medical, nursing, veterinary and pharmaceutical licensing boards who considerably more competent at limiting opiates for severe pain and barbiturates for veterinary euthanasia, than the undereducated battlefield veterans employed as law enforcement officers.

3. The Diversion Control Program is funded through registration fees that manufacturers, distributors, dispensers (such as physicians), importers, and exporters of controlled substances and certain regulated chemicals pay into an account called the Diversion Control Fee Account (Fee Account). Federal law under 21USC§886a(1)(C) directs the DEA to set the fees "at a level that ensures the recovery of the full costs of operating the various aspects of the Diversion Control Program." In 1971, DEA's predecessor, the Bureau of Narcotics and Dangerous Drugs, instituted a fee on registrants of controlled substances to cover the administrative costs of processing their registrations. The annual fees collected from registrants totaled about $15 million and were not intended to cover the costs to the agency of performing its diversion control activities. In October 1992, Section § 886a of the *Departments of Commerce, Justice, and State, the Judiciary, and*

Related Agencies Appropriations Act of 1993 (Appropriations Act of 1993) established the Fee Account. This Act changed the funding of the Diversion Control Program beginning in FY 1993 from the DEA's congressionally appropriated funds to fees paid by registrants, including doctors, pharmacies, hospitals, manufacturers, distributors, importers, and exporters of controlled substances. In 2012 the three year resident fee was $731. The annual fee was $244. The distributor, exporter and importer annual fee was $1,523 and for manufacturers was $3,047. The Act stated that the DEA must set its registration fees "at a level that ensures the recovery of the full cost of operating various aspects of" the Diversion Control Program estimated to cost about $322 million with fees revenues of only $320 million in 2012, going up to $354 million in 2013 and $366 million in 2014, $1 billion over three years. The entire operations of the DEA cost a little more than $2 billion annually. DEA Diversion Control is probably making about $375 million in fees in 2015 and needs to reduce program costs by abolishing the Drug Enforcement Administration and transferring functions to a safer and more effective FDA Drug Evaluation Agency.

DEA Registrant Population by State, 2009

STATE	**RETAIL LEVEL**	**WHOLESALE LEVEL**
ALABAMA	15,214	120
ALASKA	3,654	28
AMERICA SAMOA	12	0
ARIZONA	26,275	192
ARKANSAS	9,631	88
CALIFORNIA	156,551	1,010
COLORADO	23,030	187
CONNECTICUT	19,999	333
DELAWARE	4,142	54
DISTRICT OF COLUMBIA	6,692	58
FLORIDA	66,748	673
GEORGIA	32,637	379
GUAM	289	7
HAWAII	5,942	50
IDAHO	6,396	71
ILLINOIS	51,544	503
INDIANA	24,205	346
IOWA	12,876	160
KANSAS	12,888	109
KENTUCKY	16,695	248
LOUISIANA	16,301	124

MAINE	7,003	44
MARYLAND	29,690	410
MASSACHUSETTS	40,034	593
MICHIGAN	41,512	269
MINNESOTA	25,265	255
MISSISSIPPI	9,331	88
MISSOURI	22,288	296
MONTANA	4,705	52
NEBRASKA	8,924	106
NEVADA	9,348	56
NEW HAMPSHIRE	7,139	45
NEW JERSEY	40,952	451
NEW MEXICO	8,552	41
NEW YORK	103,746	668
NORTH CAROLINA	38,644	489
NORTH DAKOTA	3,070	34
OHIO	45,646	329
OKLAHOMA	14,057	294
OREGON	18,025	181
PENNSYLVANIA	58,615	783
PUERTO RICO	12,354	94
RHODE ISLAND	5,367	55
SOUTH CAROLINA	17,448	227
SOUTH DAKOTA	3,798	35
TENNESSEE	27,696	267
TEXAS	80,958	952
UTAH	10,940	101
VERMONT	3,421	25
VIRGIN ISLANDS	246	1
VIRGINIA	33,861	242
WASHINGTON	33,109	280
WEST VIRGINIA	7,598	63
WISCONSIN	25,992	235
WYOMING	2,377	57

Source: Drug Enforcement Administration Office of Diversion Control. Registrant Population, 2010

4. Under the CSA, the term "practitioner" is defined as a physician, dentist, veterinarian, scientific investigator, pharmacy, hospital, or other person licensed, registered, or otherwise permitted, by the United States or the jurisdiction in which the practitioner practices or performs research, to distribute, dispense, conduct research with respect to, administer, or use in teaching or chemical analysis, a controlled substance in the course of professional practice or research. Every person or entity that handles controlled substances must be registered with the DEA or be exempt by regulation from registration. As of September 2009 the DEA registered a total of 1,326,362 entities to distribute controlled substances. At the retail level – 65,361 pharmacy, 15,593 hospital/clinic, 1,067,631 practitioner, 376 teaching institute, 164,543 mid-level practitioner. At the wholesale level – 506 manufacturer, 800 distributor, 8,379 researcher, 1,474 analytical labs, 193 importer, 231 exporter, 49 reverse distributor, 1,226 narcotic treatment program. California has the most registrants with 156,551 at the retail level and 1,010 at the wholesale level. American Samoa has the least with 12 registrants at the retail level and 0 at the wholesale level. In *Oregon v. Ashcroft* No. 02-35587 of August 11, 2004, the 9th Circuit Court of Appeals ruled that the Attorney General may not define the scope of legitimate medical practice and requires an agency represented by Secretary of Health and Human Services "to determine the appropriate methods of professional practice". In *Gonzalez v. Oregon* No. 04-623 (2006) the Supreme Court upheld the ruling in that the Attorney General did not have standing to prohibit doctors from prescribing drugs.

5. The CSA makes it unlawful for any person to manufacture, distribute, or dispense any controlled substance "except as authorized by the CSA" 21USC§841(a)(1). Physicians who prescribe controlled narcotic substances and pharmacists who fill the prescriptions are considered "practitioners" who "dispense" controlled substances 21USC§802(10) and (21). To obtain authorization to do so, practitioners must register to obtain a Drug Enforcement Agency ("DEA") certificate of registration. 21USC§822. Under the CSA as originally enacted, state-licensed practitioners were entitled to be registered with the DEA as a matter of right 21USC§823(f) (1983). "Practitioners shall be registered to dispense controlled substances in schedule II, III, IV, or V if they are authorized to dispense under the law of the State in which they practice". The practitioner's registration only if the registrant (1) materially falsified an application; (2) was convicted of a felony relating to controlled substances; or (3) had his or her state license or registration suspended or revoked 21USC§824(a) (1983).

6. Imports and exports must conform to the national laws of the countries concerned with the conduct of Customs officers, who it should be pointed out are also not the DEA in the particularly medically incompetent Department of Justice. Similar to public health authorities, Customs do actually regulate the import and export of drugs, for better or worse, mostly in regards to the slavery of UN controlled substances. Any goods determined to potentially pose a threat to life may be quarantined in the port serving as a transshipment point. Labeling and products must conform with the law of the nation where the product is to be marketed 21USC§381. 21USC§952 makes it unlawful to import controlled substances in Schedule I or II into the United States of America except that "such amounts of crude opium, poppy straw, concentrate of poppy straw and coca leaves as the US finds to be necessary to provide for medical scientific or other legitimate

purposes." United States policy prohibits the cultivation and production of narcotics in the United States in favor of imports. Opium derivative alkaloids and their semi-synthetic derivatives such as a hydromorphone, hydrocodone, and oxycodone are critical therapeutic agents today. Morphine, codeine, hydromorphone, hydrocodone and oxycodone are considered necessary to the United States medical community. The Schedule I and II narcotic market in the US this 2004 is unprofessionally regulated by the DEA's Established Initial Aggregate Production Quotas(2004).

7. Under 21USC§958a, and §823(a), the DEA, grants import registration based upon the public interest and United States obligations under international treaties, conventions, or protocols for importers and manufacturers of Schedule I and II substance". Under 21 CFR§1301.34(b)(1)-(6)(i). the Administrator will first consider United States obligations under international treaties to maintain effective controls against diversion of particular controlled substances and any controlled substance in Schedule I or II compounded there from into other than legitimate medical, scientific research, or industrial channels, by limiting the importation and bulk manufacture of such controlled substances to a number of establishments which can produce an adequate and uninterrupted supply of these substances under adequately competitive conditions for legitimate medical, scientific, research, and industrial purposes. The DEA has several forms of use to the National Opium Agency to adjust the procurement quota and formally contract with US importers under the Federal Register. Yearly quotas may be adjusted with an Application for Procurement Quota for Controlled Substances. Importers of opium in the United States should apply to the Federal Register with an Application for Permit to Import Controlled Substances for Domestic and/or Scientific Purposes. Once registered importers and exporters should use an Import/Export Declaration for Customs. Opium poppy grows quite well on the West Coast, coca based anesthetics however require importation from the Andes.

C. The DEA and FBI must be abolished to help reduce 2016 rates of 156,000 accidental deaths, 42,826 suicides, 15,872 conventional homicides. FBI informants must be held responsible for the rampage shootings and suicides caused three day panic attack and up to six months of severe mental illness caused by topical exposure to dimethoxymethyl-amphetamine (DOM), if not washed off with water. The DEA must be held responsible for an estimated 20,000 of 52,000 poisoning deaths due to opiates laced with fentanyl and co-fentanyl in 2016. The DEA drug stockpile and drugs seized by the police must be destroyed to prevent recirculation of poisoned products. Going forward, the international drug conspiracy between the FBI and DEA, since 1982, codified under 28CFR§0.85(a) and the Authority for Employment of the Federal Bureau of Investigation (FBI) and Drug Enforcement Administration (DEA) Senior Executive Service under 5USC§3151-3152 and clause, 'or to a member of the Senior Executive Service or the Federal Bureau of Investigation and Drug Enforcement Administration Senior Executive Service' at the end of 5USC§5301(b) must be repealed by Congress.

1. An estimated 46,055 of 114,408, 40.3% of the DOJ workforce must be laid-off leaving DOJ with an estimated 71,945 employees, about 50,000 of whom are authorized to make arrests and carry firearms in FY 2019. The Federal Bureau of Investigation

(FBI) employs 35,000 people, including special agents and support professionals such as intelligence analysts, language specialists, scientists, and information technology specialists. The Drug Enforcement Administration (DEA) employs 11,055 people, including special agents and support staff. The Department of Justice employs 88,496 full-time law enforcement officers, including therefore these reductions might reduce DOJ forces to as little as 5,238 US Marshall headquartered near 94 federal courthouses. The FBI has 56 field offices located in major cities throughout the U.S., more than 350 satellite offices called resident agencies in cities and towns across the nation, and more than 60 international offices called legal attachés in U.S. embassies worldwide. The DEA has 221 Domestic Offices in 21 Divisions throughout the U.S., and 90 Foreign Offices in 69 countries. Laid off officers would receive between 40% to 80% of their current wage from permanent disability under 5USC§8339(f, g). The Attorney General must agree to joint custody with the Federal Court of 5,238 US Marshall's authorized to make arrests and carry firearms with the intention to reduce 36,000 FBI agents to staff Uniform Crime Report (UCR), Quantico Police Academy and Forensic Laboratory for the Justice Department and lay-off 11,000 DEA agents, without further notice. With 2.2 million prisoners the United States has the highest rate of incarceration, and false imprisonment, in the world. Undereducated, and unwarranted police officers, who use force without probable cause, must be laid off to cease their terrorist pattern or practice of false arrest, assault and torture, obstruction of justice, often under auspice of the so called war on drugs. A Bachelor degree must be required to prevent recidivism in law enforcement officers, both mandatory and voluntary.

2. The Federal Judiciary must abolish the US Sentencing Commission pursuant to *Blakely v. Washington* (2004). The best example of unfair mandatory minimum sentencing is that although the average prison sentence imposed during 2000 was 57 months, defendants convicted of weapons felonies (92 months), violent felonies (87 months), and drug felonies (76 months) received the longest prison terms, on average. In the statistical reckoning drug offenses, other than tampering, like vagrancy and public intoxication, account towards a 50% false arrest rate. Drug seizures constitute the high crime of robbery (aka racketeering) prosecuted in *United States v. Lettiere*, 640 F.3d 1271, 1273 (9th Cir. 2011). 49% of federal prisoners are detained for drug offenses and this is thought to indicate that unlike judges in other jurisdictions with more reasonable drug sentences, federal judges suffer 50% rates of false imprisonment. Due process of drug robbery victims is that they should be awarded Supplemental Security Income (SSI) because former drug dealers are unlikely to have either paid any income taxes or be re-employed. It is held, the Court has a duty to shut down drug business because no one can guarantee that the undereducated and substance abusing police won't continue to adulterate and tamper with commercial drugs they have seized upon. Damages to trade can be minimized by legalization of marijuana and requiring law enforcement officers to obtain a Bachelor degree.

3. Congress must amend federal torture statute to comply with Arts. 2, 4 and 14 of the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment of 1984 by repealing the phrase “outside the United States” from 18USC§2340A(a) and amending Exclusive Remedies at §2340B so: (1) The legal

system shall ensure that the victim of an act of torture obtains redress and has an enforceable right to fair and adequate compensation, including the means for as full rehabilitation as possible. In the event of the death of the victim as a result of an act of torture, their dependents shall be entitled to compensation. (2) Nothing in this article shall affect any right of the victim or other persons to compensation which may exist under national law.

Art. 2 Human Services

§323 Human Services Arrears

A. Human Services (HS) is a component of the Department of Health and Human Services (HHS) comprised of the Administration for Children and Families (ACF) and Administration for Community Living (ACL). The Human Services Administration (HSA) wants to be separated from the Public Health Department (PHD). The Department of Health, Education and Welfare (HEW) was created in Reorganization Plan No. 1 of April 1, 1953 42USC§3501. Sec. 509 of the Department of Education Re-organization Act of May 4, 1980 provided that any reference to HEW would be deemed to refer to HHS 20USC§3508. Sec. 101 of the Social Security Independence and Program Improvements Act of 1994 established the Social Security Administration as an independent agency beginning March 31, 1995 in Sec. 701 of the Social Security Act 42USC§901. Most states have separate Departments of Health and Human Services. A Human Service Reauthorization Act of 2021 has been drafted and edited once.

1. To separate the two Departments the simplest thing to do would be to amend Chapter 43 of Title 42 Public Health and Welfare to Department of Health and all references in the United States Code and Code of Federal Regulations to the Secretary or Department of Health and Human Services to Secretary or Department of Health respectively, except in those rare instances, where a law specifically pertains to the Human Services Administration or its Secretary to be codified in a new Chapter 162, whereas Joint Funding Simplification in Chapter 52A was repealed, or new Title 55 of the United States Code. The exact details would need to be worked out the Human Services Secretary, Congress and President. Although Reorganization Plan No. 1 of 1953 is very simple, the Department of Education Re-organization Act of 1980 and Social Security Independence and Program Improvements Act of 1994 are quite elaborate. The minimum effort needed to effectively liberate Human Services from the Public Health Department would be:

2. To transfer functions regarding independent living from 42USC§3515e to Human Services codified in either Chapter 162 of Title 42 or Title 55 of the United States Code, if Title 53 is not reserved for this purpose. Grant organizational power to the Secretary, two Administrators, and consolidate Human Services authorizing statute. The smoking gun left from repealing the Organic Act to beef up the National Park Service and Related Organizations Act of 2014 is neither pleasing nor redressed. Although consolidating Human Services statutes might help to reduce clutter in Title 42, this would require extensive updating of the codification in authorizing statutes, and it would be best to write a simple, new, short and sweet, organizational, reference guide to Human Services

statutes as codified in Title 29, 42 and 52 of the United States Code. The Secretary and Department of Health would have to be renamed in Sec. 102 of the Public Health Service Act 42USC§201, Chapter 43 and any other statutory references to Health and Human Services.

3. Because the Human Services Administration has not yet been created by an Act of Congress, the President and Senate may not appoint a Secretary to sue HHS for custody. This is a case whereby either Congress, President and/or the Secretary of Health and Human Services must proclaim to emancipate the Human Services Administration and Public Health Department from what are best described as slave-like conditions. Repeated references to the Departments of Labor, Health and Human Services, and Education, and Related Agencies Appropriations Acts in Chapter 43 make it clear that it is not the intention of Congress that the Department of Health be construed as a Service, although the no-good drug, lay-Congress may overvalue their services under 42USC§3515c. Human Services, on the other hand, might do human rights the poetic justice that is wanted, if they were not infringed upon by the relatively militant Public Health Service, and vice-versa pursuant to the prohibition of funding for certain experiments involving human test subjects under 42USC§3515b. A decision resting upon "non-infringement" is generally much more secure than one on invalidity *Harries v. Air King Products Co.* No. 210, Docket 21600 (1950) L. Hand, Chief. A patent is valid if it is not infringed *Altvater v. Freeman* 319 U.S. 359, 363, 63 S.Ct. 1115, 1117, 87 L.Ed. 1450 Friendly J.

B. The total Human Services administration budget request for FY 22 is $86.4 billion, a 34% increase from $64.5 billion FY 21. The primary reason for this dramatic increase is the $15.2 billion price tag on the Biden-Harris American Families Plan, secondarily, there is a 10.2% across the board increase in discretionary spending, mostly for refugee programs, especially unaccompanied minors, and Head Start child care. The budget requests $83.2 billion for ACF a 35% increase from $61.7 billion FY 21 and $3 billion FY 22 for ACL a 7% increase from $2.8 billion FY 21. Having already paid the nice people at Head Start and refugee assistance a 10% discretionary spending increase the mandatory portion of the Biden-Harris American Family Plan to provide child care, that is already 88% subsidized, is sued with a support order requiring that any money be 100% used to pay for the reinstatement of AFDC benefits pursuant to 18USC§228 and Arts. 18 and 26 of the Convention on the Rights of the Child (1990).

Human Services Administration FY 19 – FY 24
(millions)

Budget Authority	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Administration for Children and Families						

(ACF)						
Total Discretionary Budget Authority	26,530	24,586	24,837	30,778	31,695	32,757
Total, Mandatory Budget Authority	35,347	36,191	36,867	37,168	38,536	39,534
Total, Federal Outlays	61,877	60,777	61,704	67,947	70,231	72,291
Total, Proposed Mandatory Authority	0	0	0	15,237	15,694	16,165
Total ACF Budget Request	61,877	60,777	61,704	83,184	85,925	88,456
Administration for Community Living (ACL)						
Total ACL Budget Request	2,130	2,687	2,834	2,987	3,160	3,324
HSA Program Management and Inspector General of Civil Rights				250	258	265
Human Services Administration (HSA)						
Total HSA Budget Request	64,007	63,464	64,538	86,431	86,183	88,721

Source: HHS Budget-in-brief FY 22

1. In FY 21 ACF spending was 96% of total human services spending, FY 22 the ACF share increases to 97%. This is fair. The elderly and disabled already receive disability and retirement benefits. ACL programs range in quality from state programs of nutritional support for the elderly and technical assistance for the developmentally disabled, to negligent family caregiver subsidies and "unseen (Nazi) research" partially diverted to finance non-consensual experimentation in substance abuse causing Alzheimers, paralysis and traumatic brain injury and other. These NIH and CDC programs are not truly authorized to ACL whose budget must delete reference to this shrunken brain funding of "phantom pain", to explain why they falsely claim to limb loss experts, and prohibit experimentation in human test subjects under 42USC§3515b. To make a clean break from the Public Health Service Act, the expired Lifespan Respite Care Program of relief for stressed out caregivers needs to be transferred to the Older Americans Act to play a supporting, rather than supplanting, role for a National Family Caregiver Support Center. The shrunken brains at ACL have a lot to gain from accounting for the Independent Living for Older Americans who are blind program. It is not the responsibility of ACL to provide equal nutritional services for the under age 60 population, except for the Meals on Wheels program for people so severely physically disabled they are confined their homes, but to sue the USDA for full funding, and access for the disabled, to the Food Bank and affiliated community meals programs. Congress may fund programs for the disabled to cook the community meal for everyone.

2. ACF is tasked with caring for the majority of the population, gainfully engaged in the child rearing, population growing process, without a metaphorical paddle, having cut AFDC benefits into oblivion since 1996, for which arrears are due to eliminate child poverty in the United States by 2030. The worker propaganda sabotaging AFDC has severely degraded confidence that ACF will able to pay benefits. ACF needs a fair shake at refunding AFDC basic assistance, at the levels proposed by the President. However, it is necessary that Human Services be separated from the Health Department to prevent infringement of their experiment in human rights "services" on the practice of medicine from being infringed by unethical biomedical experimentation. The poster-child for this infringement is the unforgivable felonious for-profit "psychiatric drug abuse" rampant in greedy slave-like ACF "foster care" programs, that totally ignore the competent orphanage institution, who require a final felony conviction in cases of "child abandonment" other than death of parents, that is free and not un-amenable to reunification pursuant Sec. 472 of Title IV-E of the Social Security Act under 42USC§672. On this topic, of escalating judicial misconduct in the state courts, not least civil divorce courts, that has rendered the US Supreme Court illiterate since June 20, 2019, it is necessary to defend a stable $4.5 billion level of Child Support Enforcement and Family Support administration funding, despite declining use, by paying social security benefits to needy children with the surplus, and calling upon U.S. District Attorneys and Judges to officially debar State terrorist family offenders of child non-support, home and computer invasion, and poisoning, eg. Pseudo-ephedrine brain shrink.

3. Independence will require Human Services to employ an Office of Civil Rights to ensure non-discrimination in benefits administration and equal opportunity employment and an Inspector General to investigate fraud, waste and abuse and to protect the Secretary. Because of the peculiar nature of beneficiary persecuting welfare fraud investigation in coercive retaliation against fraud, waste and abuse convictions against the Department of Health and Human Services, in particular worker propaganda justifying AFDC cuts of benefits for poor people, psychiatric drug abuse in foster care, unethical research and acutely judicial misconduct related to child support enforcement, it seems necessary that the responsibilities of the Inspector General be combined with those of an Office of Civil Rights. The hybrid office should look something like Inspector General of the Office of Civil Rights. This should help the agency to both secure the accountable, professional, literate, non-violent conditions of non-discrimination and equitable representation and free the agency from unethical reporting, psychiatric drug abuse and other tortures, that have sabotaged so many grudging integration efforts.

§324 Administration for Children and Families

A. The Administration for Children and Families (ACF), within the Department of Health and Human Services (HHS) is responsible for federal programs that promote the economic and social well-being of families, children, individuals, and communities. ACF is the United States' largest human services administration. The Administration for Children and Families (ACF) was created on April 15, 1991, under the authority of section 6 of the Reorganization Plan No. 1 of 1953. The plan allowed the U.S. Department of Health and Human Services to merge the Office of Human Development Services with the Family Support Administration, along with the Maternal and Child Health Block Grant Program. The newly-formed organization was called the Administration for Children and Families.

1. Subsequently, the Clinton Administration cut 10 million Aid for Families with Dependent Children (AFDC) benefits FY 96 – FY 00 with the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. Cutting spending for children and families constitutes failure to pay legal support obligation under 18USC§228. Child poverty in the United States has risen from the normal poverty rate of the time of 15.8% in 1996 to 22%-33% of children growing poor, 45% below 150% of the poverty line, while 10% of adults and 9% of elders are poor, today. After 2000 child welfare grew only a little slower than normal. Worker propaganda regarding welfare dependency causing chronic joblessness needs to be mitigated with support for child care and totally eliminated by a plan to compensate all families with children growing up in poverty for their loss of Aid for Families with Dependent Children (AFDC) / Temporary Assistance for Needy Families (TANF) benefits. Due to degradation by and subsequent to the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 it is necessary for Congress to revert to the 1995 version of the law by amending Title IV Grants to States for Aid and Services to Needy Families with Children and for Child-Welfare Services Part. A Aid to Families with Dependent Children Sec. 401 – 417 of the Social Security Act under 42USC§601-§617 (1995).

B. The President's Fiscal Year (FY) 2022 Budget requests $83.1 billion for ACF.
The FY 2021 President's Budget request for ACF, including both mandatory and discretionary appropriations, was $55 billion in budget authority, a decrease of $5.4 billion from the FY 2020 enacted level. Current FY 21 spending is estimated to be $61.6 billion by the FY 22 Budget-in-brief. The reason for the 35% increase in ACF FY 22 spending is that, on top of some significantly large increases in discretionary spending, the President has proposed a total of $15.2 billion for new programs - $11.7 billion Child Care for American Families and $3.5 billion for Universal Preschool – to avoid the poisonous and economically depressing persecution that would be incurred by total ACF outlays between $60 and $70 billion for more than 42 months (Revelation 13:10). The President's proposal has however failed to pay legal child support obligations to compensate to Clinton Administration cuts to Aid to Families with Dependent Children (AFDC) by the creation of Temporary Assistance for Needy Families (TANF) in violation of 18USC§228. The President's unsatisfactory proposal has not instantly passed due to criminal "non-support" propaganda. The fake TANF spending total, only about 25% are still spent on actual benefits to needy families, remains the same and funding for Child Support Enforcement and Family Support declines 5.5% FY 22. To add insult to injury the President falsely claims that child care is "support". Instead of avoiding the most poisonous and economically depressing persecution of the number of the beast, the President's proposal should be perceived as widening the exact same persecution from countless $608 million TANF contingency fund years and threatens to worsen 42 months after the dramatic increase in Transitional Medical Services for Refugees from $354 million to $605 million FY 22. In sum the President's mandatory proposal has failed and failed to pay legal child support obligations again and after some discretionary increases of irregular quality, the FY 22 budget is only $68.8 billion and by March 2022 threatens Armageddon, that might manifest as the passage of the President's non-supportive and decadent ACA style hyper-inflationary Biden-Harris Families Plan.

Administration for Children and Families FY 19 – FY 24
(millions)

Budget Authority	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Total Discretionary Budget Authority	26,530	24,586	24,837	30,778	31,695	32,757
Total, Mandatory Budget Authority	35,347	36,191	36,867	37,168	38,536	39,534
Total, Federal Outlays	61,877	60,777	61,704	67,947	70,231	72,291
Total, Proposed Mandatory Authority	0	0	0	15,237	15,694	16,165
Total Budget Request	61,877	60,777	61,704	83,184	85,925	88,456
Early Childhood Programs						
Head Start Section (discretionary) 639 of the Head Start Act	10,083	10,613	10,748	11,932	12,290	12,659
Child Care Block Grant (discretionary) Sec. 658B of the Child Care and Development Block Grant Act of	5,288	5,826	5,911	7,377	7,598	7,826

2014; Sec. 418 Social Security Act						
Preschool Development Grants Sec. 9212(k) Every Student Succeeds Act	248	275	275	450	464	477
Subtotal, Early Childhood Programs	15,619	16,714	16,934	19,759	20,352	20,962
Programs for Vulnerable Populations						
Runaway and Homeless Youth (discretionary) Sec. 388 (a)(1)&(4) of the Act	127	132	137	145	149	154
Child Abuse Programs (discretionary) Sec. 209 Child Abuse Prevention and Treatment Act, Sec. 388(a)(4) Runaway and Homeless Youth Act	158	181	186	235	242	249
Child Welfare Programs (discretionary) Sec. 425 Social Security Act	330	329	332	442	455	469
Adoption Incentives (discretionary) Sec. 473A(h) Social Security Act	75	75	75	75	75	75
Chafee Education and Training Vouchers (discretionary) Sec. 477(h)(2) Social Security Act	43	43	43	43	43	43
Chafee Transition to Adulthood (discretionary) Sec. 477(h)(1)	140	143	143	143	143	143
Native Americans Sec. 816 of the Native Americans Act	54	56	57	60	62	64
Family Violence Prevention and Services Programs (discretionary) Sec. 303(a) Family Violence Prevention and Services	174	187	196	489	504	519
Promoting Safe and Stable Families (discretionary) 42USC§629(f)	100	93	83	106	109	113
Subtotal, Programs for Vulnerable Populations	1,200	1,239	1,251	1,739	1,782	1,829
Refugee Programs						
Unaccompanied Children Sec. 462(a) Homeland Security Act of 2002 and Sec. 235 Trafficking Victims Protection Reauthorization Act 2008	4,466	1,303	1,303	3,283 / 3,183	3,382	3,484
Transitional Medical Services Sec. 414(a) Immigration and Nationality Act	354	354	354	605 / 705	623	642

Refugee Support Services Sec. 501 Refugee Education Assistance Act 1980	207	207	207	450	464	477
Survivors of Torture Sec. 5(b) (1) of the Torture Victims Relief Act 1998.	14	16	17	27	28	29
Victims of Trafficking (Foreign and Domestic) Sec. 107(b) & 113(b) Trafficking Victims Protection Act 2000	27	28	29	39	40	41
Subtotal, Refugee Programs	5,068	1,908	1,910	4,404	4,537	4,673
Community Service Programs						
Low Income Home Energy Assistance Programs Sec. 2602 of LIHEA Act	3,653	3,740	3,750	3,850	3,966	4,203
Community Services Block Grant Sec. 674(a) of the Act	743	740	745	754	777	800
Other Community Services Programs	29	30	30	32	33	34
Subtotal, Community Service Programs	4,425	4,510	4,525	4,636	4,776	5,037
Other ACF Programs						
Disaster Human Services Case Management	2	2	2	4	4	4
Federal Administration	209	206	208	227	234	241
Social Services Research and Demonstration	6	7	8	9	10	11
Subtotal, Research and Evaluation	218	215	217	240	248	256
Total Discretionary Budget Authority	26,530	24,586	24,837	30,778	31,695	32,757
Mandatory Budget Authority						
Child Care Entitlement to States	2,917	2,917	3,550	3,550	3,657	3,766
Foster Care and Permanency	8,559	8,667	9,415	9,965	10,264	10,572
Promoting Safe and Stable Families	489	975	475	475	489	504
Child Support Enforcement and Family Support	4,322	4,566	4,439	4,194	4,500	4,500
Children's Research and Technical Assistance	35	35	35	35	35	35
Temporary Assistance for Needy Families	16,737	16,738	16,738	16,738	17,240	17,757
Temporary Assistance for Needy	608	608	608	608	700	700

Families Contingency Fund						
Social Services Block Grant	1,680	1,685	1,607	1,603	1,651	1,700
Total, Mandatory Budget Authority	35,347	36,191	36,867	37,168	38,536	39,534
Proposed Mandatory Authority						
Child Care for American Families				11,720		
Universal Preschool				3,517		
Total, Proposed Mandatory Authority				15,237		
Counter-proposed Support Order						
Child Support Enforcement and Family Support $4.5 billion Stability				306	0	0
Aid to Families with Dependent Children direct benefits				14,931	15,694	16,165
Total, Support Order				15,237	15,694	16,165

Source: HHS Budget-in-brief FY 20 and FY 22. (discretionary) indicates there is an authorization of appropriations that must be updated (for FY 25 if these proposed authorizations through FY 24 are passed). To amend Sec. 2602(b) of the Low Income Energy Assistance Act of 1981 under 42USC§8621(b) to authorize 3,750,000,000 for fiscal year 2021, 3,850,000,000 for fiscal year 2022, 3,966,000 for fiscal year 2023 and 4,203,000,000 for fiscal year 2024 by amending and repeal Sec. 2602(d)&(e) of the LIEA Act under 42USC§8621(d) & (e). To amend 639 of the Head Start Act under 42USC§9834 to authorize $10,614,000,000 for fiscal year 2020, $10,748,000,000 for fiscal year 2021, $11,932,000,000 for fiscal year 2022, $12,290 for fiscal year 2023 and 12,659 for fiscal year 2024. And to delete 'for each of fiscal years 2008 through 2012' from 657B of the Head Start Act 42USC9852b(f). To amend Sec. 658B of the Child Care and Development Block Grant Act of 2014 under 42 USC§9858 to authorize $2,748,591,018 for fiscal year 2020, 2,830,049,000 for fiscal year 2021, 3,537,500,000 for fiscal year 2022, 3,643,625,000 for fiscal year 2023, and 3,752,933,750 for fiscal year 2024. And to amend Sec. 418 of the Social Security Act under 42USC§618 to authorize $3,077,408,982 for fiscal year 2020, 3,080,951 for fiscal year 2021, 3,839,500,000 for fiscal year 2022, 3,954,375,000 for fiscal year 2023, and 4,073,066,250 for fiscal year 2024. To amend Sec. 388(a)(1) of the Runaway and Homeless Youth Act under 34USC§11280(a)(1)$132,000,000 for fiscal year 2020, $137,000,000 for fiscal year 2021, $145,000,000 for fiscal year 2022, $149,000,000 for fiscal year 2023 and $154,000,000 for fiscal year 2024. To amend Sec. 388(a)(4) of the Runaway and Homeless Youth Act under 34USC§11280(a)(4) to authorize $25,000,000 for fiscal years 2020 through 2024. To amend Sec. 209 Child Abuse Prevention and Treatment Act under 42USC§5116i to authorize $156,000,000 for fiscal year 2020, $161,000,000 for fiscal year 2021, $210,000,000 for fiscal year 2023 and $224,000,000 for fiscal year 2024. To amend Sec. 425 of the Social Security Act under 42USC§625 to provide $329,000,000 for fiscal year 2020, $332,000,000 for fiscal year 2021, $442,000,000 for fiscal year 2022, $455,000,000 for fiscal year 2023 and $469,000,000 for fiscal year 2024. To amend Sec. 473A(h) of the Social Security Act under 42USC673A(h) to authorize $75,000,000 for fiscal years 2019 through 2024. To amend the Chafee Education and Training Voucher Program in Sec. 477(h)(2) of the Social Security Act under

42USC677(h)(2) to authorize $43,000,000. To amend Sec. 303(a)(1) of the Family Violence Prevention and Services Act under 42USC§10403(a)(1) to authorize $174,000,000 for fiscal year 2019, $187,000,000 for fiscal year 2020, $196,000,000 for fiscal year 2021, $489,000,000 for fiscal year 2022, $504,000,000 for fiscal year 2023 and $519,000,000 for fiscal year 2024. And to amend Sec. 303(b) & (c) of the Family Violence Prevention and Services under 42USC10403(b) & (c) to insert 'of the amounts appropriated under paragraph (1)' after appropriated. To amend Promoting Safe and Stable Families under 42USC§629f to authorize $100,000,000 for fiscal year 2019, $93,000,000 for fiscal year 2020, $83,000,000 for fiscal year 2021, $106,000,000 for fiscal year 2022, $109,000,000 for fiscal year 2023 and $113,000,000 for fiscal year 2024. To delete 'for each of fiscal years 1999 through 2003' from Sec. 674(a) of the Community Services Block Grant Act under 42USC§9903(a).

1. The Biden-Harris American Families Plan decadently seeks to invest $225 billion over the next ten years, as the major part of a $250 billion American Jobs Plan, to ensure low and middle-income families pay no more than seven percent of their income on high-quality child care, saving the average family, eg. costing taxpayers, $14,800 per year on child care expenses, if fully implemented by 2031, when $15 an hour would ostensibly still be the minimum wage for Head Start, without a 3% annual raise. These estimates are not supported by any reasonable estimates of inflation nor supply and demand, and like all such ten year total estimates by the President, need to be categorically rejected as being decadent, before they destroy the Congressional Budget Office (CBO) accounting. The $15 an hour minimum wage for Head Start FY 22, plus 3% annual raise is all that can be sustained. Very few people complain about the high cost of child care, because most people rely on family, neighbors and reasonably priced HEAD Start certified child care and pre-school facilities. Demand is for the restoration of AFDC benefits to redress skyrocketing child poverty rates. The Biden-Harris American Families plan threatens to deepen the non-support underlying the increase in under age 65 death rate incurred by the Affordable Care Act since 2010. Specifically the Biden-Harris American Families Plan to pay child care workers $14,800 per child, while the parents get nothing to less than SSI, totally fails to provide maternity leave for six months of exclusive breast feeding, that is needed to reduce maternal and infant mortality, a the most child impoverishing moment of obstetric billing, pursuant to the most recent cognizant World Health Organization (WHO) statement made in the osteoporotic, post-menopause calcium supplement omitting *Essential Nutrition Actions: Mainstreaming Nutrition Through the Life-Course* (2019).

2. Exclusive breastfeeding - defined as the practice of only giving an infant breast milk for the first 6 months of life – has the single largest potential impact on child mortality of any preventive intervention. Together with appropriate complementary feeding, breastfeeding has the potential to reduce mortality among children under 5 years of age by 19%. Exclusive breastfeeding reduces the risk of gastrointestinal infection and of all-cause mortality, and protects infants from respiratory infections. Exclusive breastfeeding also has a protective effect against obesity later in life. Key recommendations are to improve maternity protection through the workplace (e.g. 6 months of mandatory paid maternity leave and polices to encourage women to breastfeed in the workplace), to

empower women to exclusively breastfeed (WHO '19: 34-44). Malnutrition includes stunting, wasting, underweight, micronutrient deficiencies, overweight and obesity (among both children and adults), and associated chronic conditions such as diabetes, cardiovascular disease and some cancers. Malnutrition, in one form or another, is estimated to affect one in three people globally and is linked to morbidity and mortality. Child stunting is low height-for-age. Child wasting is low weight-for-height. Child overweight means high weight-for-height. Adult obesity is defined carrying excess body fat with a body mass index equal to or higher than 30 kg/m^2.

3. Over the past 25 years, since the passage of Personal Responsibility and Work Opportunity Act propaganda in 1996, cut 10 million AFDC benefits 1996-2000 that have not been redressed, US infant mortality remains high and maternal mortality rates have risen. The United States has the highest birth rate (12.5 per 1,000 population), infant mortality rate (6.1 infant deaths per 1,000 live births and 8 under age (5 deaths per 1,000) and maternal mortality rate (32 deaths per 100,000) of any industrialized nation. Globally, the infant mortality rate has decreased from an estimated rate of 63 deaths per 1000 live births (6300 per 100,000) in 1990 to 32 deaths per 1000 live births (3200 per 100,000) in 2015. Correspondingly, the infant mortality rate of the United States (US) declined from approximately 100 per 1,000 live births to (10,000 infant deaths per 100,000 live births in 1900, to 69 per 1,000 live births (689 per 100,000) in 2000 to 6.7 per 1,000 live births (670 per 100,000) in 2006 to 6.1 per 1,000 live births (610 per 100,000) in 2015. Statistics for 40 states and the District of Columbia, gleaned from death certificates, indicate that whereas the reported maternal mortality rate from 1999 to 2002 was 9.8 per 100,000 live births, it jumped to 20.8 per 100,000 live births for the period 2010 to 2013. The U.S. is the only developed country in the world where maternal deaths actually increased between 1993 and 2013, according to the World Health Organization. From 2000 to 2017, the global maternal mortality ratio declined by 38 per cent – from 342 deaths to 211 deaths per 100,000 live births. Target 3.1 of the Sustainable Development Goals (SDGs) is to reduce the global maternal mortality ratio to to less than 70 per 100, 000 live births by 2030. The Surgeon General has issued a *Call to Action to Improve Maternal Health* and HHS a *Healthy Women, Healthy Pregnancies, Healthy Futures: Action Plan to Improve Maternal Health in America*, both are undated.

4. The Biden-Harris American Families Plan to ensure low and middle-income families pay no more than seven percent of their income on high-quality child care, threatens to increase infant and maternal mortality, just as the Affordable Care Act (ACA) to ensure no-one pays more than 8.5% of their income for health insurance, has incurred an increase in under age 65 death rate, that is unprecedented since 1900, while the over age-65 death rate continues its steady decline. This hyper-inflationary style of socialization does not work because there are two levels of greedy and unscrupulous beneficiaries, who are not exactly the population targeted for benefits. In the case of the ACA providers of increasingly non-curative medicines and unnecessary surgeries for anyone so [sic] they believe they should pay for health insurance to finance increasingly terrorist health professionals, who are equally [sic] in the sense that they are brainwashed by incompetent public health authorities to not prescribe curative medicine and may poison to increase demand of the patient population for their ostensible services, if the placebo

effect is not bad enough. The reason the child care agenda fails is that since 1996 the worker propaganda to deprive low-income families of AFDC benefits under 18USC§246 is a life-threatening deprivation of rights under color of law under §242 for which low-income families are entitled to civil action for deprivation of rights under 42USC§1983 to restore Title IV Grants to States for Aid and Services to Needy Families with Children and for Child-Welfare Services Part. A Aid to Families with Dependent Children Sec. 401 – 417 of the Social Security Act under 42USC§601-§617 to the condition it was in 1995 before it was degraded by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 and subsequent worker propaganda.

5. Telling people, or excessively providing child care, to encourage people to "get a job" is not a real job, does not necessarily get people a job, definitely does not get them a good job, tending to exacerbate conditions of slave labor, and in this case threatens to deprive new mothers of the wherewithal to do their job exclusively breastfeeding for at least the first six months and fails to guarantee either 3% inflation for either the abysmally $7.25 federal minimum wage since 2009 or proposed $15 an hour Head Start minimum wage. The combination of two factors, deprivation of AFDC benefits and a minimum wage that does not increase annually at the relatively high rate of 3%, for a normally 2.5% inflating labor budget, to defeat 2%-3% inflation since 1980, are the major reasons for a dramatic increase in child poverty since 1996. Full time minimum wage work does not afford a family a poverty line income and there are no welfare benefits, to make up the difference. A third factor in the number of poor children has to do with economic depressions. During the Great Recession 2009-2011 more than 22% of children were living in poverty, but when the economy recovered the child poverty rate went down as low as 15% in 2020, the same as it was in 1996 for all age groups. The unjust Biden-Harris American Families Plan threatens to cost the United States a lot of money, for a defective government product, reliant upon private individuals and corporations, while failing to place devaluation of the US dollar to pay for prior COVID-19 relief bills, or current deficit in excess of 3% of GDP, on the agenda. The Federal Reserve "bought" rather than sold $3.3 trillion in COVID-19 relief bills, is counterfeiting deficits in excess of 3% to protect the stock exchange and economy from excessive withdrawal, but counterfeiting is a crime they do not confess to know to devaluate for and the Treasury may at any time be compelled to sell their deficits in excess of 3% of GDP and incur economically depression from excessively withdrawing from the stock exchange, as they perpetuated the Great Recession and Great Britain incurred an 11% COVID-19 depression in 2020.

6. The 2020 State of America's Children report indicates that although unaffordable COVID-19 relief has greatly helped to bolster the consumer economy and prevent severe poverty and child poverty, children remain the poorest age group in America. Nearly 1 in 6 lived in poverty in 2018. The child poverty rate (16 percent) is nearly one-and-a-half times higher than that for adults ages 18-64 (11 percent) and two times higher than that for adults 65 and older (10 percent). Children are considered poor if they live in a family with an annual income below the Federal Poverty Line of $25,701 for a family of four, which amounts to less than $2,142 a month, $494 a week or $70 a day. Child poverty is related to both age and race/ethnicity. The youngest children are the poorest and nearly 73 percent of poor children in America are children of color. More than 1 in 6 children

under 6 were poor and almost half of them lived in extreme poverty. Nearly 1 in 3 Black (30.1 percent) and American Indian/Alaska Native children (29.1 percent) and nearly 1 in 4 Hispanic children (23.7 percent) were poor compared with 1 in 11 white children (8.9 percent). Deep poverty among children remains a significant problem. Some 2 million children live in families with income and benefits (net of taxes paid) below half the poverty line, or below just $14,000 a year for a typical family of four. The deep poverty rate among children rose in the decade after the 1996 law that created the Temporary Assistance for Needy Families (TANF) program, from 3.1 percent in 1995 to 3.5 percent in 2005 and 2.7 percent in 2016.

7. The Biden-Harris American Families Plan is incompetently defensive of both the acute intoxication from online pharmaceutical product "adulteration" allegations that provoked this "child support fraud" proposal in the HHS FY 22 Budget-in-brief, and the chronic failure to pay legal "child support" obligations since AFDC benefits were cut in 1996. There is nothing wrong with Head Start supervised child-care, except that the Head Start $15 minimum wage proposal, for $600 a 40 hour week, is broken, without immediate effect and 3% inflation in the future. The child care subsidy is an inappropriate and unjustified infringement under Art. 18 of the Convention on the Rights of the Child (CRC)(1990) mocking the failure of HHS to pay legal child support obligations under 18USC§228. The TANF child benefit cuts and stagnant minimum wage are wrongs that must be redressed in the best interest of the child to an adequate standard of living pursuant to Arts. 26 and 27(1)(4) of the CRC. Aside from a stable $4.5 billion Child Support Enforcement and Family Support administration and other minor budget fixes, the support order is that all, every penny, of the >$15 billion of the mandatory budget request for the American Families Plan should go to increasing the amount and number of individual child benefits payable to the restoration of Title IV Grants to States for Aid and Services to Needy Families with Children and for Child-Welfare Services Part. A Aid to Families with Dependent Children Sec. 401 – 417 of the Social Security Act under 42USC§601-§617 legislation to the condition it was in 1995 and 3% inflation pursuant to Art. 26 of the CRC.

8. ACF must sue the Labor Secretary regarding the federal minimum wage and might as well get 6 months of maternity protection the sabbatical gender equality requires, on the agenda. It takes 68.1 hours at the federal minimum wage of $7.25 to earn the $494 a week it takes to keep a family of four above the poverty line and without an annual inflation adjusted increase in minimum wage this gap increases annually at the 2%-3% rate of consumer price inflation. To close this minimum wage gap, without excessively impoverishing employers, incurring layoffs, or needing to bother impoverishingly "rich" politicians, who haven't authorized themselves a pay raise since 2009, it necessary that Congress legislate an annual 3% increase in federal minimum wage. 2.5% for themselves. Because most states have higher minimum wages, and the consumer economy is flush with COVID-19 relief, compensation for 12 years of delinquency is fair and due. A 36% increase in federal minimum wage would be $9.86 an hour 2021, 3% more than that rounds to $10.08 in 2022. To make up for the six month delay and start the automatic annual federal minimum wage increase with a nice round number, it is therefore ordered to amend the federal minimum wage statute to $10 in 2021 and 3

percent more every year thereafter while inflation continues to run between 2% and 3% as it has since 1980 under 29USC§206(a)(1)(D). Parent(s) earning the federal minimum wage would then only need to work 49.4 hours a week to sustain a poverty line income for a family of four in 2021 and due to the +/- 0.5% advantage over consumer prices inflation written into this law, would only need to work an estimated 49.2 hours a week to earn a poverty line income in 2022 and +/- 0.995 less every year thereafter.

9. ACF must do the math to distribute $15 billion FY 22 plus 3% annual inflation to most effectively relieve child poverty in the United States. The number of benefits must cover an estimated 2.4 million children growing up in deep poverty and should be enough to cover the families of all 12 million children living at or below 100% of the poverty line. With only slightly more than $19 billion, due to the deceptive practice of only about 25% of $16 billion in TANF spending, $4 billion FY 21 actually going to real child welfare benefits, ACF could only afford about $700 a month for all 2.4 million children who would otherwise live in deep poverty, less than 50% of the poverty line. The disability insurance program pays about $170 billion to 9 million beneficiaries annually. To guarantee all 10 million or so poor families with children a poverty line income of about $20,000 annually, would cost no more than an estimated $200 billion. Taxing state employees and the rich the full 12.4% OASDI (and AFDC) tax would levy more than $250 billion annually. There is no excuse for delaying the repeal of Sec. 230 of the Social Security Act under 42USC§430.

10. The Department of Labor shall estimate the cost to contributors to provide for six months, 24 weeks, paid maternity leave, or six month sabbatical every ten years, under state and federal unemployment compensation programs. Six months paid maternity leave or sabbatical every ten years overrule both the current Labor Department proposal for paid leave for both mothers and fathers, including adoptive parents, and 14 weeks of maternity leave in the Maternity Protection under International Labor Organization (ILO) Convention No. 183 (2000) pursuant to six months of exclusive breastfeeding required for infant nutrition and development by the World Health Organization (WHO) *Essential Nutrition Actions: Mainstreaming Nutrition Through the Life-Course* (2019). Men and adoptive parents are not expected to want more than a three week holiday to have the income to enjoy their new baby. Male and non-child bearing contributors are entitled to equal six month benefits with new mothers, wherefore legitimate demand for a six month sabbatical every ten years of unemployment contribution is supported to prevent reverse gender discrimination. Unpaid maternity leave and the extraordinarily high cost of hospital delivery, as well time spent on child-care, are the primary reason that female income lags behind male, and that child poverty rates are so high in the United States. The United States lags dramatically behind all high-income countries, as well as many middle- and low-income countries when it comes to public policies designed to guarantee adequate working conditions for families. One hundred sixty-three countries around the world guarantee paid leave to women after childbirth; the United States does not. Forty-five countries ensure that fathers either receives paid paternity leave or paid parental leave; the United States does not. Seventy-six countries protect workingwomen's right to breastfeed at work; the United States offers no such protection. Ninety-six countries offer paid annual leave; the United States does not require employers to provide any paid

annual leave. One hundred thirty-nine countries provide paid leave for short or long-term illnesses; the United States has no national policy regarding sick leave. The only other industrialized country, which does not have paid maternity or parental leave for women, Australia, guarantees a full year of unpaid leave to all women in the country. In contrast, the Family and Medical Leave Act of February 5, 1993 (PL-303-3) in the U.S. provides only 12 weeks of unpaid leave to approximately half of mothers in the U.S. and nothing for the remainder. 45 countries ensure that fathers either receive paid paternity leave or have a right to paid parental leave. To legislate this fundamental labor program, the Secretary of Labor shall produce estimates regarding the cost to contributors and propose to repeal experimental 'Demonstration Projects' and replace it with 'Labor Insurance' at Section 305 of the Social Security Act under 42USC§505.

(a) To expedite the reemployment of mothers who have established a benefit year to claim unemployment compensation under State law the Secretary of Labor shall pay unemployment compensation for 24 weeks of Maternity Protection under International Labor Organization (ILO) Convention No. 183 (2000) as amended to provide 6 months of exclusive breastfeeding by page 39 of the World Health Organization (WHO) *Essential Nutrition Actions: Mainstreaming Nutrition Through the Life-Course* (2019). To provide equal benefits for equal contributions, while the unemployment compensation program makes a good faith effort to provide labor insurance, male and non-child producing female contributors shall be entitled to a six month sabbatical every ten years.

(b) On production of a medical certificate, stating the presumed date of childbirth, a woman shall be entitled to a period of maternity leave of not less than 24 weeks. Cash benefits shall be provided at a level which ensures that the woman can maintain herself and her child in proper conditions of health and with a suitable standard of living.

(1) Where a woman does not meet the conditions to qualify for cash benefits under national laws and regulations or in any other manner consistent with national practice, she shall be entitled to adequate benefits out of social assistance funds, subject to the means test required for eligibility for such assistance, from Temporary Assistance for Needy Families (TANF) under Sec. 404 of Title IV-A of the Social Security Act under 42USC§604 *et seq*. and Supplemental Security Income (SSI) Program for the Aged, Blind and Disabled under Sec. 1611 of Title XVI of the Social Security Act under 42USC§1382 *et seq*.

(2) Medical benefits shall be provided for the woman and her child. Medical benefits shall include prenatal, childbirth and postnatal care, as well as hospitalization care when necessary.

(c) Employers shall provide at least 3 weeks of paid leave annually to uphold the Holiday with Pay ILO Convention No. 132 (1970) and Workers with Family Responsibilities Convention No. 156 (1981). Employers shall provide up to 12 week of unpaid leave to care for the severe sickness of a child under the Family and Medical Leave Act of February 5, 1993 (PL-303-3).

C. ACF programs aim to achieve the following: 1. Families and individuals empowered to increase their own economic independence and productivity; 2. Strong, healthy, supportive communities that have a positive impact on the quality of life and the development of children; 3. Partnerships with individuals, front-line service providers, communities, American Indian tribes, Native communities, states, and Congress that enable solutions which transcend traditional agency boundaries; 4. Services planned, reformed, and integrated to improve needed access; 5. Strong commitment to working with people with developmental disabilities, refugees, and migrants to address their needs, strengths, and abilities.

1. The Head Start program was established as part of the Economic Opportunity Act of 1964 (P.L. 88-452), and was reauthorized through FY 2012 under the Improving Head Start for School Readiness Act of 2007 (P.L. 110-134). The program provides grants directly to local public and private non-profit and for-profit agencies to provide comprehensive early learning and development services to economically disadvantaged children and families, with a special focus on helping preschoolers develop the education and skills required to be successful in school. The Early Head Start program was established as part of the Head Start Amendments Act of 1994 (P.L. 103-252) to serve pregnant women and children from birth to three years of age, in recognition of the mounting evidence that the earliest years are critical to children's growth and development. In FY 2019, the Head Start and Early Head Start programs were funded at approximately $10 billion and served 873,019 children and pregnant women in centers, family homes, and in family child care homes in urban, suburban, and rural communities throughout the country. The FY 22 budget requests $11.9 billion—an increase of $1.2 billion over FY 2021 enacted—to promote the school readiness of children ages birth to five, which includes doubling the investment in Early Head Start- Child Care Partnerships and funding a cost-of-living adjustment ($234 million). With this investment, Head Start will serve an estimated 906,215 children, a 5.3% increase of 48,600, through nearly 1,600 local agencies in states, and tribes across the United States. American Indian and Alaska Native Head Start serves nearly 41,000 children in tribal and non-tribal settings. American Indian and Alaska Native Head Start serves nearly 41,000 children in tribal and non-tribal settings. This is more than all the growth in child-care the federal government can safely manage under the experienced guidance of the lawful Head Start program.

2. The budget provides $7.3 billion in discretionary funds for the Child Care and Development Block Grant. In FY 2018— the most recent year for which data is available—over 1.3 million children from about 813,000 low-income families, about 88% of families, received a monthly child care subsidy. The market for child care and preschool is obviously already saturated, of high quality regulated by Head Start, voluntary and affordable, and does not require, and would be corrupted, by a massive campaign of federal non-support for the child support and child welfare benefits the federal government is actually sued for everyday. The FY 2022 budget will serve an estimated 2.4 million children. The budget provides $450 million for the Preschool Development Grants Birth through Five, an increase of $175 million over FY 2021 enacted. Without demand for anything but "support", including a $15 an hour minimum

wage FY 22, plus 3% inflation thereafter, it is terrorist for the President to massively infringe on the child care sector by falsely claiming that child-care is “support” and massively expanding federal finance therefore, when there is a long federal history of stealing child welfare to pay for low-income workers, such as child-care, and the President's child care proposal must be treated as a terrorist response to sabotage the $15 an hour minimum wage.

D. ACF strives to address the needs of vulnerable children and families so they can live healthy, productive, violence-free lives. There are 4.2 million youth and young adults ages 13 to 25 who experienced a form of homelessness over a 12-month period. The budget includes $145 million for 685 programs across the country to provide comprehensive services to an estimated 52,011 homeless youth. The budget requests $906 million for Child Welfare and Child Abuse Prevention programs in ACF, an increase of $188 million over FY 2021 enacted. The budget requests $671 million for child welfare and adoption activities. Within this total, ACF is investing $100 million in new Child Welfare competitive grants for states and localities to advance reforms to reduce the overrepresentation of children and families of color in the child welfare system and reorient systems towards prevention. While it is true, there were over 400,000 children in the foster care system in FY 2019, and it is a shame that racial minorities are disproportionately included in this lot, it is cruel and unusual to yet again target “welfare” for racial discrimination, and imperative that child protective services not construe their child-abducting selves as being the welfare system, sans welfare benefits. It is necessary that ACF leadership and programs be fully investigated pursuant to equal employment opportunities without discrimination on the basis of race, color, religion, sex, national origin, handicap, or age in Title VII of the Civil Rights Act of 1964 under 42USC§2000e-16(e) and E.O.11478. The assumption is that head start is integrated but child protective services, foster care, TANF (case-in-point) and ACF leadership are some of the most white slaving, psychiatric, racists, working for the judiciary. The Administration for Native Americans (ANA) promotes self-sufficiency for Native Americans by providing discretionary grant funding for community- based projects, and training and technical assistance to eligible tribes and native organizations. The budget includes $60 million, an increase of $3 million above FY 2021 enacted. ACF supports organizations and communities that work to end domestic violence. The budget provides $489 million for Family Violence Prevention and Service Act Programs (FVPSA), which provide emergency shelters and supportive services to survivors of domestic violence. The funding represents a 150% increase of $294 million over FY 2021 enacted. It is very important that this massive increase in funding be used to normalize racial representation, civil rights, family stability and disdain for psychiatric drug abuse as being a more severe form of child abuse than other parentally negligent, self-inflicted substance abuse disorders, to begin to redress the extremely poisonous and mentally defective, psychiatric terrorist infiltration of civil society and child protective services.

1. To eliminate this evil, racist, infringement, of what most states call “children's services” on child welfare is seems very important that ACF change the name of child welfare to Children's Services in their budget. Children's services are involved in: Protecting and promoting the welfare of all children, including handicapped, homeless,

dependent, or neglected children; Preventing or remedying, or assisting in the solution of problems which may result in, the neglect, abuse, exploitation, or delinquency of children; Preventing the unnecessary separation of children from their families by identifying family problems, assisting families in resolving their problems, and preventing breakup of the family where the prevention of child removal is desirable and possible; Restoring to their families children who have been removed, by the provision of services to the child and the families; Placing children in suitable adoptive homes, in cases where restoration to the biological family is not possible or appropriate; and assuring adequate care of children away from their homes, in cases where the child cannot be returned home or cannot be placed for adoption.

2. The state provides assistant to foster care and adoption assistance programs taking into consideration the special needs of the children. These programs shall ensure that orphanages or foster homes, uphold standards related to admission policies, safety, sanitation, and protection of civil rights. Record checks reveal whether a felony conviction for child abuse or neglect, for spousal abuse, for a crime against children (including child pornography), or for a crime involving violence, including rape, sexual assault, or homicide, but not including other physical assault or battery, if a State finds that a court of competent jurisdiction has determined that the felony was committed at any time, such final approval shall not be granted under Sec. 472 of Title IV-E of the Social Security Act under 42USC§672. A care plan shall assure that the child receives safe and proper care and that services are provided to the parents, child, and foster parents in order to improve the conditions in the parents' home, facilitate return of the child to his own safe home or the permanent placement of the child, and address the needs of the child while in foster care, including a discussion of the appropriateness of the services that have been provided to the child under the plan.

3. State child welfare agencies and courts consult with the individual parent and child to develop an individual responsibility plan for the individual, that: a. Sets forth an employment goal for the individual and a plan for moving the individual immediately into private sector employment; b. Sets forth the obligations of the individual, which may include a requirement that the individual attend school, maintain certain grades and attendance, keep school age children of the individual in school, immunize children, attend parenting and money management classes, or do other things that will help the individual become and remain employed in the private sector; c. To the greatest extent possible is designed to move the individual into whatever private sector employment the individual is capable of handling as quickly as possible, and to increase the responsibility and amount of work the individual is to handle over time; d. Describes the services the State will provide the individual so that the individual will be able to obtain and keep employment in the private sector, and describe the job counseling and other services that will be provided by the State; and e. May require the individual to undergo appropriate substance abuse treatment.

4. Authorized under title IV-E of the Social Security Act, the Foster Care, Adoption Assistance, Guardianship Assistance, Prevention Services, and John H. Chafee Program for Successful Transition to Adulthood programs provide safety and permanency for

children separated from their families; support services to prevent child maltreatment and the need for foster care; and supports to prepare older youth in foster care for adulthood. ACF's child welfare vision focuses on equity, prevention of child maltreatment, program improvement, and outcomes for youth who experienced foster care. Research has shown that Black and American Indian/Alaska Native children are disproportionately involved at all stages in the child welfare system relative to their presence in the population, while White and Asian/Pacific Islander children are underrepresented. Although the total number of children in foster care is still very high, preliminary data show that the number decreased in FY 2019, for the second consecutive year,to 432,997, a decrease of over 2.5 percent from FY 2018. The number of children entering foster care in FY 2019 decreased to 251,359, a 4.4 percent decrease from FY 2018. The number of children adopted with U.S. public child welfare agency involvement increased for the fourth year in a row, to 66,035—a 4.8 percent increase from FY 2018 and the largest number of such adoptions reported since data collection began. Increasing permanency for children through adoption, kinship placement, or reunification is a high priority for ACF, especially for the more than 122,000 children waiting for adoption and the over 20,000 youth who exit foster care each year without adoption or permanent guardianship.

5. The foster care system is undermined by rampant psychiatric drug abuse. Psychiatric drug abuse in foster care must stop and the federal government must stop making federal incentive payments because psychiatric drugs are cruel and unusual and should not be foisted on anyone, least of all juveniles. Psychiatric drugs need to be treated with as more disdain than opiates because they are actually used to abuse children and are accompanied with organized, terrorist, psychiatric criminals, adept at defrauding and corrupting the government. Foster care, adoption and legal guardianship incentive payments are highly questionable because of the profit motivated psychiatric drug slavery trade the most important thing is that adoptive parents have the money to afford their children, however the money is prioritized to help the child stay with relatives. Historical data show that between FY 2004 – 2014, of those children who exited care in less than 24 months, over 90% exited to permanent homes. In FY 2016, this number was 92%. The Family First Act provides partial federal reimbursement to states for prevention services for children who are at risk of entering foster care, pregnant or parenting foster youth, and their parents or kin caregivers. Federal funding is not limited by whether the child meets title IV-E income eligibility standards. The funds can support mental health and substance abuse services, including opioid misuse, and in-home parent skill-based programs. The Family First Act restricted federal funding for congregate foster care—often called group homes—in favor of family foster homes. Sixteen states have implemented the congregate care restrictions in the Family First Act, and all states are required to have fully implemented it by the end of FY 2021. The Promoting Safe and Stable Families program provides formula grants to states for services to families to improve child safety at home. The Promoting Safe and Stable Families account also includes the Personal Responsibility Education Program and Sexual Risk Avoidance Education, which were reauthorized through FY 2023 at $75 million per program per year in P.L. 116-260.

6. Federal payments for foster care and adoption assistance, target technical assistance for the courts, and completely ignore the *bona fide* child care institution called an orphanage recognized in Sec. 470 of the Social Security Act under 42USC§670 *et seq*. An orphan is a child whose parents are dead or have abandoned them permanently. Adults can also be referred to as orphan, or adult orphans. However, those who reached adulthood before their parents died are normally not called orphans; the term is generally reserved for children whose parents have died while they are too young to support themselves. An orphan is a child whose parents are dead or have abandoned them permanently. Orphans grow up in an orphanage or are adopted. There are an estimated 100,000 orphans growing up in orphanages in the United States. 7.6% of children are orphans worldwide, in Africa that number is estimated at 11% , in Asia 6.5% and Latin America and the Caribbean 7.4%, however the United Nations counts for children who have lost only one parent. The estimated 100,000 orphans in the United States comprise only about 0.2% of children in the United States. SSA needs to make orphan a qualifying disability. Adults can also be referred to as orphan, or adult orphans. However, those who reached adulthood before their parents died are normally not called orphans; the term is generally reserved for children whose parents have died while they are too young to support themselves. Do not take advantage of a widow or an orphan (Old Testament, Exodus 22:22). Leave your orphans; I will protect their lives. Your widows too can trust in me (Old Testament, Jeremiah 49:11). Religion that God our Father accepts as pure and faultless is this: to look after orphans and widows in their distress and to keep oneself from being polluted by the world (New Testament, James 1:27). And they feed, for the love of God, the indigent, the orphan, and the captive (The Human: 8). Therefore, treat not the orphan with harshness (The Quran, The Morning Hours: 9). Be good to orphans and the very poor. And speak good words to people (The Quran, The Heifer: 83). Give orphans their property, and do not substitute bad things for good. Do not assimilate their property into your own. Doing that is a serious crime (The Quran, The Women: 2).

E. The Child Support Program is a federal/state/ tribal/local partnership that operates under Title IV-D of the Social Security Act, eg. Sec. 466 codified at 42USC§666 *et seq*. The program functions in 54 states and territories, and 62 tribes. The national Child Support Program assures that assistance in obtaining support is available to children through locating parents, establishing paternity, establishing and modifying support obligations, and monitoring and enforcing these obligations. Established in 1975, the Child Support Program has evolved over the decades. The program has shifted its primary mission from welfare cost recovery to family support after legislation in 1996 and 2006. In FY 2016, the child support enforcement program distributed $28.8 billion in collections. Of that amount, 95 percent was sent directly to families. Child support collections increased at an average annual rate around 5% from $19 billion 2001, however growth has slowed to about 1% annually since 2008. Administrative costs were $5.7 billion for federal and state administration only more than $4.8 billion in 2001, 1.25% average annual growth. FY 2016 the Child Support program produced more than $5 for every $1 states and the federal government spent on the program, with a margin of error about 10%. It is alarming that Child Support Enforcement and Family Support mandatory funding is projected to steadily go down from $4.6 billion FY 20, to $4.4 billion FY 21 to $4.2 billion FY 22.

1. In 1996, Congress established the National Directory of New Hires (NDNH) as a new component of the Federal Parent Locator Service (FPLS), to help state child support agencies locate parents and enforce child support orders. Child support cases are matched daily against the NDNH to identify employers of parents owing child support so states can issue an income withholding order. OCSE operates two other major databases supporting child support agencies' business processes: the Federal Case Registry (FCR) of Child Support Orders, containing case and participant information from 54 states and territories, and the Child Support Debtor File, which contains data certified by states regarding the amount of past-due child support owed by noncustodial parents. Paternity and support order establishment, current collection, and arrears collection rates have never been stronger, while cost-effectiveness remains high at $5.03 collected for every dollar spent on the program. From FY 2014 to FY 2015, the IV-D caseload paternity establishment percentage remained at 100%, while the statewide rate was 95% compared to 96% in 2014. Cases with Orders: 86%. Current Collections: 65%. Arrearage Cases: 64%. Cost Effectiveness was $5.26 per dollar spent FY 15 and has declined to $5.03 per dollar spent FY 21.

2. Although current statistics are unavailable, child support cases are believed to be declining with the divorce rate, abolition of unwise and expensive “enforcement” practices, and amicable private settlement. Provided that child support enforcement continues to generate $5.03 per $1 spent on administration it is not unreasonable that spending on support goes down. However, the Administration has failed to statistically prove that this is the case and failure to pay legal child support obligations is a serious crime against children, many men go to prison for under 18USC§228. There is serious concern that child support enforcement has become the new target of corrupt cuts. The President's abuse of the term “support” to describe child-care, serves to reinforce this opinion that child support enforcement has been corrupted, probably because so many delinquent fathers use avoidance of child-support payments to justify not working, when tortured. Because child non-support is such a huge personal and federal crime it is necessary that funding for the administration of Child Support Enforcement and Family Support be sustained. Whereas child support enforcement charges a $35 monthly fee per case, and there is reason to believe that caseload is declining because the statutory predication for the agency is numerically corrupt under 42USC§666 *et seq*. has been judicially abused to unjustifiably incarcerate poor fathers in violation of 18USC§228(b) thereby rendering them unable to pay and extort money only when it is obvious it will not be used to support children and this has been witnessed to result in the death of the child, the fad is that private settlement is reached by most rational divorcees and non-custodial parents. Nonetheless, because a surplus of funding for Child Support Enforcement and Family Support Administration could be easily used to make the much demanded government child social security benefit payments it is imperative that funding be sustained at zero growth levels, unless there is an uptick in child support enforcement payments and the program must be statistically monitored. Therefore, a part of the mandatory funding counterproposal is to provide for a $4.5 billion level of funding with $306 million proposed mandatory funding FY 22.

Federal Child Support Cases 2011-2018

	2011	2012	2013	2014	2015	2016	2017	2018
Child Cases (thousands)	17,341	17,157	16,900	16,338	15,899	15,562	15,147	14,728
Total Distributed Collections (million)	27,300	27,720	28,010	28,200	28,560	28,830	28,630	28,590
Total Distributed to Families (millions)	25,620	26,110	26,540	26,810	27,210	27,520	27,390	27,390
Administrative Expenditures (millions)	5,660	5,660	5,590	5,690	5,750	5,730	5,880	5,880

Source: Annual Report to Congress. Office of Child Support Enforcement. FY 2015. January 12, 2017; FY 2018 March 24, 2021

1. According to a 2014 U.S. Bureau of Census survey, child support represents 41% of family income for poor families with income below the poverty level who receive child support. 29% of custodial families have incomes below the poverty line. Custodial parents are 82% women, 78% 30 or older, and 55% have just one eligible child, 68% are white, 25% black and 23% Hispanic. In the spring of 2004, an estimated 14.0 million parents had custody of 21.6 million children under 21 years of age while the other parent lived somewhere else. Five of every six custodial parents were mothers (83.1%) and 1 in 6 were fathers (16.9%). 28% of children live in single parent households as the result of the dramatic increase in divorce rates to 50% of all marriages. In 1999 there were 2.2 million marriages and 1.1 million divorces. Only 10% of children living with both parents were below the poverty line whereas 40% living with only one parent were below the poverty line. Children living only with their mothers were twice as likely to live in poverty as those living only with their fathers. In 2001, 6.9 million custodial parents who were due child support under the terms of agreements or current awards were due an average of $5,000; an aggregate of $34.9 billion in payments due. Of this amount, about

$21.9 billion (62.6%) was received, averaging $3,200 per custodial-parent family. Overall, custodial parents reported receiving $22.8 billion directly from the non-custodial parent for support of their children in 2001, which included $900 million received by parents without current awards or agreements. In 2001, the average annual amount of child support received (for custodial parents receiving at least some support) was $4,300, and did not differ between mothers and fathers (as support recipients). The 2001 proportion of custodial parents receiving every child support payment they were due was 44.8%. Among these parents, the average amount received was $5,800, and did not differ significantly between mothers and fathers. The average family income for the 3.1 million custodial parents who received all the child support they were due in 2001 was $32,300, and their poverty rate was 14.6%.

2. The procedures involved in child support enforcement are best laid out in Sec. 466 of Title IV-D of the Social Security Act under 42USC§666 *et seq*. to include the establishment of paternity and of support enforcement orders and of their modification, withholdings from tax refunds, and withholdings from income checks administrated by financial institution by means of an "account" means a demand deposit account, checking or negotiable withdrawal order account, savings account, time deposit account, or money-market mutual fund account. In making the determination as to the amount collected the income of the non-custodial parent is taken into consideration. It is very important not to force people living below the poverty to pay more than the small sum they can afford, if anything. The state must pay welfare benefits in these cases. In no case should a person be incarcerated for failing to pay child support if they live at or below the poverty line. Furthermore, the collection of back child support after the child has grown have proven deadly to the grown child and spousal support after a few months, without any children, legalized robbery. Child support manages to collect more than half of the revenues that are due.

3. Child service workers must support and facilitate non-custodial parents' access to and visitation of their children, by means of activities including mediation (both voluntary and mandatory), counseling, education, development of parenting plans, visitation enforcement (including monitoring, supervision and neutral drop-off and pickup), and development of guidelines for visitation and alternative custody arrangements under Sec. 469B of the Social Security Act under 42USC§669b. The federal parent locator determines without charge the whereabouts of any parent or child when such information is to be used to locate such parent or child for the purpose of - (a) enforcing any State or Federal law with respect to the unlawful taking or restraint of a child; or (b) making or enforcing a child custody or visitation determination consistent with Sec. 453 of the Social Security Act under 42USC§653. The enforcement of child support extends to foreign countries under Sec. 459A of the Social Security Act under 42USC§659a. The Hague Convention on the International Recovery of Child Support and Other Forms of Family Maintenance (Hague Convention) promotes the enforcement of child support obligations in cases where the custodial parent and child are in one country and the noncustodial parent is in another. In 2014, the Preventing Sex Trafficking and Strengthening Families Act, Public Law (P.L.) 113-183, authorized U.S. ratification of the Hague Convention and required states and territories participating in the federal child support program to enact the Uniform Interstate Family Support Act (UIFSA 2008). The

existence of a support obligation that was in effect for the time period charged in the indictment or information creates a rebuttable presumption that the obligor has the ability to pay the support obligation for that time period under 18USC§228(b).

F. The Low Income Home Energy Assistance Program (LIHEAP) appropriation provides home heating and cooling assistance to low-income households. LIHEAP includes funding for the regular block grant, Energy Emergency Contingency Fund, Leveraging Incentive program, and Residential Energy Assistance Challenge (REACH). The Low Income Home Energy Assistance Act of 1981 (P.L. 97-35) originally authorized LIHEAP through August 1,1999, as amended by the Human Services Reauthorization Act of 1984 (P.L. 98-558). The Augustus F. Hawkins Human Services Reauthorization Act of 1990 (P.L. 101-501) established a Leveraging Incentive program to reward grantees under LIHEAP that have acquired non-federal home energy resources for households with low income. LIHEAP was reauthorized through FY 2007 in the Energy Policy Act of 2005 (P.L. 109-58). Preliminary data for FY 2020 shows an estimated 5.3 million households received heating assistance. For the typical household this assistance offset 63 percent of their annual heating costs. States may use up to 15 percent of their funding for weatherization assistance. The budget requests $3.8 billion, an increase of $100 million over FY 2021 enacted. The Consolidated Appropriations Act, 2021 provided $638 million in emergency spending to assist low- income households with their drinking water and wastewater bills. An additional $500 million was provided by the American Rescue Plan. The budget includes $786 million for the Office of Community Services, which is an increase of $11 million over FY 2021 enacted. This total includes $754 million for the Community Services Block Grant (CSBG), $22 million for the Rural Community Development Program, and $11 million for Community Economic Development. CSBG supports services to ameliorate the causes and conditions of poverty by assisting individuals, families, and communities with services. Over one thousand eligible entities receive CSBG funds annually. In FY 2019, preliminary data indicates approximately 17 million individuals were served.

G. Social Services Research and Demonstration funding allows ACF to study programs that lack dedicated research and evaluation funds and to research areas that affect multiple programs. Topics of recent projects include employment and family self-sufficiency; child poverty; studies of behavioral science interventions; examination of disparities in access to, and use of, ACF programs; and approaches to improving program efficiency and effectiveness, including efforts to improve the use of administrative data. Within Promoting Safe and Stable Families, an increase of $6 million is included to meet the requirements of the Family First Prevention Services Act. The budget invests an additional $2 million above FY 2021 enacted to establish a standard for national disaster human service case management in partnership with FEMA, the American Red Cross, and others; and establishing connections with the Administration for Community Living to ensure support services for older and disabled Americans, connecting the continuum of care for disaster survivors with life-sustaining wrap- around services. Funding for Federal Administration has remained essentially flat for the last four years as ACF's discretionary appropriations have increased by 30 percent. To address this, and to manage the new

Child Welfare competitive grant, the budget requests $227 million, an increase of $20 million above FY 2021 enacted.

H. The ACF provides for several refugee programs to compliment Homeland Security and State Department programs. ACF is primarily, but irregularly, occupied, with providing shelter, care, and support for unaccompanied migrant children apprehended by the Department of Homeland Security (DHS) or other law enforcement authorities. The budget requests $3.3 billion for the unaccompanied children program, an increase of $2.0 billion above the FY 2021 appropriation, but less than the $4.3 billion FY 19 appropriation. ACF is committed to ensuring unaccompanied migrant children are unified with relatives and sponsors as safely, humanely, and quickly as possible. the budget includes a proposal to establish a Separated Families Services Fund to provide mental health and other supportive services for children, parents, and legal guardians who were separated at the United States – Mexico border under the previous Administration, and requests $30 million for this effort. To ensure competent medical care

1. ACF will rebuild the Nation's refugee resettlement infrastructure to support resettling up to 125,000 refugees in FY 2022, which would be the highest number of refugees admitted to the United States in 30 years. To achieve this, the budget requests $1.1 billion for refugee assistance, an increase of $494 million above FY 2021 enacted. These new funds are disproportionately allocated to excessively and corruptly finance Transitional Medical Services. The FY 2022 estimate of eligible new arrivals is 214,000, including 125,000 refugees and 89,000 other new arrivals eligible for refugee benefits. The budget includes $605 million for transitional and medical services, which is sufficient to maintain benefits for the estimated number of new arrivals and $450 million for refugee support services. The budget includes $39 million to screen and identify trafficking victims and provide services, including case management, emergency assistance, and medical services to an estimated 3,500 trafficking victims. ACF's National Human Trafficking Hotline provides 24- hour emergency counseling, referrals to services from a database of over 2,900 vetted social service programs, and tips to law enforcement on potential trafficking schemes. The budget also includes $27 million for survivors of torture. While it is important that Transitional Medical Service be fully financed to respond to the COVID-19 pandemic, $605 million is as problematic a number as coronavirus testing and vaccines are prone to terrorism.

2. To alleviate both the COVID-19 pandemic at the border, and the looming number of the beast crisis in a bioterrorism prone health agency, it is proposed to increase total refugee spending to $1.2 billion by transferring $100 million from the extremely large unaccompanied minor funding to increase Transitional Medical Services discretionary spending by another $100 million to $705 million and ensure that they are fully 'debriefed': that Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis and eucalyptus, or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the pandemic the most effective strategy is probably to place eucalyptus or lavender soap institutional showers, baths and public restrooms, with instruction to "wash your nose/lava su nariz". Intensive care units and

public airspaces may be sterilized with eucalyptus scented humidifiers (diffusers) not used since the 1950s. It is important that this life-lesson on curing coronavirus and influenza is fully instituted at the border to break with the felony monopolization of UN vaccine propaganda underlying the global pandemic, but is equally applicable to all snot nose children and their families as they return to school and work, whereas the possibly life-saving and severe illness preventing vaccine is only about 30% effective at reducing the contagious state of allergic rhinitis, only slightly better than the sometimes 5% effective seasonal influenza vaccine.

§324a Aid to Families with Dependent Children

A. The modern form of assistance for needy families with children has its origins in the early-1900s "mothers' pension programs," established by state and local governments. These programs provided economic aid to needy families headed by a mother so that children could be cared for in homes rather than in institutions. Federal involvement in funding these programs dates back to the Great Depression, and the creation of the Aid to Dependent Children (ADC) program as part of the Social Security Act of 1935. ADC provided grants to states to help them aid families with "dependent children," who were deprived of the economic support of one parent because of his death, absence, or incapacitation. The Social Security Act was amended to provide social insurance protection for families headed by widows (survivors' benefits, added in 1939) and those with disabled members (disability benefits, added in 1956). This left families headed by a single mother with the father alive, but absent, as the primary group aided by ADC, later renamed Aid to Families with Dependent Children (AFDC). The cash assistance caseload also became increasingly nonwhite. States were first given the option to aid two-parent families beginning in 1961, but were not required to extend such aid until the enactment of the Family Support Act in 1988.

1. Even with the extension of aid to two-parent families, this group never became a large part of the caseload, and most adult TANF cash assistance recipients continue to be single mothers. Beginning in 1967, federal policy changes were made to encourage, and then require, work among AFDC mothers. In 1974, children surpassed the elderly as the age group with the highest poverty rate. Additionally, experimentation on "welfare-to-work" initiatives found that requiring participation in work or job preparation activities could effectively move single mothers off the benefit rolls and into jobs. "Welfare reform," aiming to replace AFDC with new programs and policies for needy families with children, was debated over a period of four decades (the 1960s through the 1990s). These debates culminated in a number of changes in providing aid to low-income families with children in the mid-1990s, creating a system of expanded aid to working families (e.g., increases in the Earned Income Tax Credit and funding for child care subsidies) and the creation of TANF, which established time limits and revamped work requirements for the cash assistance programs for needy families with children. From FY1994 to FY2001, the cash welfare caseload declined rapidly, from 5.0 million families to 2.2 million families per month, a -56% decline. Participation in public assistance programs by custodial parents fell from 40.7% to 28.4% between 1993 and 2001. While the rate of program participation for custodial mothers decreased from 45.2% to 31.0%

during that time, it was still about double that of custodial fathers in 2001 (14.9%). In FY 2020 there were an average of 1.1 million families per month . The number of families receiving benefits declined -39% from 1,749,000 in 2013 to 1,075,504 in 2020, a -77% decline FY 1994.

2. Aid to Families with Dependent Children (AFDC) was a federal assistance program in effect from 1935 to 1996 created by the Social Security Act (SSA) and administered by the United States Department of Health and Human Services that provided financial assistance to children whose families had low or no income. This program grew from a minor part of the social security system to a significant system of welfare administered by the states with federal funding. However, it was criticized for offering incentives for women to have children, and for providing disincentives for women to join the workforce. AFDC dispensed scant relief to poor single mothers. The federal government authorized case workers, supervisors, and administrators with discretion to determine who received aid and how much. ADC was primarily created for white single mothers who were expected not to work. Black mothers who had always been in the labor force were not considered eligible to receive benefits. The words "families with" were added to the name in 1962, partly due to concern that the program's rules discouraged marriage. The Civil Rights Movement and the efforts of the National Welfare Rights Organization (NWRO) in the 1960s expanded the scope of welfare entitlements to include black women. The welfare rolls racial demographics changed drastically. The majority of welfare recipients still remained white and most black women recipients continued to work. Starting in 1962, the Department of Health and Welfare allowed state-specific exemptions as long as the change was "in the spirit of AFDC" in order to allow some experimentation. By 1996 spending was $24 billion per year. When adjusted for inflation, the highest spending was in 1976, which exceeded 1996 spending by about 8%. In 1996, AFDC was replaced by the more restrictive Temporary Assistance for Needy Families (TANF) program. In 1996, President Bill Clinton negotiated with the Republican-controlled Congress to pass the Personal Responsibility and Work Opportunity Act which drastically restructured the program. Among other changes, a lifetime limit of five years was imposed for the receipt of benefits.

3. The Clinton Administration cut 10 million Aid for Families with Dependent Children (AFDC) benefits FY 96 – FY 00 with the Personal Responsibility and Work Opportunity Reconciliation Act of 1996. Cutting spending for children and families constitutes failure to pay legal support obligation under 18USC§228. Child poverty in the United States has risen from the normal poverty rate of the time of 15.8% in 1996 to 22%-33% of children growing poor, 45% below 150% of the poverty line, while 10% of adults and 9% of elders are poor, in 2010 during the Great Recession. After 2000 child welfare grew only a little slower than normal. Worker propaganda regarding welfare dependency causing chronic joblessness needs to be mitigated with support for child care and totally eliminated by a plan to compensate all families with children growing up in poverty for their loss of Aid for Families with Dependent Children (AFDC) / Temporary Assistance for Needy Families (TANF) benefits. Due to degradation by and subsequent to the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 it is necessary for Congress to revert to the 1995 version of the law by amending Title IV Grants to

States for Aid and Services to Needy Families with Children and for Child-Welfare Services Part. A Aid to Families with Dependent Children Sec. 401 – 417 of the Social Security Act under 42USC§601-§617 (1995).

B. The Temporary Assistance for Needy Families (TANF) program, was created in the 1996 welfare reform law (P.L. 104-193). TANF is $16.5 billion a year block grant to States replaced Aid to Families with Dependent Children (AFDC) and other related welfare programs in Sec. 401 of Title IV-A of the Social Security Act under 42USC§601 *et seq*. TANF provides assistance to needy families so that children may be cared for in their own homes or in the homes of relatives, end the dependence on government benefits by promoting job preparation, work, and marriage; prevent and reduce the incidence of out-of-wedlock pregnancies and encourage the formation and maintenance of two-parent families. TANF funds can be used in any manner a state can reasonably calculate helps it achieve the goals of (1) providing assistance to needy families so that children may be cared for in their own homes or in the homes of relatives; (2) ending the dependence of needy parents on government benefits through work, job preparation, and marriage; (3) preventing and reducing the incidence of out-of-wedlock births; and (4) encouraging the formation and maintenance of two-parent families. Under TANF, the federal government gives states a fixed block grant totaling $16.5 billion each year and requires them to maintain a certain level of *state* spending (totaling $10 billion-11 billion a year), based on a state's level of spending for AFDC and related programs prior to its conversion to TANF in 1996. This state funding requirement is known as the "maintenance of effort" requirement, or MOE.

1. Funding under the TANF program is provided primarily through State Family Assistance Grants. State allocations, totaling $16.5 billion per fiscal year under current law, are based on AFDC spending levels from the mid-1990s. While states must meet certain federal requirements relating to work participation for families receiving assistance, as well as a maintenance-of-effort (MOE) spending requirement based on a historical level of state spending on allowable activities, the law provides states with broad flexibility in the use of TANF funds and in program design. Currently, states use TANF funding on a variety of programs and services that are reasonably calculated to address the program's four broad purposes. Cash assistance has been declining as a proportion of overall spending and represented only 21.4 percent of overall TANF and MOE spending in FY 2018, compared to about three-quarters of spending in FY 1997. Under the program, states also have broad discretion to determine their own eligibility criteria, benefit levels, and the type of services and benefits available to TANF cash assistance recipients. Families with an adult who has received federally funded assistance under TANF for five cumulative years are not eligible for federally funded assistance, subject to limited exceptions.

2. States may transfer up to a total of 30 percent of their TANF grant to either the Child Care and Development Block Grant (CCDBG) program or the Social Services Block Grant (SSBG) program, although no more than 10 percent may be transferred to SSBG. In FY 2018, states transferred $1.5 billion of TANF state grants (nine percent of total federal funds used) to CCDBG and $1.1 billion (seven percent of total federal funds

used) to SSBG. In addition, states can use their federal TANF and MOE funds to directly fund child care, both for families receiving TANF cash assistance and for other low-income families. In FY 2018, an additional nine percent of federal TANF funds – or $1.5 billion – was spent directly on child care. Further, states spent $2.3 billion in MOE funds directly on child care in FY 2018.

3. The TANF Contingency Fund provides a funding reserve of $608 million to assist states that meet certain criteria, related to the state's unemployment rate and Supplemental Nutrition Assistance Program (SNAP) caseload, which are intended to reflect economic distress. States also must meet a higher MOE requirement of 100 percent in order to qualify for contingency funds. Contingency funds can be used for any allowable TANF expenditure and must be spent in the fiscal year in which they were awarded. Approximately 20 states access the Contingency Fund in a given fiscal year. Tribes are eligible to operate their own TANF programs, and those that choose to do so receive their own family assistance grants, which totaled almost $200 million in FY 2019. The number of approved tribal TANF programs has steadily increased since the first three tribal TANF programs started in July 1997. As of December 2019, 75 tribal TANF grantees have been approved and operate tribal TANF programs. The territories of Guam, Puerto Rico, and the U.S. Virgin Islands also operate their own TANF programs. Territories are subject to the same state plan, work, and MOE requirements as the states. A territory's allocation is based on historic funding levels, with a total of $77.9 million made available annually. Because spending has remained relatively the same since 1996, without any consideration for inflation, except for the internal taking of benefits to spend on services the agency is reluctant to inform the public about, there is little effort to account for the details of TANF spending, and is not accounted for in the Congressional Justification of Estimates, although it is explained.

TANF, Budget Detail FY 15 and FY 19
(millions)

Category	FY 15 Federal Funds	FY 15 State and Federal Funds	FY 19 Federal Funds	FY 19 State and Federal Funds
Basic Assistance	4,273	7,937	2,937	6,510
Basic Assistance	4,016	7,656	2,654	6,007
Relative Foster Care	168	282	284	503
Assistance Authorized Solely under Prior Law	674	674	689	689
Foster Care Payments	357	357	360	360

Juvenile Justice Payments	50	50	33	33
Emergency Assistance Authorized Solely under Prior Law	266	266	296	296
Non-Assistance Authorized Solely Under Prior Law	654	654	580	580
Child Welfare or Foster Care Services	410	410	447	447
Juvenile Justice Services	65	65	59	59
Emergency Services Authorized Solely Under Prior Law	179	179	75	75
Work, Education and Training Activities	2,219	2,686	2,801	3,231
Subsidized Employment	156	186	123	151
Education and Training	735	945	1,415	1,634
Additional Work Activities	1,239	1,555	1,263	1,448
Work Supports	421	468	357	407
Early Care and Education	1,306	6,085	1,468	6,344
Child Care (Assistance and Non-Assistance)	1,253	4,096	1,407	3,743
Pre-Kindergarten/ Head Start	52	1,989	61	2,601

Financial Education and Asset Development	2	2	2	3
Refundable Earned Income Tax Credits	167	1,988	343	2,272
Non-EITC Refundable State Credits	0	585	0	490
Non-Recurrent Short Term Benefits	319	884	333	955
Supportive Services	228	425	204	408
Services for Children and Youth	226	579	217	872
Prevention of Out-of-wedlock Pregnancies	129	469	136	239
Fatherhood and Two-Parent Family Formation and Maintenance Programs	88	128	127	164
Child Welfare Services	1,017	1,578	1,155	1,783
Family Support/Preservation/Reunification	545	843	618	884
Adoption Services	13	26	14	31
Additional Child Welfare Services	459	709	523	867
Home Visiting Programs	22	29	94	124

Program Management	2,120	3,194	2,337	3,163
Administrative Costs	1,156	1,954	1,361	1,997
Assessment/Service Provision	760	965	805	938
Systems	204	275	170	227
Other	189	929	19	250
Total Expenditures	13,963	29,296	13,799	28,483
Transferred to CCDF Discretionary	1,251	1,251	1,302	1,302
Transferred to SSBG	1,125	1,125	1,119	1,119
Total Transfers	2,376	2,376	2,421	2,421
Total Funds Used	16,339	31,672	16,220	30,904
Federal Unliquidated Obligations	1,446	1,446	1,383	1,383
Unobligated Balances	2,625	2,625	4,475	4,475

Source: FY 2015 and FY 2019 Federal TANF & State MOE Financial Data

C. Prior to the enactment of TANF, the federal government reimbursed states for a portion of AFDC, the related expenditures for Emergency Assistance (EA), and Job Opportunity and Basic Skills (JOBS). Federal funds paid from 50 to 80 percent of the state AFDC benefit costs, depending on per capita income. In addition, the federal government paid 50 percent of the administrative costs for the programs. States were required to end the AFDC program and begin TANF by July 1, 1997, but many began the new system earlier. The federal block grant for TANF ($16.5 billion per year from 1997 through 2002) is based on each state's peak level of federal expenditures for AFDC and related programs; for most, this was the 1994 level. Federal conditions apply to the federally funded TANF, such as work-participation requirements, five-year time limits, child-support assignment and distribution, and aid to only those unwed minor parents living in an adult-supervised setting. Of the $24.5 billion spent on TANF in 2001, federal funds accounted for 60 percent ($14.8 billion), while state funds made up the remaining 40 percent ($9.8 billion). In FY 19 $28.5 billion were spent on TANF, 48% federal ($13.8 billion) and $14.7 billion state (52%). In four years, total basic assistance

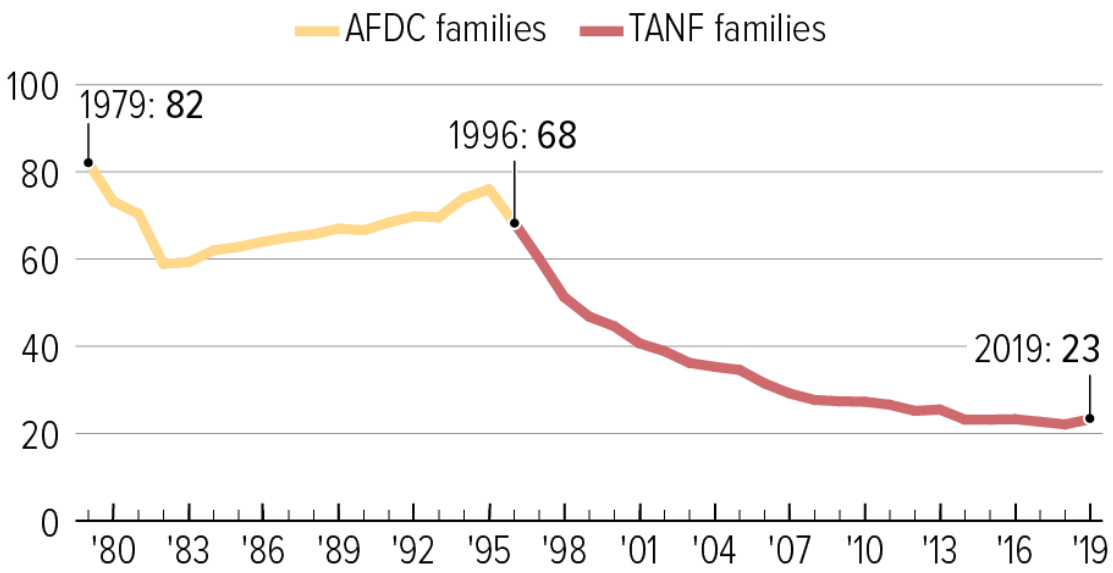
payments declined -18% from $7.9 billion FY 15 to $6.5 billion FY 19, Federal basic assistance payments declined -33% from $4.3 billion FY 15 to $2.9 billion FY 19. State basic assistance payments decreased -2.7% from $3.7 billion FY 15 to $3.6 billion FY 19.

1. In fiscal year (FY) 2003, combined Federal and State expenditures for the Temporary Assistance for Needy Families (TANF) program totaled $26.3 billion, an increase of $926 million from FY 2002. States spent the majority of their grants on various non-cash services designed to promote work, stable families, or other TANF objectives, including work activities ($2.6 billion), child care ($3.5 billion), transportation and work supports ($543 million), administrative and systems costs ($2.5 billion), and a wide range of other benefits and services ($6.3 billion). In addition to these expenditures, States also can transfer up to 30% of their TANF block grant into the Child Care and Development Fund (CCDF) or the Social Services Block Grant (SSBG). In FY 2003, States transferred $1.8 billion into the CCDF and $927 million into the SSBG. These expenditure patterns represent a significant shift since the enactment of TANF, when spending on cash assistance amounted to 73.1% of total expenditures. States spent $10.1 billion, or 41.8% of their total expenditures, on cash assistance, in 2013.

D. TANF's performance is measured on state welfare-to-work efforts, with states assessed based on numerical work participation standards, although welfare programs are usually judged on the basis of administrative efficiency and payment accuracy. Consequentially, TANF benefit spending has declined from 75% in 1994 to 25% of total "TANF" spending in 2017. Basic assistance—what many call "cash welfare"—accounted for only 27.6% of all TANF funding in FY2013. Administrative costs of social security program are normally less than 1% of expenditures. The TANF caseload is much smaller—1.7 million families in FY2013 versus 5.0 million families in FY1994. The number of TANF children declined from 14 million in 1995 to 4 million in 2018. TANF provides a safety net to significantly fewer poor children and families than in the past: In 2014, just 23 families received TANF benefits for every 100 poor families with children, down from 68 families receiving TANF for every 100 poor families in 1996. Even more troubling, 12 states' TANF programs reach only ten families or fewer for every 100 poor families. TANF is often these families' only source of support; without it they would have no cash income to meet basic needs.

TANF's Reach Declined Significantly Over Time

Number of families receiving AFDC/TANF benefits for every 100 families with children in poverty



Note: TANF = Temporary Assistance for Needy Families, AFDC = Aid to Families with Dependent Children

Source: CBPP analysis of poverty data from the Census' Current Population Survey and AFDC/TANF caseload data from Department of Health and Human Services and (since September 2006) caseload data collected by CBPP from state agencies.

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1. Over the last two decades, the national TANF average monthly caseload has fallen by three-quarters — from 4.4 million families in 1996 to 1.1 million families in 2019 — even as poverty and deep poverty remained widespread. In 2019, 4.5 million families with children were in poverty, and 2.1 million were experiencing deep poverty.
In 2019, for every 100 families in poverty, only 23 received cash assistance from TANF, down from 68 families when TANF was enacted in 1996. The trend in the average monthly number of families receiving cash assistance from TANF and its predecessor program (AFDC, ADC) from 1959 through 2013 shows two distinct periods of rapid caseload growth before declining since 1994. The first period of growth occurred from the mid-1960s to the mid-1970s. The second growth spurt followed a period of relative stability in the caseload (around 3.5 million families) and occurred from 1989 to 1994. Following 1994, the caseload declined. It declined rapidly in the late 1990s, with continuing declines, albeit at a slower rate, from 2001 to 2008. The caseload increased again from 2008 through 2010 coincident with the economic slump associated with the 2007-2009 recession. That latest period of caseload increase was far less rapid and much smaller than the two earlier periods of caseload growth. From FY1994 to FY2001, the cash welfare caseload declined rapidly, from 5.0 million families to 2.2 million families

per month, a 56% decline. TANF cash assistance families with an adult reported as working represented 17.3% of the cash assistance caseload in FY2013—more than double the 7.5% share in FY1994. In FY2013, 85.7% of adult recipients were women. In FY2013, 56.6% of all families had a child under the age of six, with 12.0% of all families having an infant. In FY2013, the share of child recipients who were Hispanic was 36.3%, compared with 29.9% who were African American, and 25.8% who were non-Hispanic white. Hispanic children became the largest group of recipient children by FY2013. The total number of TANF beneficiaries has declined dramatically from a high of nearly 14.2 million in 1993 to little less than 5 million in 2003. There were an average of 2,822,110 TANF recipients, 2,078,055 child recipients, and 1,075,504 families, FY 2020. The number of families receiving benefits declined -39% from 1,749,000 in 2013 to 1,075,504 in 2020, a -77% decline from a high of 5,046,000 families in 1994.

TANF Monthly Average Number of Families 1988-2013
(thousands)

	1988	1994	2001	2006	2013
Total Families	3,748	5,046	2,202	1,957	1,749
Family with Adults/Not Employed	3,137	3,799	993	826	781
Family with Adults/Employed	244	379	421	259	302
Child-Only/SSI Parents	60	171	172	177	156
Child-Only/Noncitizen Parent	48	184	126	153	196
Child-Only/Caretaker Relative	189	328	256	262	235
Child-Only/Other	72	185	235	281	7

Source: Falk, Gene. Temporary Assistance for Needy Families (TANF): Size and Characteristics of the Cash Assistance Caseload. Congressional Research Service. January 29, 2016

2. Most states only admit very poor families onto the benefit rolls. The maximum income is below the poverty line in all states. TANF benefits leave family incomes below half of the poverty line in every state. Most states' benefits were below 30 percent of the

poverty line. 12 states' TANF programs reach only ten families or fewer for every 100 poor families. TANF often is these families' only source of support; without it they would have no cash income to meet basic needs . In July 2012, the majority of states (28 states and the District of Columbia) required that a single mother caring for two children earn less than $795 per month to gain entry to the benefit rolls—an earnings level representing about half of 2012 poverty-level income. States often permit families with a working member who obtains a job while on the rolls to remain eligible for TANF at higher earnings levels, though in many states such eligibility is retained for a limited period of time. States also usually require that a family has assets below a specified amount in order to qualify for benefits. In July 2012, 27 states and the District of Columbia required applicant families to have $2,000 or less in assets to gain entry to the benefit rolls. In most states, the value of at least one of the family's cars is not counted toward the state's asset limit.

3. From 1981 to 2012, the inflation-adjusted value of cash assistance benefits for needy families in the median state declined by 44%. Some of this decline occurred before the 1996 welfare law: between 1981 and 1996 the value of cash assistance benefits had already declined by 28%. In 2016 TANF benefits were below half of the federal poverty line in all 50 states. As of 2020 TANF benefits are below two-thirds of the federal poverty line in all 50 states and the District of Columbia and at or below 20 percent of the poverty line in 18 states. In the median state in 2020, a family of three received $492 per month; in 13 states, such a family received less than $300. The monthly TANF benefit level for a family of three in 2020 was less than half of the Fair Market Rent (FMR) for a two bedroom apartment in 32 states, compared to only seven states in 1996. Additionally, less than a quarter of TANF families receive HUD housing assistance to help cover rent. Even when benefits from SNAP (formerly food stamps) are added to TANF family grants, families with no other income remain below the poverty line in every state. TANF maximum benefits vary greatly by state; there is also a very apparent regional pattern to benefit amounts. States in the South tend to have the lowest benefit payments; states in the Northeast have the highest benefits. Cash assistance benefit amounts for needy families are not automatically adjusted for inflation by the states, and have lost considerable value in terms of their purchasing power over time.

E. With the highest rates of child poverty, infant and maternal (increasing) mortality of any industrialized nation, redressing the theft of AFDC benefits since 1996 is the nation's highest priority. In response to dire extremist threats regarding the more than 42 months of total ACF spending between $60 and $70 billion the Biden Harris American Families Plan has proposed leveraged new funding, but this funding is sabotaged by its misdirection to unneeded child-care under the false pretense that child-care is synonymous with the "support" the Administration is constantly being sued for. Record checks reveal that the United States President has felony conviction for child abuse and neglect, in regards to the severe degradation of the AFDC program with Personal Responsibility and Work Opportunities Act of 1996, cutting 10 million benefits and subsequent worker propaganda resulting in a dramatic increase in child poverty and maternal mortality wherefore final approval of the Biden-Harris American Families Plan to falsely claim superfluous child-care is the much demanded "child-support/child benefit" shall not be granted under Sec. 472 of Title IV-E of the Social Security Act

under 42USC§672. The child care subsidy is an inappropriate and unjustified infringement under Art. 18 of the Convention on the Rights of the Child (1990) mocking the failure of HHS to pay legal child support obligations under 18USC§228. The Biden-Harris American Families Plan is sued with a support order to sustain declining Child Support Enforcement and Family Support at a $4.5 billion level with any surplus funds administered as social security benefits to needy families and most of all to restore Title IV Grants to States for Aid and Services to Needy Families with Children and for Child-Welfare Services Part. A Aid to Families with Dependent Children Sec. 401 – 417 of the Social Security Act under 42USC§601-§617 to the condition it was in 1995 and all, every penny, of the mandatory budget request for the American Families Plan should go to increasing the amount and number of individual child AFDC benefits pursuant to Art. 26 of the Convention on the Rights of the Child (1990).

1. ACF must do the math to distribute $15 billion new AFDC benefits FY 22 plus 3% annual inflation to directly relieve child poverty in the United States. The number of benefits must cover an estimated 2.4 million children growing up in deep poverty and should be enough to cover the families of all 12 million children living at or below 100% of the poverty line. With only slightly more than $19 billion, due to the deceptive practice of only about 21% of $16 billion in TANF spending, $4 billion FY 21 actually going to real child welfare benefits, ACF could only afford about $700 a month for all 2.4 million children who would otherwise live in deep poverty, less than 50% of the poverty line. Current benefit levels are significantly lower. The disability insurance program pays about $170 billion to 9 million beneficiaries annually. The existence of a support obligation that was in effect for the time period charged in the indictment or information creates a rebuttable presumption that the obligor has the ability to pay the support obligation for that time period under 18USC§228(b). To guarantee all 10 million or so poor families with children a poverty line income of about $20,000 annually, would cost no less than $100 billion and no more than an estimated $200 billion. Taxing state employees and the rich the full 12.4% OASDI (and AFDC) tax would levy more than $250 billion annually. Whereas it is unlikely that ACF and AFDC would be able to administrate this money, it is proposed that child benefits (without medical disability paperwork requirements for child benefits) would be prioritized for distribution under SSI poverty guidelines by the creation in the Treasury of a Supplemental Security Income (SSI) Trust Fund. There is no excuse for delaying the repeal of Sec. 230 of the Social Security Act under 42USC§430. AFDC funding would remain the same, prioritizing the impoverishing moment of pregnancy, birth and 6 months of exclusive breastfeeding and grow at a 3% annual rate.

§325 Administration for Community Living

A. The Administration for Community Living (ACL), is one of the nation's largest providers of home- and community-based care for older persons and their caregivers. ACL's mission is to maximize the independence, well-being, and health of older adults, people with disabilities across the lifespan, and their families and caregivers. The ACL was created in 2013 by changing the name of the Agency on Aging in 2013. With the appropriate services and supports, most people who are aging or who have disabilities of

all types can live in their own homes or in other community settings—which is overwhelmingly preferred and typically less expensive. ACL remains committed to its central mission of supporting people with disabilities and older adults so they can live independently and fully participate in their communities. The elderly population in particular is growing rapidly. The US population over age 60 is projected to increase by 6 percent between 2018 and 2020 from 72.8 million to 77.1 million. The number of people age 65 and older with severe disabilities – defined as three or more limitations in activities of daily living – is projected to increase from 3.9 million individuals in 2018 to 4.2 million (6 percent increase) by the year 2020. These individuals are at greatest risk of nursing home admission. The number of older adults in the United States ages 65 and older is projected to increase by 58 percent, from 49 million to nearly 78 million, between 2016 and 2035, an average annual rate of 3.1 percent. 3.1 percent is far more than the 1 percent growth in population growth anticipated by normal 1 percent inflation in services. Old Age Survivor Insurance population growth averages 2.4 percent and spending growth averages is usually overestimated at 6 percent and in retrospect is actually 5.5 percent. Nonetheless, it is necessary that services for the disabled are reauthorized to sustain 3 percent inflation through FY 24

1. There are six core services funded by the OAA including: 1. Supportive services, which enable communities to provide rides to medical appointments, and grocery and drug stores. Supportive services provide handyman, chore and personal care services so that older persons can stay in their homes. These services extend to community services such as adult day care and information and assistance as well. 2. Nutrition services, which include more than a meal. Since its creation, the Older Americans Act Nutrition Program has provided nearly 6 billion meals for at-risk older persons. Each day in communities across America, senior citizens come together in senior centers or other group settings to share a meal, as well as comradery and friendship. Nutrition services also provide nutrition education, health screenings, and counseling at senior centers. Homebound seniors are able to remain in their homes largely because of the daily delivery of a hot meal, sometimes by a senior volunteer who is their only visitor. 3. Preventive health services, which educate and enable older persons to make healthy lifestyle choices. Every year, illness and disability that result from chronic disease affects the quality of life for millions of older adults and their caregivers. Many chronic diseases can be prevented through healthy lifestyles, physical activity, appropriate diet and nutrition, smoking cessation, active and meaningful social engagement, and regular screenings. The ultimate goal of the OAA health promotion and disease prevention services is to increase the quality and years of healthy life. 4. The National Family Caregiver Support Program (NFCSP), which was funded for the first time in 2000, is a significant addition to the OAA. It was created to help the millions of people who provide the primary care for spouses, parents, older relatives and friends. The program includes information to caregivers about available services; assistance to caregivers in gaining access to services; individual counseling, organization of support groups and caregiver training to assist caregivers in making decisions and solving problems relating to their caregiving roles; and supplemental services to complement care provided by caregivers. The program also recognizes the needs of grandparents caring for grandchildren and for caregivers of those 18 and under with mental retardation or developmental difficulties

and the diverse needs of Native Americans. 5. Services that protect the rights of vulnerable older persons, which are designed to empower older persons and their family members to detect and prevent elder abuse and consumer fraud as well as to enhance the physical, mental, emotional and financial well-being of America's elderly. These services include, for example, pension counseling programs that help older Americans access their pensions and make informed insurance and health care choices; long-term care ombudsman programs that serve to investigate and resolve complaints made by or for residents of nursing, board and care, and similar adult homes. 6. ACL supports the training of thousands of paid and volunteer long-term care ombudsmen, insurance counselors, and other professionals who assist with reporting waste, fraud, and abuse in nursing homes and other settings; and senior Medicare patrol projects, which operate in 47 states, plus the District of Columbia and Puerto Rico. ACL awards grants to state units on aging, area agencies on aging, and community organizations to train senior volunteers how to educate older Americans to take a more active role in monitoring and understanding their health care.

B. The FY 2021 discretionary request for ACL was $2,108,207,000, or -$114,908,000 below the FY 2020 Enacted level. The total funding shortfall was made up for by P.L. 116–131, enacted March 25, 2020 to amend the Older Americans Act of 1965 P.L. 89-73. A new Workforce Initiative and Opportunity Act was heavily funded through FY 24. The Rehabilitation Act of 1973 as amended through P.L. 114–95, enacted December 10, 2015 and Developmental Disabilities Assistance and Bill of Rights Act of 2000 (DD Act) P.L. 106-402, Sec. 4360(g) of the Omnibus Budget Reconciliation Act of 1990, Sec. 8(b) of the Assistive Technology Act of 2004 P.L. 108-364 need their authorizations of appropriations updated. Public Health Service Act as amended through P.L. 117–8, enacted April 23, 2021 never authorized ACL appropriations and failed to reauthorize National Institutes of Health (NIH) funding beyond FY 20. Mandatory Prevention and Public Health Fund (PPHF) financing terminated FY 20. The elderly won the Presidential elections, however to fulfill their economic duty to finance ACL, Congress must reauthorize the Rehabilitation Act and DD Act funding to sustain 3 percent annual growth through FY 24. ACL is requesting budget authority of $3,008,907,000, an increase of $750,792,000 over the FY 2021 Enacted level of $2,258,115,000. The request also includes $17.1 million in Public Health Services Evaluation funds to partially support three programs authorized by the Public Health Services Act: the Limb Loss Resource Center, the Paralysis Resource Center and the Traumatic Brain Injury program, these are thought to be a mistake whereas this funding should belong to the National Institutes of Health, could only be interpreted as a mandatory grant therefrom, and ACL wants to cease infringing on the toxic public health sector and ultimately liberate human services from the Public Health Department. This budget provides a total of $3,094,836,000 and requests only $2,987,221,000 in federal outlays.

Administration for Community Living FY 19 – FY 24
(thousands)

Program	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Health and Independence for						

Older Adults						
Home & Community Based Supportive Services OAA Sec. 303(a)(1)	384,676	412,029	436,751	462,956	498,733	520,177
Nutrition Services	905,815	970,226	1,028,439	1,090,145	1,155,555	1,224,887
Congregate Nutrition Services (non-add) OAA Sec. 303(b)(1)	494,830	530,016	561,817	595,526	631,258	669,133
Home-Delivered Nutrition Services (non-add) OAA Sec. 303(b)(2)	251,082	268,936	285,072	302,176	320,307	339,525
Nutrition Service Incentive Program (non-add) OAA Sec. 311(e)	159,903	171,274	181,550	192,443	203,990	216,229
Preventive Health Services OAA Sec. 303(d)	24,822	26,587	28,183	28,874	31,666	33,566
Chronic Disease Self-Management Education (PPHF – FY 20)	8,000	8,000	0	0	0	0
Elder Falls Prevention (PPHF – FY 20)	5,000	5,000	0	0	0	0
Native American Nutrition and Supportive Services OAA Sec. 643(1)	34,173	37,103	39,298	41,627	44,093	46,710
Aging Network Support Activities OAA 411(b)(1)	16,400	14,515	15,385	16,309	17,287	18,324
Workforce Innovation and Opportunity OAA Sec. 517(a)	0	428,000	453,680	480,900	509,755	540,340
Subtotal, Health & Independence for	1,378,886	1,901,460	2,001,736	2,120,811	2,257,089	2,384,004

Older Adults; Program Level						
Caregiver & Family Support Services						
Family Caregiver Support Services OAA Sec. 303(e)	180,999	193,869	205,501	217,831	230,901	244,755
Native American Caregiver Support Services OAA Sec. 643(2)	10,046	10,760	11,406	12,090	12,815	13,584
Alzheimer's Disease from PPHF (non-add)	14,700	14, 700	0	0	0	0
Lifespan Respite Care PHS Sec. 2905 (non-add pending reuathorization and transfer to OAA)	4,096	6,110	3,360	4,472	4,606	4,744
Subtotal, Caregiver & Family Support Services; Program Level	205,745	219,329	216,907	229,921	243,716	258,339
Protection of Vulnerable Adults						
Long-Term Care Ombudsman Program OAA Sec. 702(a)	16,868	18,067	19,151	20,300	21,518	22,809
Prevention of Elder Abuse & Neglect OAA Sec. 702(b)	4,768	5,107	5,414	5,738	6,083	6,448
Senior Medicare Patrol Program (HCFAC)	18,000	18,000	18,000	18,000	18,000	18,000
Elder Rights Support Activities OAA Sec. 411(b)(2)	15,819	15,613	16,550	17,543	18,596	19,712
Elder Rights Support Activities OAA Sec. 216(b)(3)	0	1,372	1,454	1,541	1,634	1,732

National Eldercare Locator Service OAA Se. 217(b)(1)	0	2,191	2,312	2,450	2,597	2,753
Subtotal, Protection of Vulnerable Adults; Program Level	55,455	60,350	62,881	65,572	68,428	71,454
Disability Programs, Research & Services DDA Sec. 163(c)						
State Councils on Developmental Disabilities DDA Sec. 129(a)	75,921	78,000	80,340	82,750	85,233	87,790
Developmental Disabilities Protection and Advocacy DDA Sec. 145	40,692	40,784	42,008	43,268	44,566	45,903
University Centers for Excellence in Developmental Disabilities DDA Sec. 156(a)(1)	40,478	41,619	42,868	44,154	45,479	46,843
Projects of National Significance DDA Sec. 163(a)(1)	11,958	12,250	12,618	12,996	13,386	13,788
Independent Living Rehab Act Title VII	154,730	158,010	162,750	167,633	172,661	177,842
Grants to States for Independent Living Rehab Act Sec. 714 (non-add)	26,319	26,877	27,683	28,514	29,369	30,250
Centers for Independent Living Rehab Act Sec. 727 (non-add)	90,083	91,992	94,752	97,594	100,522	103,538
Independent Living Services for Older Individuals Who Are Blind Rehab	38,328	39,141	40,315	41,525	42,770	44,054

Act Sec. 753 (non-add)						
National Institute on Disability, Independent Living and Rehabilitation Research Rehab Act Sec. 201	119,608	122,143	125,807	129,582	133,469	137,473
Subtotal, Disability Programs, Research & Services; Program Level	443,387	452,806	466,391	480,383	494,794	509,639
Consumer Information, Access and Outreach						
Aging and Disability Resource Center OAA Sec. 216(b)(4)	8,091	8,687	9,209	9,761	10,347	10,968
State Health Insurance Assistance Program Omnibus Budget Reconciliation Act Sec. 4360(g) Mandatory	49,115	52,115	52,115	52,115	52,115	52,115
Voting Access for People with Disabilities HAVA Sec. 264	6,956	7,463	7,687	7,918	8,156	8,400
Assistive Technology AT Act Sec. 8(b)	35,955	37,000	38,110	39,253	40,431	41,643
Medicare Improvements for Patients and Providers Act (TRA/BBA/FCA)	37,500	37,500	37,500	37,500	37,500	37,500
Pension Counseling OAA Sec. 216(b)(2)	0	1,988	2,107	2,234	2,368	2,510
Subtotal, Consumer Information, Access	137,617	144,753	146,728	148,781	150,917	153,136

& Outreach; Program Level						
Program Administration OAA Sec. 216(a)	40,921	43,937	46,574	49,368	52,330	55,470
Subtotal; Program Level	2,262,011	2,822,635	2,941,217	3,094,836	3,267,274	3,432,042
Less Funds from Mandatory Sources						
HCFAC Fund for Senior Medicare Patrol Program	-18,000	-18,000	-18,000	-18,000	-18,000	-18,000
Prevention & Public Health Fund	-27,700	-27,700	0	0	0	0
State Health Insurance Assistance Program Omnibus Budget Reconciliation Act Sec. 4360(g) Mandatory	-49,115	-52,115	-52,115	-52,115	-52,115	-52,115
Medicare Improvements for Patients and Providers Act Sec. 119	-37,500	-37,500	-37,500	-37,500	-37,500	-37,500
Total Outlays	2,129,696	2,687,320	2,833,602	2,987,221	3,159,659	3,324,427

Source: Robertson, Lance. Administrator and Assistance Secretary for Aging. Administration for Community Living. FY 21 Congressional Justification of Estimates for Appropriations Committees. Pgs. 13 & 14 the decimal point should be comma to use thousands, rather than millions.

1. A number of changes are made to the ACL budget table. The Holocaust Survivor and Care Corp rows are deleted because they are part of the Aging Network Support Activities. The Alzheimer Disease Program is deleted, except for prior funding from PPHF, whereas, from Direct Appropriation means that it comes from the Caregiver Support Program. The Lifespan Respite Care Program row is not deleted, as initially thought, the program to provide temporary relief for stressed out primary caregivers, has not been reauthorized since 2011, current payments, obviously comes from the Caregiver

Support Program, but should be reauthorized at 3% growth from FY 19, before spike, to increase total funding for caregivers, who are subjected to unfair Social Security disability denials, estimates are now marked (non-add). New rows in the Protection of Vulnerable Adults category is made for new funding for Elder Rights Support Activity and Eldercare Locator Service. The non-add elder justice row is deleted. New funding for Pension counseling is included at the end of the Consumer Information, Access and Outreach. The authorization of appropriations, expired as of FY 20 for Independent Living under the Rehabilitation requires an more in depth study in the budget that must include funding for the blind, whereas the term Commissioner is synonymous with Administrator of ACL, increasing total spending. Any funding for the Limb Resource Center and Paralysis Resource Center funding under Title III of the Public Health Service would be distributed to ACL by means of a mandatory NIH grant, they are not, and these program rows are therefore removed from the ACL budget. Traumatic Brain Injury funding is deleted because it is actually allocated to the Centers for Disease Control and Prevention (CDC) in Traumatic Brain Injury Reauthorization Act of 2014. National Institute on Disability, Independent Living and Rehabilitation Research funding is increased by taking responsibility to eliminate grant program sibling rivalry related violence and discrimination by accounting for 3 percent inflation in all funding provided by amendment of the Sec. 201 of the Rehabilitation Act of 1973. As it is written in Sec. 4360(g) of the Omnibus Budget Reconciliation Act of 1990 the State Health Insurance Assistance Program is funded 50/50 from the Federal Hospital Insurance and Federal Supplemental Medical Insurance Trust Funds and is a mandatory appropriation that must be cancelled, it was reauthorized at a at an indefinite level of $52,115 million from from FY 20. The Assistive Technology Act of 2004 AT Act needs to be re-authorized at total current funding levels in Sec. 8(b) and the alternative financing mechanism rows are deleted whereas the bill just needs to be reauthorized. Medicare Improvements for Patients and Providers Act was reauthorized and is so complicated there is no need to study the amendment of the 50/50 split between the Federal Hospital Insurance and Federal Supplemental Medical Insurance Trust Funds other than as total mandatory appropriation that remains at the same level of $37,500 million for the immediate future.

2. The $2,171,000,000, provided by Division A Title II of the Further Consolidated Appropriations Act of 2020 P.L. 116-94 does not do the Older Americans Act of 1965 (``OAA''), the RAISE Family Caregivers Act, the Supporting Grandparents Raising Grandchildren Act, titles III and XXIX of the PHS Act, sections 1252 and 1253 of the PHS Act, section 119 of the Medicare Improvements for Patients and Providers Act of 2008, title XX-B of the Social Security Act, the Developmental Disabilities Assistance and Bill of Rights Act, parts 2 and 5 of subtitle D of title II of the Help America Vote Act of 2002, the Assistive Technology Act of 1998, titles II and VII (and section 14 with respect to such titles) of the Rehabilitation Act of 1973, and for Department-wide coordination of policy and program activities that assist individuals with disabilities, justice by amending expired authorizations for appropriations, nor formally concluding the inappropriate and lethal (Hillary Clinton claims to have killed both my grandmothers) infringement on the Public Health Services Act, and is not believed to be an accurate estimate of FY 22 appropriations. Having perused the FY 22 HHS Budget-in-brief ACL is sought to support this interpretation, working towards the liberation of human services

from public health, to guide the formulation of the ACL FY 22 Congressional Justification of Estimates for Appropriations Committees.

C. The Lifespan Respite Care Program is a poster child for negligent human services funding by the Public Health Service. The general feeling is that the program of relief is well-written, makes reference to the National Caregiver Support Program of the Administration on Aging (for Community Living) , but must not supplant it, and to make a clean break from the PHS should not be located in Sec. 2901-2905 Public Service Act under 42USC§300ii – §300ii-4. The reasonable, not to supplant 'caregiving', authorization of appropriations, at Sec. 2905 of the PHS under 42USC300ii-4 should be transferred to a new Sec. 303(f) of the Older Americans Act under 42USC§3023(f) in the new reauthorization bill for disability programs. The Lifespan Respite Care definitions in Sec. 2901 of the PHS under 42USC§300ii should be consolidated with the definitions of the National Caregiver Support Program in Sec. 316 of the OAA under 42USC§3030s. Sec. 2902-2904 of the PHS under 42USC§300ii-1 – 300ii-§3 should be transferred to Sec. 374B- 374C of the OAA under 42USC3030s-3 - §3030s-5. To not supplant Caregiving, plans for a Lifespan Respite Care Resource Center should be stricken and replaced with National Caregiving Resource Center under Sec. 374B of the OAA as herein amended under 42USC§3030s-4. Administration on Aging needs to be amended to Administration for Community Living in Sec. 374A(c) of the OAA as herein amended under 42USC§3030s-3(c).

1. To justify the removal of appropriations rows for unauthorized, unethical programs of research using human test subjects under the purvey of the ACL it is necessary to relate the most recent discoveries on the topic of why American lawyer's brains are so small and that same abuse is so disabling and lethal to older Americans. The Alzheimer Disease Program of education regarding the topic does not receive any appropriations from Congress and should not receive any money intended for caregivers. The Limb Resource Center and Paralysis Resource Center are not authorized for appropriations, except by the relevant National Institutes of Health under Title III of the Public Health Service Act. Traumatic Brain Injury funding is deleted because it is actually allocated to the Centers for Disease Control and Prevention (CDC) in Traumatic Brain Injury Reauthorization Act of 2014. It is not appropriate for ACL to falsely claim to patronize these programs they are probably not due research funding for because of the widespread negligence regarding the very serious pattern of abuse of substances and prescription drugs that cause these disorders and deaths. The Limb Resource Center is there to threaten phantom pain if these phantom spending rows are negligently deleted from ACL.

2. To prevent Alzheimer's and other brain injury the Secretary must take care to prohibit abuse with certain prescription drugs under 42USC§242. The primary drug of concern, because the patients are very likely to do the drug of their own volition are statin cholesterol lowering drugs. Statin drugs are effective at masking unwashable cardiotoxic exposure by fabrics that must be thrown away. Statins are not thought to be very effective, if at all, for treating common and persistent MRSA and Streptococcal infection of the heart. The primary problem with statins is that they cause severe brain shrinkage and this damage is acutely dementing, takes time to heal, and is highly infective of

meningitis, so that it is absolutely necessary for statin drug consumers to be immunized with Pneumovax to prevent meningitis. The meningitis turns the severe absent mindedness of statin consumption mean. Statins are highly contraindicated because they cause brain damage, but may reduce the risk of fatal heart attack. Pneumovax is necessary to prevent Streptococcus pyogenes infection of the heart and pneumococcal meningitis of the statin damaged brain. MRSA is sterilized with Epsom salt bath or saline or chlorine swim. To eliminate the sterilized lesions before they are reinfected with MRSA Hawthorn, the supreme herb for the heart, is safe and effective.

3. Pseudo-ephedrine (Sudafed, Sudagest etc.) also shrink the brain. Pseudo-ephedrine brain shrink is not very infective because it is very effective at clearing the sinuses of all sorts of viral and bacterial infections however the cost to the brain is so great pseudo-ephedrine is contraindicated, even for use as speed by truckers. Pseudo-ephedrine is thought to be the primary drug of involuntary exposure abuse in the legal system because it makes judges and civil rights lawyers illiterate and unable to contest the falsest of criminal charges. Because it is the most effective oral treatment for coronavirus pseudo-ephedrine is also believed to be a major reason the coronavirus propaganda is so bad and so uncontested by the news media and government. The US Supreme Court has not published since June 20, 2019. They believed to be unable to cope with incessant computer hacking because of unwitting pseudo-ephedrine and statin exposure, for which they are now Pneumovaxed to prevent meningitis, but it takes a week from one exposure to pseudo-ephedrine to write again. The American legal system is thought to have the highest rate of incarceration in the world due to chronic pseudo-ephedrine abuse by corrupt law enforcement, similar but more chronic and widespread than LSD elections in Europe, and UN Controlled Substance abuse by law enforcement world-wide. Pseudo-ephedrine is derived from Ephedra (Mormon tea) found in the Nevada and Utah vicinity of the Great Basin National Park. Furthermore, in regards to strokes, that cause the vast majority of paralysis, the lucid dreaming drug Galantamine, poses a serious stroke risk, termed sleep paralysis. The general finding is that the primary meaning of dreams is that they are caused by fat in the brain and lucid dreams in particular pose a stroke risk.

4. A recent letter to the editor in the New England Journal of Medicine explained the effetiveness of the COVID-19 vaccine. After a massive vaccination campaign in nursing homes 4% of people who received one dose of the vaccine were reinfected, 1% of vaccinated people were reinfected and 0.1% of unvaccinated people were reinfected. Two courses of the vaccine may cure chronic prevent death and severe infection by COVID-19 but is only about 30% effective at preventing the contagious state of allergic rhinitis from coronavirus. The lavender sanitizer in the restroom at the Memorial Day half-marathon start and finish line cleared the nose instantly, but requires instructions to "wash your nose" if the infected people are ever to learn the lesson: Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis; eucalyptus or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the frontline treatment for both the wet cough of influenza and coronavirus, with a little nose washing. The most effective method for ending the COVID-19 pandemic is probably to place eucalyptus, lavender or peppermint scented soap in public restrooms

with instructions to ‘wash your nose’. Eucalyptus scented humidifiers (diffusers) from the 1950s are the way to sterilize public air-space.

Art. 3 Health Department

§326 Management and Oversight

A. The U.S. Department of Health and Human Services (HHS) Secretary administers and oversees the largest cabinet department in terms of budget, directing an annual budget of over $2.4 trillion that accounts for almost one out of every four federal dollars, and administers more grant dollars than all other federal agencies combined. The HHS Office of the Secretary’s administrative budget is less than 0.04 percent of the total $1.6 trillion HHS budget. The Fiscal Year (FY) 2022 President’s Budget requests a program level of $661 million General Departmental Management, a $110 million increase above FY 2021 enacted. There are a number of smaller offices who assist the Secretary in Departmental Management and Oversight that are added up and studied in this section because they are of little consequence to the budget total. The Public Health and Social Services Emergency Fund (PHSSEF) led by the Assistant Secretary of Preparedness and Response (ASPR) is the most important of these programs, it costs $3.6 billion FY 22, more than all the other Office in this section combined, including the Secretary, and organizes most of the voluntary emergency medical activities, contracts for the national stockpile to provide dangerous ventilators rather than eucalyptus scented humidifiers (diffusers) to intensive care units (ICUs) and oversees the controversial Biomedical Advanced Research and Development Program (BARDA) whose COVID-19 vaccine related felony monopolization is being subjected to the annual sham legal proceeding of being proposed to be a new Advanced Research Projects Agency for Health (ARPA-H) at the National Institutes of Health. For Management and Oversight the FY 22 budget requests a total program level of $5.5 billion and outlays of $5.1 billion for 4,956 full-time employees, to prescribe or not prescribe, hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus.

Department Management and Oversight FY 20 – FY 24
(millions)

	FY 20	FY 21	FY 22	FY 23	FY 24
Office of the Secretary General Department Management	545	551	661	681	701
Medicare Hearings and Appeals	192	192	196	202	208
Office of the	60	62	87	90	93

National Coordinator for Health Information Technology					
Office for Civil Rights P.L	51	66	67	69	71
Office for Civil Rights Outlays	39	39	48	49	51
Office of the Inspector General P.L.	397	412	430	443	456
Office of the Inspector General Outlays	173	179	202	208	214
Public Health and Social Services Emergency Fund	2,737	2,848	3,523	3,629	3,738
Agency for Healthcare Research and Quality P.L.	444	436	489	504	519
Agency for Healthcare Research and Quality, Outlays	338	338	380	391	403
Department Management and Oversight P.L.	4,426	4,567	5,453	5,618	5,786
Department Management and Oversight, Outlays	4,084	4,209	5,097	5,250	5,408

AHRQ FTEs	251	271	277	280	283
General Management FTEs	912	982	1,104	1,115	1,126
Medicare Hearings and Appeals FTEs	67	102	132	133	135
Office of the National Coordinator for Health Information Technology FTEs	157	177	177	179	184
Office for Civil Rights FTEs	142	190	229	231	233
Office of the Inspector General FTEs	1,654	1,623	1,649	1,666	1,682
Public Health and Social Services Emergency Fund FTEs	948	1,152	1,388	1,402	1,430
Total Department Management and Oversight FTE	4,131	4,497	4,956	5,006	5,073

Source: HHS Budget-in-brief FY 22

1. The Office of the Assistant Secretary for Health (OASH), which makes up almost half of the General Departmental Management budget, serves as the senior advisor to the Secretary for public health, science, and medicine, and coordinates public health policy and programs across the HHS Operating and Staff Divisions. Additionally, the Assistant Secretary for Health (ASH) oversees the Office of the Surgeon General and the U.S. Public Health Service Commissioned Corps (Corps), its newly established Ready Reserve and 11 core offices including the Office of Minority Health (OMH) and the Office on Women's Health (OWH). The budget includes $306 million to support each of

the 11 Staff Divisions and the remainder of activities supported by General Departmental Management in the Office of the Secretary. The Surgeon General provides Americans with the best scientific information available on how to improve their health and reduce the risk of illness and injury. The Surgeon General manages the daily operations of the U.S. Public Health Service Commissioned Corps ("Corps"), which consists of approximately 6,400 uniformed public health professionals. There has been a dramatic increase in the number of officers deployed and days of deployment in 2020 as the result of the COVID-19 pandemic. The budget includes new funding of $27 million in the Public Health and Social Services Emergency Fund to maintain and continue to operationalize COVID-19- related investments [sic].

2. The budget includes $101 million to support community efforts to reduce teen pregnancy to be implemented by the Office of Population Affairs. The budget includes $56 million for the Minority HIV/AIDS Fund (MHAF). The *Ready, Set, PrEP* program, a nationwide program to provide free pre-exposure prophylaxis (PrEP) medications to people who do not have insurance that covers prescription drugs. The budget includes new funding of $27 million in the Public Health and Social Services Emergency Fund to maintain and continue to operationalize COVID-19- related investments. The budget includes $40 million in new funding to allow the Office of the Secretary to ensure implementation of over 30 new Executive Orders, including those on Health and Racial Equity. The budget includes $5 million for the Kidney Innovation Accelerator to catalyze innovation in the prevention, diagnosis, and treatment of kidney disease; $8 million to stand-up a Department-wide Electric Vehicle Fleet program; $6 million to create a Grants Quality Management Service Office. The Office of Climate Change and Health Equity and respond to President Biden's Executive Order on Health Equity with $6 million in evaluation funding.

B. The FY 2022 President's Budget requests $172 million for the Office of Medicare Hearing and Appeals (OMHA), the same as the FY 2021 operating level. Medicare Hearings and Appeals is an account created by Congress in FY 2020 to consolidate the costs of the adjudicative expenses associated with appeals of Medicare claims brought by beneficiaries and health care providers. The appeals process is overseen by administrative law and appeals judges at the Office of Medicare Hearings and Appeals (OMHA) and the Departmental Appeals Board (DAB), respectively. There has been an appeals backlog since FY 11. OMHA reduced the backlog of cases by 85 percent to approximately 131,961 appeals (from a high of nearly 900,000 in FY 2015). DAB continues to build capacity as their caseload has remained over 18,000 since the end of FY 2020. DAB's caseload still represents a reduction in the backlog from a high of nearly 31,000 in FY 2017. 3% growth is needed to compete with inflation and continue to make headway with the backlog. The DAB Medicare Appeals Council provides a final administrative review of claims for entitlement to Medicare. The FY 2022 President's Budget requests $24 million for DAB, $4 million above the projected FY 2021 operating level, which is subject to change.

1. The Office of the National Coordinator for Health Information Technology (ONC) leads health information technology (IT) efforts and is a resource to the entire health system to advance adoption of health IT and promote nationwide health information

exchange to improve health care all around. The Fiscal Year (FY) 2022 Budget requests $87 million for ONC, an increase of $25 million in program level. ONC oversees the federal Health IT Advisory Committee, which was first established in 2018 as required by the 21st Century Cures Act. ONC coordinated standards awareness and use through the publication of Interoperability Standards Advisory. Apple's Health App allows patients to access their health information from dozens of health care organizations with their iPhone. The U.S. Department of Health and Human Services (HHS), Office for Civil Rights (OCR) ensures: Individuals receiving services from HHS- conducted or HHS-funded programs are not subject to discrimination; and People can trust the privacy, security, and availability of their health information. In FY 2022, OCR will engage in rulemaking to further strengthen individuals' rights to access their own health information. The Fiscal Year (FY) 2022 President's Budget requests $48 million for OCR. OCR will use $19 million in civil monetary settlement funds to support Health Insurance Portability and Accountability Act (HIPAA) enforcement activities. The FY 2022 funding request will empower OCR to bolster its enforcement; policy; and education and outreach, in all non-discrimination areas that include race, color, national origin, disability, sex, age, and religion.

2. The U.S. Department of Health and Human Services (HHS), Office of Inspector General (OIG) is the largest inspector general's office in the federal government, with approximately 1,600 employees dedicated to combating fraud, waste, and abuse, and improving the efficiency and effectiveness of HHS programs. The Fiscal Year (FY) 2022 President's Budget requests $430 million for OIG, a $18 million increase above FY 2021. The 21st Century Cures Act (Cures Act), 2016 P.L. 114-255, Section 4004, authorizes OIG to execute investigative and enforcement authorities related to a detrimental practice known as information blocking. Information blocking is a practice that inappropriately impedes the flow or use of electronic health information (EHI). The FY 2022 budget for OIG includes $323 million for Medicare and Medicaid oversight, approximately a $2 million decrease from FY 2021. With a $2.4 trillion portfolio to oversee, OIG sets priority outcomes to achieve the greatest impact across HHS's diverse programs. Priorities are minimize risk to beneficiaries by protecting beneficiaries from prescription drug abuse, including opioids, ensure health and safety for children served by HHS grants, safeguard programs from improper payments and fraud, promote patient safety and accuracy of payments in home and community setting and strengthen Medicaid protections against fraud and abuse.

C. The Public Health and Social Services Emergency Fund (PHSSEF), within the Office of the Secretary, directly supports efforts across the government to safeguard the public and improve the nation's ability to prepare for, and respond to, natural and man-made disasters and other public health threats to the American people. The Fiscal Year (FY) 2022 President's Budget includes $3.5 billion for the PHSSEF, an increase of $676 million above FY 2021 enacted, to prepare for future public health emergencies and build upon investments made in response to the COVID-19 pandemic. 7. Over 42,000 member organizations, including over 5,000 acute care hospitals, participate in 326 health care coalitions nationwide. The Assistant Secretary of Preparedness and Response has nearly achieved the goal of onboarding and training 6,720 intermittent employees. The FY 2022

budget provides an additional $28 million, to a total of $92 million. The increase will support the salary and training costs of an estimated 1,300 new intermittent employees, which includes those onboarded during the COVID-19 response. The civilian Medical Reserve Corps is a national network of locally organized groups of approximately 200,000 volunteers organized into more than 750 local community-based units. Since the declaration of the COVID- 19 emergency, more than two-thirds of units have engaged in local response efforts and over 300 units have supported COVID-19 vaccination campaigns. The budget provides $6 million for the Medical Reserve Corps.

1. The Assistant Secretary for Preparedness and Response has served a critical role in the COVID-19 response, deploying inappropriate personal protective equipment, masks, ventilators, and medical supplies from the Strategic National Stockpile to states, cities, and territories across the country and supporting the Biomedical Advanced Research and Development Authority (BARDA). The Strategic National Stockpile is a national repository of critical medical supplies, pharmaceuticals, and Federal Medical Stations that is available to supplement state and local resources during public health emergencies. The Strategic National Stockpile COVID-19 response has more than 180 private industry partners engaged for medical supply chain and delivery, more than 4,425 trucks transporting supplies, more than 655 transport flights, more than 16,830 tons of cargo shipped to support US repatriation efforts and states and more than 200 staff to serve the stockpile's operation center.

2. BARDA has supported the advanced development, manufacturing, and distribution of a total of 81 COVID-19 vaccines, therapeutics, and diagnostics. Under Project BioShield, BARDA procures and supports the late-stage development of medical products that are sufficiently mature for use during a public health emergency and ready to be delivered to the Strategic National Stockpile. Since 2004, Project BioShield has invested in 28 unique products, delivered 18 products to the stockpile, and supported FDA approval for 18 products. These products include therapeutics and vaccines for anthrax, smallpox, botulism, chemical and thermal burns, nerve-agent induced seizures, and radiation exposure. The budget provides $770 million for Project BioShield to support late-stage development and procurement of the highest priority countermeasures for potential inclusion in the stockpile, including: New antimicrobial drugs to treat drug-resistant pathogens; Products to treat thermal burn injuries; Therapies for acute radiation exposure; Treatments for chemical agent exposure; and a new therapeutic for treating Marburg virus. The budget provides $335 million, an increase of $48 million above FY 2021 enacted, for pandemic influenza preparedness activities carried out by ASPR and the Office of Global Affairs (OGA). ASPR will continue to support priorities in the 2019 Executive Order, “Modernizing Influenza Vaccines in the United States to Promote National Security and Public Health,” and apply lessons learned from the COVID-19 response to improve pandemic influenza response capabilities.

3. The COVID-19 pandemic response has demonstrated the importance of therapeutics that can prevent progression to severe disease and treat severely ill individuals. The ASPR consults with over 200 health ministers worldwide. Although BARDA deserves to be commended for producing new medicines and vaccines, the millions of lives lost to

the COVID-19 pandemic response, waiting for the development of a vaccine, that is not completely effective at eliminating the contagion, has demonstrated the importance of knowing and informing the public about the curative therapeutics, prescription and over-the-counter drugs and herbal remedies, that can prevent progression to severe disease and treat severely ill individuals, that are already readily available on the market, with a minimum of side-effects or identity theft. The lesson that must be learned by HHS, is that to end the COVID-19 pandemic, and greatly improve the response to future SARS and influenza pandemics in the future is: Hydrocortisone, eucalyptus, lavender or peppermint cure coronavirus. Eucalyptus or lavender also cure influenza. Mentholyptus cough drops are the frontline treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective method is to stock public restrooms with eucalyptus, lavender or peppermint scented soap with instructions to "wash you nose". Eucalyptus scented humidifiers, last used in the 1950s, should also be distributed to sterilize hospital waiting rooms, intensive care units (ICUs), and public airspaces.

D. The Agency for Healthcare Research and Quality (AHRQ) improves the quality and safety of care through health services research, data collection and analysis, and dissemination to patients, providers, and the health community. The Fiscal Year (FY) 2022 budget requests $489 million for AHRQ. This includes $353 million in budget authority, $27 million in PHS evaluation funds, and $109 million in mandatory transfers from the Patient Centered Outcomes Research Trust Fund. The principal goal of health "services" research is to identify the most effective ways to organize, manage, finance, and deliver health "care" that is high quality, safe, equitable, and high value, evidently without mentioning curative "medicine". The budget provides $61 million for investigator-initiated research, of which $24 million will support new investigator-initiated research grants, including research to understand the effects of health system innovations responding to the COVID-19 pandemic and investments in supporting health systems in the delivery of equitable health care. AHRQ supports data and measurements activities through several flagship projects to monitor and improve the quality of care. The Health Care Cost and Utilization Project is the nation's most comprehensive database of software tools and products developed through a federal-state-industry partnership and includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988.

1. There are over a million health care associated infections that occur across the U.S. health care system every year, leading to the loss of tens of thousands of lives and adding billions of dollars to health care costs. Hospital-acquired conditions have relatively high mortality risk and include central line-associated blood stream infections, ventilator-associated pneumonia, and post-operative venous thromboembolism. In FY 2022, the program will continue its focus on Health Care-Associated Infections, its support of Patient Safety Organizations, and its work to prevent diagnostic errors. More than 700 American women die each year as a result of pregnancy and childbirth and over 50,000 experience severe complications. AHRQ's Medical Expenditure Panel Survey (MEPS) is the only national source for comprehensive annual data on how Americans use and pay for medical care. AHRQ will utilizing initiative funding to further expand the Medical

Expenditure Panel Survey to include an additional 1,000 households with women of childbearing age (2,300 persons) each year. AHRQ provides administrative support for the U.S. Preventive Services Task Force (USPTF), an independent, non-governmental, volunteer panel of national experts in prevention and evidence-based medicine whose mission is to improve the health of all Americans by making evidence-based recommendations. released a statement on screening for lung cancer and recommended annual screening for individuals between the ages of 50 and 80 and who are at high risk of lung cancer because of their smoking history.

Public Health Service, Outlays and Program Level FY 17 - FY 24
(millions)

	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Health Department								
Food and Drug Administration	2,811	2,675	3,249	3,266	3,311	3,635	3,749	3,778
FDA P.L.	4,754	5,143	5,727	5,941	6,050	6,528	6,694	6,879
Health Resources and Services Administration	6,003	5,975	6,835	7,047	7,218	7,834	8,069	8,311
HRSA P.L.	10,338	10,605	11,697	11,885	12,056	12,553	12,788	13,030
Indian Health Service	5,039	5,011	5,804	6,047	6,236	8,471	8,724	8,985
IHS P.L.	6,388	6,363	7,156	7,291	7,480	9,756	10,198	10,498

Centers for Disease Control and Prevention	6,368	5,732	6,543	6,916	7,040	8,536 / 7,458	7,809	7,991
CDC P.L.	12,099	11,415	12,094	12,892	13,968	15,412 / 14,334	14,655	15,043
National Institutes of Health	33,188	33,020	38,557	40,073	41,282	50,315 / 43,815	45,224	46,584
NIH P.L.	34,229	34,067	39,933	41,685	42,936	51,953 / 45,453	46,916	48,322
Substance Abuse Mental Health Services Administration	4,111	4,091	5,588	5,737	5,870	9,587	9,879	10,180
SAMHSA P.L.	4,258	4,237	5,735	5,884	6,017	9,734	10,027	10,328
Department Management	3,430	3,051	3,128	4,084	4,209	5,097	5,250	5,408
Department Management, P.L.	3,574	6,699	3,474	4,426	4,567	5,453	5,618	5,786

Public Health Service Federal Outlays	60,950	59,555	69,704	73,170	75,166	93,475 / 85,897	88,704	91,237
PHS Program Level	75,640	78,529	85,816	90,004	93,074	111,389 / 103,811	106,896	109,886

Source: HHS Budget-in-Brief FY 19 & FY 22

E. It is important to remove the health insurance and human services to heighten scrutiny of the corruption of the Public Health Service. The total budget request for federal outlays for public health is $85.9 billion FY 22, -8.8% less than the Secretary's request of $93.5 billion FY 22, due to the termination of CDC and NIH fluctuations, stabilized with terminations of the programs that do not enjoy informed consent for the purposes of the Nuremberg Code. $85.9 billion FY 22 is $10.7 billion, 14.2% more than $75.2 billion the previous FY 21. The increase is 56% due to a controversial $3.7 billion, 63% increase in SAMHSA spending, and much needed $2.3 billion increase for IHS, a 37% increase from the previous year. To respond to the opioid and stimulant overdose epidemic it important that other, unprofessional “opioid propaganda for the masses” be eliminated from HHS and future SAMHSA spending be limited to 3% annual growth from their actual FY 22 spending level that must be poised to pass every number of beast and “psychiatric” drug abuse warning challenge. The remaining 6% of the increase will have to be attributed to COVID-19 pandemic response to influenza vaccine style propagana, better treat one's nose with hydrocortisone, eucalyptus, lavender or peppermint to help water cure coronavirus and take a mentholyptus cough drop to cure the unmonopolized wet cough of influenza, late than never, and the new Democratic President's seizure of civilian power via the intoxicated judge and false compensating method of child non-support of bioterrorism, isolated to an un-infringed Public Health Service. After this initial bid for loyalty from 6% growth, 3% growth is the rule.

1. The NIH has not consented to the proposed Advanced Research Projects Agency for Health (ARPA-H) that must be rejected like all the accounting frauds subjected to this sham legal proceeding by an agency that does not produce a normal Justification of Estimates for Appropriations Committees, that could precisely differentiate between HHS and Labor Department spending in the NIH budget. PHSSEF estimate could not be redressed by the fraudulent addition of HHS Budget by Operating Division Table. FY 21 PHSSEF has been granted authority to spend $212 billion out of this federal account, and as of June 38.7% ($82B) of the total $212B has been obligated.. They carried over a balance of $92 billion from FY 21 and were given $120 billion in new appropriations, and have authority to use $511million of other budgetary resources. The PHSSEF Biomedical Advanced Research and Development Program (BARDA) whose COVID-19 vaccine development and marketing related anti-trust excluding the prescription for

curative hydrocortisone, eucalyptus, lavender or peppermint under 15USC§1, is being infringed on by the emphasis the ARPA-H proposal puts on felonious market domination under §2. COVID-19 vaccines, millions of people die waiting for one curative treatment that takes two doses to effect, are simply not as good at helping water cure coronavirus as the hydrocortisone, eucalyptus, lavender or peppermint at the corner store who require equal advertising and emergency provision under 15USC§13a.

2. The PHSSEF is fined up to $100 million to provide hydrocortisone, eucalyptus, lavender or peppermint products to cure both COVID-19 and influenza with the Strategic National Stockpile under 15USC§1. The treatment for "Pinocchio nose" allergic rhinitis is hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus. The eucalyptus in mentholyptus cough drops cures both influenza and coronavirus, with a little nose washing. Eucalyptus, lavender or peppermint soap in public restrooms is the most likely method to end the COVID-19 pandemic. Washing the face and nose with these medicated soaps instantly cures mild cases, so does swimming. Reinfection however re-occurs, even with vaccinated people, at the first environmental or interpersonal exposure to the contagion. The key to ending the COVID-19 pandemic is to instruct everyone to wash their nose with with water and hydrocortisone, eucalyptus, lavender or peppermint to help cure allergic rhinitis and clean, with Lysol if help is needed, until there is sufficient rain to cleanse the earth under 21CFR§330.10 and 42USC§300u. Most expensively, instead of so many pneumonia risky ventilators PHSSEF should be providing Intensive Care Units (ICUs), waiting rooms, schools, and other institutions with eucalyptus scented humidifiers, not used by grandmothers since the Marcus Welby era of medicine in the 1950s, to sterilize the public airspace of both influenza and coronavirus.

3. The CDC pandemic response has been [sic] and felonious monopolization by public health does not do their deprivation of rights justice. A drug abuse warning regarding pseudo-ephedrine and statin brain shrink needs to put out by the Secretary under 42USC§242. Health sector "two bag meth" abuse in furtherance of the Office of National Drug Control Policy (ONDCP) grant funding for CDC to steal marijuana and push methamphetamine began FY 19. The US Supreme Court has been illiterate since June 20, 2019, before the COVID-19 pandemic began in December. Pseudo-ephedrine is probably the most highly effective oral medication at curing viral and bacterial sinusitis, but the insomnia and most of all brain shrink side-effect is too debilitating, [sic] and life-threatening to Alzheimer's patients to allow. The Department of Justice (DOJ) and CDC must be charged with the harbor and concealment of ONDCP bio-terrorists, specifically the FBI / DEA who want to be abolished, under 18USC§2339 and §175 by the Secretaries of Health and Human Services under 42USC§242 and Defense under §175a without deviating from usual commanding officer non-judicial punishment reporting of laid off law enforcement under 24USC§419 and all ONDCP financing prohibited under 18USC§2339C(a)(1)(B). CDC must advocate for the repeal of Office of National Drug Control Policy (ONDCP) statute under 21USC§1701 *et seq*. and amendment of federal torture statute to comply with Arts. 2, 4 and 14 of the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (1987) by repealing the

phrase “outside the United States” from 18USC§2340A(a)(tampered in 2009). CDC is not the person to advocate for compensation under Art. 14 to amend the extremely confused exclusive remedies of a non-self compensating Congress. CDC must stop using fighting words pursuant to *New York Times v. Sullivan* 376 U.S. 254 (1964) and prohibit propaganda under Art. 20 of the Covenant on Civil and Political Rights (1978). To reduce voluntary use and involuntary opioid and other psychotropic substance abuse and the general infringement of undereducated law enforcement officers on corruptible health practitioners, who don't have a Bachelor degree in liberal arts, CDC and public health departments shall encourage health practitioners to boycott DEA Registration they have no legitimate use for under 21CFR§1300.11.

§327 Food and Drug Administration

A. Beginning as the Division of Chemistry and then (after July 1901) the Bureau of Chemistry, the modern era of the FDA dates to 1906 with the passage of the Federal Food and Drugs Act; this added regulatory functions to the agency's scientific mission. The Bureau of Chemistry's name changed to the Food, Drug, and Insecticide Administration in July 1927, when the non-regulatory research functions of the bureau were transferred elsewhere in the department. In July 1930 the name was shortened to the present version. FDA remained under the Department of Agriculture until June 1940, when the agency was moved to the new Federal Security Agency. In April 1953 the agency again was transferred, to the Department of Health, Education, and Welfare (HEW). Fifteen years later FDA became part of the Public Health Service within HEW, and in May 1980 the education function was removed from HEW to create the Department of Health and Human Services, FDA's current home. The agency grew from a single chemist in the U.S. Department of Agriculture in 1862 to a staff of more than 18,100 employees and a budget of $6 billion in 2021. The Food and Drug Administration (FDA) advances public health by protecting the nation’s food supply and ensuring safe and effective drugs are available in the United States. FDA is responsible for oversight of more than $2.6 trillion in food, medicines, devices, and other consumer products accounting for 20 percent of every dollar spent by U.S. consumers.

1. The FDA has dedicated $500 million from Congress towards, the felonious monopolization of public information regarding novel COVID-19 vaccines and new therapeutics to enable development to unjustifiably usurp the 21st Century Cures Act precision medicine research discovery that hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus and eucalyptus or lavender cure influenza. The Coronavirus Treatment Acceleration Program is designed to help bring new COVID-19 therapies to market as soon as possible. The program uses every available method to move new treatments to patients as quickly as possible, while at the same time evaluating whether they are helpful or harmful. Currently, there are more than 600 COVID-19 drug development programs in the planning stages, with more than 400 trials that have been reviewed by the FDA, and 10 treatments authorized for use during the COVID-19 pandemic through Emergency Use Authorizations. The FDA must be sued to release their list of approved COVID-19 treatments under the Freedom of Information Act, informed that they will be publicly fined up to $100 million under 15USC§2 if they fail

to authorize the COVID-19 polygraph under 21CFR§330.10 for the edification of the Secretary under 42USC§300u: Hydrocortisone, eucalyptus, lavender or peppermint help water cure allergic rhinitis from coronavirus. Eucalyptus or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus, lavender or peppermint soap in public restrooms, with instruction to "wash your face and nose". Lysol is approved for environmental cleaning. Intensive care units (ICUs), waiting rooms and public airspaces of all sorts may be sterilized of both influenza and coronavirus with eucalyptus scented humidifiers (diffusers).

B. The Fiscal Year (FY) 2022 President's Budget requests $6.5 billion program level for FDA, an increase of $477 million above FY 2021 enacted. This total includes $3.6 billion in budget authority and $2.9 billion in user fees. The plan is to increase Center for Tobacco Products and National Center for Toxicological Research program levels after 48 months more than 42 months $600-$700 and $60-$70 million allowed respectively (Revelation 13:10). At regular 3% growth the total FDA program level will take 48 months to achieve $7 billion FY 25, this is too long. The FDA is too vulnerable to poison, to fail to capitalize on the doomsday prophecy to express their faith in an extra $121 million FY 24 spending. According to this most economically depressing and poisonous of all health theologies the FDA must immediately redress the product adulteration of the Center for Tobacco Products (CTP) with $18 million and National Center for Toxicology Research $3 million additional program level FY 21. CTP may budget for $18 million FY 21 for compensation for personal suits for injury by consumers and vendors whose tobacco products were adulterated. Quitting tobacco spending is put on hold. The National Center for Toxicology Research is encouraged to investigate brain damage caused by pseudo-ephedrine and statin drugs and stroke risk posed by the lucid dreaming drug Galantamine indicated to cause "sleep paralysis" in young recreational consumers. The investigation on statin drug induced brain damage must take into consideration the high risk of antibiotic resistant pneumococcal meningitis infection from taking statin drugs without Pneumovax because the brain doesn't heal fast enough and require unwise statin consumers receive Pneumovax. A meaningful drug abuse warning must be put out, especially on pseudo-ephedrine, and also statin drugs and Galantamine for the Secretary to help the Court regain their capacity to publish under 42USC§242.

Food and Drug Administration FY 17 - FY 24
(millions)

Budget Authority	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Foods	1,041	1,033	1,078	1,098	1,110	1,194	1,230	1,267
Human Drugs	1,330	1,611	1,882	1,973	1,997	2,121	2,185	2,250
Biologic	339	358	402	419	437	458	472	486

s								
Animal Drugs and Food	195	187	225	239	245	286	295	303
Medical Devices and Radiological Health	448	505	577	600	628	677	700	718
National Center for Toxicological Research	63	63	67	67	67	77	79	82
Tobacco Products	596	600	667	680	682	781	804	829
FDA Headquarters	281	314	310	302	318	344	354	365
FDA White Oak Operations	47	46	51	54	53	56	57	59
GSA Rental Payments	232	238	239	241	236	236	236	237
Other Rent Related	117	123	124	133	136	155	155	155
Subtotal Salaries and Expense	4,689	5,078	5,622	5,806	5,909	6,385	6,567	6,751
Export Certification	5	5	5	5	5	9	9	9

Fund								
Color Certification Fund	10	10	10	10	11	11	11	11
Rare Pediatric Priority Review Vouchers	8	8	8	13	13	13	13	13
Building and Facilities	12	12	12	32	13	31	14	14
21st Century Cures Act	20	20	70	75	70	50	50	50
Emerging Health Threats	10	10	0	0	0	0	0	0
Over-the Counter monograph	0	0	0	0	28	29	30	31
Seafood Safety Studies	0	0	0	0	1	0	0	0
Total Program Level	4,754	5,143	5,727	5,941	6,050	6,528	6,694	6,879
Additional Opioids Allocation	0	0	10	10	0	0	0	0
Revised Total Program	4,754	5,143	5,737	5,941	6,050	6,528	6,694	6,879

Level								
Total User Fees								
Prescription Drug	755	911	1,010	1,075	1,107	1,142	1,176	1,212
Medical Device	126	193	205	220	236	241	246	251
Generic Drug	323	494	502	513	520	528	536	544
Biosimilars	22	40	39	42	43	43	44	45
Animal Drug	24	18	30	31	33	34	35	36
Animal Generic Drugs	0	0	18	20	23	23	24	24
Family Smoking Prevention and Tobacco Control Act	635	754	625	712	712	712	812	812
Food Re-inspection	6	6	6	7	7	7	8	8
Food Recall	1	1	1	1	1	1	1	1
Mammography Quality Standards Act	21	21	21	18	19	19	20	20
Export Certification Fund	5	5	5	5	5	5	5	5

Color Certification Fund	10	10	10	10	11	11	11	11
Rare Pediatric Priority Review Vouchers	8	8	8	13	13	13	14	14
Voluntary Qualified Import Program	5	5	5	5	6	6	6	7
Third Party Auditor Program	1	1	1	1	1	1	1	1
Outsourcing Facility	1	1	2	2	2	2	2	2
Subtotal, Current Law User Fees	-1,943	-2,468	-2,488	-2,675	-2,739	-2,789	-2,841	-2,893
Proposed Law User Fees								
Export Certification	0	0	0	0	0	4	4	4
Increase to the Tobacco User Fee	0	0	0	0	0	100	100	100
Subtotal	0	0	0	0	0	-104	-104	-104

, Proposed Law User Fees								
Less Total, User Fees	-1,943	-2,468	-2,488	-2,675	-2,739	-2,893	-2,945	-3,101
Revised Total Program Level	4,754	5,143	5,737	5,941	6,050	6,528	6,292	6,464
Total Federal Outlays	2,811	2,675	3,249	3,266	3,311	3,635	3,749	3,778
FTEs			17,603	17,677	18,187	18,662	18,849	19,037

Source: Ostroph, Stephen M.; Hahn, Stephen. FY 2021 Justification of Estimates for Appropriations Committees. Department of Health and Human Services. FY 17 & FY 21. HHS Budget-in-Brief FY 19, 21 & 22.

C. FDA strategically manages infrastructure and facilities, including 56 laboratories located across the continental United States and Puerto Rico. Each year, about 48 million people in the United States get sick, 128,000 are hospitalized, and 3,000 die from food-borne diseases. FDA is transforming the nation's food safety system by shifting the focus from response to prevention. The FY 2022 budget includes $1.6 billion, an 8% increase of $134 million above FY 2021 enacted, to ensure the safety of human and animal food supply. Of the total, $1.6 billion is budget authority and $17 million is user fees, a 40% decrease from $28 million FY 2021. FDA is committed to protecting the public health and improving regulatory pathways for the lawful marketing of cannabis and cannabis-derived products within the agency's jurisdiction. The Budget provides $5 million to support FDA regulatory activities for cannabis and cannabis derivatives. Since the enactment of the Food Safety Modernization Act, FDA has made great strides in transforming the nation's food safety system by focusing on preventing foodborne illness. There is an initiative to reduce per- and polyfluoroalkyl substances (PFAS) in foods. In 2020, FDA released the New Era of Smarter Food Safety Blueprint, which outlines steps FDA will take over the next decade. The blueprint is centered around four core elements: (1) Tech-enabled Traceability; (2) Smarter Tools and Approaches for Prevention and Outbreak Response; (3) New Business Models and Retail Modernization; and (4) Food Safety Culture.

1. In April 2021, FDA announced a comprehensive plan to continue the agency's work and further reduce levels of toxic elements, such as lead, cadmium, mercury, and arsenic in foods for babies and young children. The "Closer to Zero: Action Plan for Baby

Foods" identifies actions the agency will take to reduce exposure to toxic elements in foods eaten by babies and young children and provide action levels for industry to decrease these elements over time. To not misunderstand their sale of defective baby food products, FDA needs to advocate for 6 months exclusive breastfeeding pursuant to *Essential Nutrition Actions: Mainstreaming Nutrition Through the Life-Course* (2019) that accidentally excludes calcium supplementation to prevent osteoporosis, especially for older women, but is quite good for pregnancy and other age groups. Exclusive breastfeeding - defined as the practice of only giving an infant breast milk for the first 6 months of life – has the single largest potential impact on child mortality of any preventive intervention. Together with appropriate complementary feeding, breastfeeding has the potential to reduce mortality among children under 5 years of age by 19%. Exclusive breastfeeding reduces the risk of gastrointestinal infection and of all-cause mortality, and protects infants from respiratory infections. Exclusive breastfeeding also has a protective effect against obesity later in life. Key recommendations are to improve maternity protection through the workplace (e.g. 6 months of mandatory paid maternity leave and polices to encourage women to breastfeed in the workplace), to empower women to exclusively breastfeed.

2. More than 130 people a day die from opioid-related drug overdoses across the country. In FY 2014, FDA approved a new form of naloxone – a drug that rapidly reverses the effects of an opioid overdose – with an auto-injector to enable a caregiver to administer the drug. Using expedited approval processes, FDA approved both an auto-injector in FY 2014 and an intranasal formulation in November 2015, both designed for use by lay bystanders, as well as first responders. Naltrexone is a generic oral opiate agonist. On April 1, 2015, FDA issued final guidance, "Abuse-Deterrent Opioids – Evaluation and Labeling," to assist industry in developing opioid drug products with potentially abuse-deterrent properties. Prescription opioid products are an important component of modern pain management, but abuse and misuse of these products have created a serious and growing public health problem. One potentially important step towards creating safer opioid analgesics has been the development of opioids that are formulated to deter abuse. FDA has recently approved additional treatment options for patients who overdose on opioids. The FDA continues to address all facets of the epidemic to: (1) decrease exposure and prevent new addiction; (2) support the treatment of those with opioid use disorder; (3) foster the development of non-opiate pain treatment therapies; and (4) improve enforcement and assessing benefit-risk. Of over 50,000 products (stolen and counterfeited) from the International Mail Facilities, 215 opioids were discovered. After a brief period of statistical success at reducing opioid use and overdoses in the second half of 2018. Preliminary data from 2020 suggests that overdose deaths, which were already increasing, accelerated during the pandemic. A record 90,000 drug overdose deaths occurred in the United States in the 12 months ending in September 2020. To reduce the burgeoning popularity of opiate prescriptions, because the 21st Century Cures Act mentions only opiates by name, funding for opiate research needs to be limited to the Substance Abuse Mental Health Services Administration (SAMHSA). Buprenorphine and subloxone (buprenorphine with naloxone) have been approved for the treatment of opiate addiction in pregnant women. Non-opiate alternatives to addictive epidurals given

to women during childbirth, especially young ones who are most prone to addiction, are needed, such as without pain killers, or cannabis derived CBD analgesic.

D. FDA oversees the safety, effectiveness, availability, and quality of an extensive range of regulated products available to Americans, including over-the-counter and prescription drugs, animal drugs, medical devices, and biologics including vaccines, blood products, and gene therapies. FDA's Human Drugs Program is responsible for ensuring the safety and efficacy of new, generic, and over-the-counter drug products quality to prevent and detect substandard or counterfeit drugs in the U.S. market. The budget requests $4 billion for medical product safety investments—an increase of $223 million above FY 2021 enacted. The request includes $2 billion in budget authority and $2.1 billion in user fees. Drug user fees are the bread and butter of the FDA and this money is distributed to finance most of their operations. Together with federal partners through the Public Health Emergency Medical Countermeasures Enterprise, FDA works to build and sustain medical countermeasure programs necessary to protect against chemical, biological, radiological, nuclear, and emerging infectious disease threats. In FY 2019, FDA approved 33 medical countermeasures, including the first vaccine for the prevention of monkey pox disease. During the pandemic, FDA authorized COVID-19 vaccines in an expedited timeframe while adhering to FDA's rigorous standards for safety, effectiveness, and manufacturing quality needed to support emergency use authorization and transparently enhance public and medical community trust and confidence in vaccines (especially felony monopolization by influenza and coronavirus vaccine propaganda).

1. Currently, there are more than 600 COVID-19 drug development programs in the planning stages, with more than 400 trials that have been reviewed by the FDA, and 10 treatments authorized for use during the COVID-19 pandemic through Emergency Use Authorizations. The public needs to be informed of all approved treatments on an equal basis with vaccines, provided they are not all felony monopolizations by unethical researchers. The standard treatment is: Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis and eucalyptus, or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the pandemic the most effective strategy is probably to place eucalyptus or lavender soap in and institutional showers, baths and public restrooms, with instruction to "wash your nose/lava su nariz". Intensive care units and public airspaces may be sterilized with eucalyptus scented humidifiers (diffusers) not used since the 1950s.

2. American Patients First, is the FDAs blueprint to lower drug-pricing costs. The FDA does not set drug prices, but can help lower prices by bringing efficiencies to the drug development and review process and by promoting robust competition for established drugs. FDA-approved generic drugs now account for 90 percent of the prescriptions dispensed in the United States, and in 2018 competition from generic drugs saved the healthcare system an estimated $293 billion. In FY 2019, the agency approved an all-time record 1,171 generic drugs, following previous records of 971 approvals in FY 2018 and 937 approvals in FY 2017. First generics approved in FY 2019 included drugs to

treat emergency opioid overdose, pulmonary arterial hypertension, breast cancer, seizures, depression, and various infections. FDA is also increasing approvals of complex generic drugs, which are harder to copy and traditionally lack competition. The Budget provides $49 million, a $5 million increase above FY 2020, for FDA influenza preparedness activities. First enacted in the Prescription Drug User Fee Act in 1992, industry fees support FDA capacity to carry out its food and medical product safety responsibilities. The Budget reflects increases to all currently authorized medical product user fees by an additional $198 million. In addition, the Budget continues to include a legislative proposal to modernize the over-the-counter drug monograph system and establish a user fee for an estimated $28 million in FY 2021. Medical devices regulated by FDA–everything from personal protective equipment to ventilators to remote patient monitors–were critical components of the U.S. response to the COVID-19 pandemic. The FDA is cited for corrupt approval of combination test that tests positive for coronavirus whether it is influenza or coronavirus, and has a duty to inform the public that mentholyptus cough drops are the frontline treatment for both influenza and coronavirus, with a little nose washing. The FDA needs to approve eucalyptus scented humidifiers (diffusers) to sterilize intensive care units (ICUs), waiting rooms and other public airspaces.

E. To regulate the online pharmaceutical industry after extensive felony monopolization, theft from International Mail Facilities (IMF) and counterfeiting since the passage of An Act to amend the Federal Food, Drug, and Cosmetic Act with respect to human drug compounding and drug supply chain security, and for other purposes P.L. 113-54 of Nov. 27, 2013. Repeal Section 801(u) to the FD&C Act under 21USC§381(u). Insert online pharmacy consumer before pharmacist in 21USC§384(a)(1). Delete 'from Canada' from §384(b). Replace 'to submit to the Secretary' with 'record' at §384(d)(1). Insert 'foreign' before establishment and delete 'within Canada' under §384(f). Repeal paragraphs i to end §384(i-m).

1. An Act to amend the Federal Food, Drug, and Cosmetic Act with respect to human drug compounding and drug supply chain security, and for other purposes P.L. 113-54 of Nov. 27, 2013 created a situation whereby domestic wholesalers and compounders were facilitated to adulterate superior generic pharmaceuticals manufactured in India and purchased online and thereby discredit the competition violation of felony monopolization under 15USC§2 and adulteration, mislabelling and counterfeiting under 21USC§331. The Trump Administration extensively blocked international bank transaction so that an online pharmacy consumer would have to call their bank and pay a reasonable fee to pre-authorize an international transaction, or their card would be blocked, the transaction would not go through and they would need to call to reactivate their card so that it could be used at all. This has been somewhat mitigated by conscientious international vendors. The FDA FY 21 Justification of Estimates for Appropriations Committees reports an alarming increased in ORA international drug interceptions from International Mail Facilities (IMF) and Ports of Entry and destruction attributed to the, now contested, SUPPORT Act Public Law No: 115-271 of Oct. 24, 2018. FY 19 the FDA increased the number of special agents and import investigators responsive to illicit activity involving FDA-regulated products arriving through International Mail Facilities (IMF) and Ports of Entry. FY 19 more than 17,000 violative

drug products were destroyed across all nine IMF (an increase of 15,522 over FY 18) with a reported value of more than $1.5 million (an increase of more than $1 million over FY 18).

2. The FY 21 Budget provided $45 million for opioid activities at international mail facilities to increase enforcement. This investment will enable FDA to inspect 100,000 packages per year, many containing multiple products. As provided in sections 303(f) and 401(h) of the Act (21USC§823(f) and §841(h)), it is unlawful for any person who falls within the definition of "online pharmacy" as set forth in section 102(52) of the Act under 21USC§802(52)) and 21CFR§1300.04(h)) to deliver, distribute, or dispense a controlled substance by means of the Internet under 21CFR§1301.11(b). It is inappropriate to target online pharmacies because they do not sell controlled substances. Shipments from legitimate online pharmacies registered under 21USC§360(i) should not be searched or delayed. Section 3022 of the SUPPORT Act Public Law No: 115-271 of Oct. 24, 2018 added Section 801(u) to the FD&C Act under 21USC§381(u) that needs to be repealed because it is unconstitutionally vague to abuse the term "drug" so that its effect is that any import may be deemed to be illicit, seized and counterfeited by aforementioned drug compounders, regardless of whether or not it is or was at time of entry into an International Mail Facility (IMF) counterfeit under (u)(2). The Budget provides an additional $4.5 million, $78 million total, to ostensibly strengthen the compounding scientific framework, develop a list of bulk drug substances approved for compounding by industry, bolster regulatory compliance, and expand policy development. The Budget will enable FDA to evaluate the over 300 unique bulk drug substances nominated for inclusion on the list of substances approved for compounding by industry. This ORA compounding program is highly suspected of being an organized high-tech counterfeit operation capable of repackaging adulterated and substandard drugs in fancy foil packages that look just like the quality generic Indian pharmaceutical, that were imported and destroyed.

3. For the past several years banks have infringed on international transactions so that they would need to be pre-authorized by the bank to prevent the account from being frozen since 2020 in conspiracy with India. The National Commission on Electronic Fund Transfers should hold a hearing to redress restraint of trade pursuant to 12USC§2404(a) and 15USC§1. For the most part this has affected +/-$10 billion annual online pharmaceutical imports to individuals residing in the United States. The delay in international mail deliveries due to the COVID-19 pandemic is adulterously long, up to 5-8 weeks for an express delivery that should not take longer than 5-8 days. These shipments of lifesaving must not be delayed or subjected to unlawful search and adulteration. The Postal Service shall provide prompt, reliable, and efficient services to patrons in all areas and shall render postal services to all communities under 39USC§101(a). States must remove any impediments arising to the free exportation of goods required for humanitarian needs, such as (i) medicines and medical devices; paragraph 98 of Alleged violations of the 1955 Treaty of Amity, Economic Relations, and Consular Rights (*Islamic Republic of Iran v. United States of America*) No. 175 3 October 2018.

4. The rule of law is that the prescriptions pharmaceutical drugs may be purchased without prescription. Pharmaceutical drugs manufactured in India's several full service generic pharmaceutical drug manufacturers tend to be of equal or higher quality than American pharmacy drugs. In general the foil packages sold by the online pharmacy are far safer from adulteration than the American child-proof cap under 16CFR§1700.14. There is a credible fear that there is an organized conspiracy to counterfeit the sealed packages and replace their contents with toxic substances. There is believed to be at least one high tech online pharmacy counterfeit operation in business since at least 2014 that has opportunistically resurfaced to predate upon the delay in the international delivery of the mail. Pfizer forensic service to the US District Attorney is highly encouraged to pursue the up to $15,000 fine for each and any prohibited online pharmacy counterfeiting devices, up to $1 million, discovered by the Postal Service pursuant to the Food Drug and Cosmetic Act (FD&CA) under 21USC§333(f). To avoid the looming cost of devaluation it would be really nice to buy American foil wrapped antibiotics online without prescription by converting the online pharmaceutical counterfeiting machines to legitimate use pursuant to 24USC§225h.

5. US Attorneys prosecute pharmaceutical drug counterfeiting. On January 27, 2021 Antonio Walthour (28) was sentenced to three and a half years for conspiring to sell counterfeit drugs. These drugs were made with fentanyl to make pills and pressing them to look like legitimate pharmaceutical controlled substances with markings such as “Xanax,” “Lortab,” “Percocet,” or “Watson.” Eric and Holly Falkowski were sentenced in 2017 for their roles in the conspiracy to 188 months and 36 months, respectively. In 2020 U.S. Immigration and Customs Enforcement’s (ICE) Homeland Security Investigations (HSI) New Orleans seized 51,000 counterfeit items valued at more than $16.7 million during a holiday-related intellectual property rights surge operation. David Beckford was sentenced to more than 10 years in prison for his role in a conspiracy to manufacture counterfeit Xanax pills with a pill press. The problem seems to be that the FDA is not certifying online pharmacies who deliver from the high quality generic pharmaceutical manufacturers in India. US Attorneys and law enforcement infringe on this weakness to seize everything they can get their hands on. In cases where there are real manufacturing devices, these devices get into the hands of law enforcement and their health professional informants and are used to counterfeit drugs with the monopolistic intent to adulterate the non-DEA licensed competition, and thereby justify payments for their refusal to treat, improper ineffective and/or experimental prescriptions, and poisonous enforcement, but only generate more mistrust, chronic illness and death. The drug and product mislabelling and counterfeiting device operation is believed to be located in California using equipment seized by the federal police. The FDA has a responsibility to ensure online pharmacies get their products from Indian generic pharmaceutical manufacturers and their shipments are not intercepted and counterfeited pursuant to felony monopolization under 15USC§2.

F. To perfect the Tobacco Control Act it is necessary to repeal extraneous tobacco definitions in 21USC§321(rr) at paragraphs 2-4, increase tobacco revenues by $100 million FY 21, reduce tobacco spending by 50% FY 22 and pay up to $100 million compensation for the pandemic of felony monopolization under 15USC§2 and §15. The

Family Smoking Prevention and Tobacco Control and Federal Retirement Reform Act (Tobacco Control Act) P.L. 111-31 was signed by President Barack Obama, an African-America smoker, on June 22, 2009. It created the Center for Tobacco Products (CTP) under 21USC§387a(e) to provide technical and "non-financial" assistance to small tobacco manufacturers to comply with the provision of this law (f). FDA's Center for Tobacco Products advances the mission to protect Americans from tobacco-related death and disease by regulating the manufacturing, distribution, and marketing of tobacco products and has corruptly and without statutory authority laid claim that all tobacco user-fee revenues be spent on propaganda to educate the public (especially young people) about tobacco products and their harmful health effects. After years of delay, the outrageous tobacco excise tax increase from the Children's Health Insurance Program Reauthorization Act (CHIPRA) of February 2009 has been redressed by the Alcohol, Tobacco, Tax and Trade Bureau (TTB).

1. Subsequently, numerous instances of widespread tobacco product adulteration and counterfeiting under the influence of corrupt police and health professionals, have occurred in violation of 21USC§387b and §387c(a)(6). In 2015 Fresh Empire teen anti-smoking propaganda seems to have incited the contamination of all or nearly all the entire pipe tobacco harvest with throat toxic green tomatoes best treated with slippery elm based Throat Coat. Hard lung nodules from carcinogenic *Aspergillus niger* cured with a dab of hydrocortisone to the chest and slimy sphincter and black stool from carcinogenic rat poison induced intestinal bleeding were noted locally in sealed packages of tobacco and water bottles around 2017 along with two deaths from colon cancer. In the beginning of 2021 nearly all pipe tobacco sold in California and Oregon gas stations and convenience was contaminated with either a noxious substance or psychiatric drug induced temporomandibular join (TMJ) discomfort. CTP must prioritize the safety of tobacco products against terrorist, involuntary research using tobacco consumers as human test subjects, and cease to finance the corrupt research and youth anti-smoking propaganda that motivates corrupt police officers and health professionals.

2. After the Child Nicotine Poisoning Prevention Act of 2015 (CNPPA) required the safe packaging of liquid nicotine products, known as flow restrictors, in 2018 it became obvious that CTP only intended to enroll e-cigarette manufacturers in a collegiate pre-market approval process, while the FDA became exceedingly corrupted by the SUPPORT Act. The Hippocratic Oath provides that the lot of the perjurer is the opposite, a major reason children of health professionals get addicted to tobacco products, including the new, purportedly low risk, e-cigarettes. Reported e-cigarette use among high school students, was 16.0 percent in 2015, had decreased to 11.3 percent in 2016 and held steady in 2017, however in 2018 use skyrocketed and 27.5 percent of high school students and 10.5 percent of middle school students were current e- cigarette users in 2019. On December 20, 2019, the President signed legislation to amend the Federal Food, Drug, and Cosmetic Act, and raise the federal minimum age of sale of tobacco products from 18 to 21 years. It is now illegal for a retailer to sell any tobacco product – including cigarettes, cigars and e-cigarettes – to anyone under 21. The National Youth Anti-Drug Media Campaign under 21 U.S. Code § 1801 to 1804 was repealed by Pub. L. 109–469, title V, § 501(b), Dec. 29, 2006, 120 Stat. 3533. It is held that the Center for

Tobacco Products must stop spending their tobacco revenues on tobacco propaganda so tobacco user-fees will generate a net profit for the FDA.

3. The FDA Budget includes $812 million in tobacco user fees that should not be used exclusively to support the FDA tobacco program, but to reduce federal outlays for the FDA and immediately pay compensation for personal suits for injury under 15USC§15 caused by the pandemic of felony monopolization in the health propaganda sector that weighs heavily on the negligence of the FDA to approve the right, safe, effective and low cost treatments needed to respond to pandemics and other outbreaks of disease and organized crime under 15USC§2. The Budget includes a legislative proposal to increase user fee collections in support of the tobacco program by $100 million, and make e-cigarette manufacturers and importers subject to the user fees. This is a good idea, especially taxing e-cigarettes, but it is much more valuable and medically necessary to desist in financing youth anti-tobacco propaganda, for the exact same reason tobacco manufacturers have been enjoined to stop targeting their marketing to young adults. Because the lot of a perjurer is the opposite, when the FDA or public health sector, is perceived as being corrupt, virtually always, anti-smoking propaganda targeting youth will have the aforementioned statistically significant reverse effect, older, less rebellious individuals, not specifically targeted by this propaganda, would not tend to think about in binary.

4. The HHS FY 21 Budget proposes to reform tobacco regulation by moving the Center for Tobacco Products out of FDA and create a new agency within HHS to strengthen accountability and more effectively respond to tobacco related public health concerns. This is not corroborated in the FDA Justification of Estimates for Appropriations Committees. Transferring CTP to HHS would only result in HHS adopting the expense for the corrupt propaganda. HHS employs legions of corrupt anti-smoker health professionals who already get paid to counsel people to quit smoking. The FDA would lose the long-standing regulatory victory of gaining jurisdiction over tobacco, that should maybe be extended to alcohol, at some time in the extremely distant future when public health is not so absolutely corrupted by coronavirus vaccine propaganda suppressing the safety and effectiveness of hydrocortisone, eucalyptus, lavender or peppermint or some other felony monopolization. Once, again it is held that the Center for Tobacco Products must stop spending their tobacco revenues on tobacco propaganda and be a net profit for the agency, but with prejudice against any malicious health regulation of alcohol and tobacco products, to prevent product adulteration and terrorism against products taxed by the Alcohol and Tobacco Tax and Trade Bureau (TTB), and consider repealing the Tobacco Control Act in its entirety, although it is well written, because it corrupts the FDA and would corrupt HHS, even worse, like all health legislation since 2009, for that matter.

5. The only obvious error in the Tobacco Control Act is that paragraphs 2-4 of the introductory definition of tobacco products needs to be repealed under 21USC§321(rr) 2-4. Congress should not have invoked long standing semantic “drug” abuse and neglect regarding tobacco not being a “drug” or “device” or “combination product” to justify tobacco not be marketed in combination with any food, drug, medical device, cosmetic or

dietary supplement. In *Action on Smoking and Health (ASH) v. Harris* 655 F. 2d. 236 No. 79-1397 (1980) the Food and Drug Administration (FDA) refused to assert jurisdiction over cigarettes containing nicotine as a "drug" under section 201(g)(1)(C) of the Federal Food, Drug, and Cosmetic Act under 21USC§321(g)(1)(C). ASH was attempting to abuse the term "drug" to limit tobacco sales to pharmacies and falsely cited Dr. Charles C. Edwards, FDA Commissioner's 1972 testimony before a Senate subcommittee whereby *Federal Trade Commission v. Liggett and Myers Tobacco Company* (108 F.Supp. 573, 1952) held that cigarettes are not drugs within the meaning of the act unless a therapeutic purpose is claimed. Indeed, if cigarettes were to be classified as drugs, they would have to be removed from the market because it would be impossible to prove they were safe for their intended us [sic]. Sic is used in brackets after a copied or quoted word that appears odd or erroneous.

6. The immediate grievance is that the FDA and HHS Secretary recently conspired to ban menthol flavored tobacco on April 29, 2021, although menthol cigarettes comprise a quarter of all cigarettes and are particularly popular amongst African-Americans and women. The truth of the matter is that CTP is liable to be sued for up to $100 million for retaliating against and blocking information regarding two recently surfaced, critical pieces of health information, in one blow of their contagious although vaccinated Pinocchio nose under 42USC§300jj-52 and 15USC§2. One, menthol and menthol flavored cigarettes, in particular, are highly effective cure for coronavirus in chain smokers. Two, hydrocortisone crème cures hard lung nodules of *Aspergillus niger* that produces carcinogenic aflatoxin. In this they are a million times more reprehensible than the stage II lung cancer patient who preferred to smoke fentanyl than try a dab hydrocortisone crème to cure the underlying pulmonary aspergillosis and abate the pain and cause of carcinogenesis, for our amusement.

7. The Preliminary Scientific Evaluation of the Possible Public Health Effects of Menthol versus Non-Menthol Cigarettes by the Tobacco Product Scientific Advisory Committee of March 23, 2011 held, the weight of evidence supports the conclusion that menthol in cigarettes is not associated with an increase in disease risk to the user. 11 studies found there was no difference in rates of disease between menthol and non-menthol smokers. Two studies held there was a slight improvement in health outcomes of menthol smokers. Menthol is widely used in drug products, foods, cosmetic products, and cigarettes, and generates a minty taste and a cooling sensation. Menthol is made from mint and retains all the medicinal properties of mint, particularly as a cure for coronavirus and allergic rhinitis noted in the Advisory Opinion that Hydrocortisone, Eucalyptus, Lavender or Peppermint help (Water) and Vaccines Cure Coronavirus HA-23-3-21. There is no denying that it is a crime of genocide to not merely deprive smokers of information that menthol cigarettes cure coronavirus, without so much a s human trial of menthol to cure coronavirus pursuant to usual procedures for classifying OTC drugs as generally recognized as safe and effective and not misbranded, and for establishing monographs 21CFR§330.10 but to attempt to ban menthol cigarettes altogether in flagrant violation of the Application of the Convention on the Prevention and Punishment of the Crime of Genocide (*The Gambia v. Myanmar*) Summary 2020/1 23 January 2020 that is open to civil action for deprivation of rights under 42USC§1983 and paragraph 98 of Alleged

violations of the 1955 Treaty of Amity, Economic Relations, and Consular Rights (*Islamic Republic of Iran v. United States of America*) No. 175 3 October 2018.

8. *United States v. 46 Cartons Etc.*, 113 F. Supp. 336 (D.N.J. 1953) held, the libellant contends that the leaflet accompanying the article suggests and represents that the article is effective in preventing respiratory diseases, common cold, influenza, pneumonia, acute sinusitis, acute tonsillitis, scarlet fever, whooping cough, measles, meningitis, tuberculosis, mumps, otitis media (middle ear infection), meningopneumonitis psittacosis (parrot fever). Libellant further contends that claimant represents that the smoking of these cigarettes is innocuous for persons suffering from circulatory diseases, high blood pressure and various heart conditions. Claimant, understandably, does not believe it is selling drugs. It admits that the product has none of the curative or preventive powers implied in the leaflet. But throughout the leaflet claimant has tried to capture a share of the cigarette market by a subtle appeal to a natural and powerful desire on the part of us all to avoid the infectious diseases or ailments therein mentioned. In this case claimant does believe regularly smoking menthol cigarettes greatly reduces, even eliminates daily mentholyptus cough drop consumption to treat frequent contagious allergic rhinitis from venturing into public places during the COVID-19 pandemic, whether or not vaccinated pursuant to 21CFR§330.10. The eucalyptus in the mentholyptus cough drop also cures the occasional influenza, whose wet cough and fatigue, symptoms are mistakenly described as coronavirus, that begins with a Pinocchio nose and ends in death from fluid filled lungs.

9. In general, tobacco use is attributed with being the leading cause of preventable death and disease in the United States. More than 400,000 deaths per year in the United States, are said to be caused by tobacco use, about the same percentage of people who are active smokers, but cause of death is often due to untreated misdiagnosis, of which smoking bears a fair share. Research on lung cancer is an effective way to get up the gumption to try to quit smoking, but many non-smokers develop lung cancer, and one must no forget to treat aspergillosis with hydrocortisone, that can be transmitted by contaminated tobacco products. Whereas heavy smoking populations in Japan and Israel have longer live-expectancies than the United States, it is probably not true that smoking is the leading cause of preventable death and disease, except that smoking is obviously an unhealthy addiction, and that "smokers" are prescribed highly effective pneumococcal infection preventing Pneumovax 23 vaccine, other non-health professional working age people, even those with heart, lung and brain damage whose lives would be most improved, are categorically denied, although tobacco smoking has some sub-therapeutic lung sterilizing qualities contraindicated in cases of infection, when smoking becomes unpleasant, painful and this is excruciating to the addict. The addiction is decidedly unpleasant to non-smokers and smokers, who pay the expense, alike.

10. Nearly 9 out of 10 adult daily smokers began smoking by age 18. The reason given by pediatricians is that juvenile brains are more susceptible to addiction and become addicted more quickly and with fewer exposures. The focus of tobacco addiction prevention is therefore to prevent teenagers from smoking. However, it is very important that the method of instruction is scientific and fact based and that propaganda and false

information, such as almost any health and economic statistic ever produced on the topic, is not financed, or else teenage rebellion against common public health corruption, will result in increased addiction, much like attempts by patently corrupt drug enforcement to infiltrate elementary schools with their sample case of UN controlled substances. For instance, the "The Real Cost" campaign claims more than 587,000 youth aged 11 to 19 were prevented from initiating cigarette smoking – half of whom might have gone on to become established smokers – saving more than $53 billion by reducing smoking- related costs. Investment in tobacco prevention can have huge returns: the campaign has a cost savings of $180 for every dollar of the nearly $250 million invested in the first two years of the campaign. Self-serving lies.

11. On May 10, 2016, FDA finalized a rule – Deeming Tobacco Products To Be Subject to the Federal Food, Drug, and Cosmetic Act (FD&C Act) – which extended FDA's tobacco authorities to all tobacco products, including electronic nicotine delivery systems (ENDS) - such as e-cigarettes, cigars, hookah (waterpipe) tobacco, pipe tobacco and nicotine gels. Then, according to findings from the 2018 National Youth Tobacco Survey (NYTS), there was a dramatic increase in youth use of e-cigarettes: From 2017 to 2018, there was a 78 percent increase in current e-cigarette use among high school students and a 48 percent increase among middle school students. On January 2, 2020, FDA issued a final guidance for industry entitled "Enforcement Priorities for Electronic Nicotine Delivery Systems (ENDS) and Other Deemed Products on the Market Without Premarket Authorization." Under this policy, companies that do not cease manufacture, distribution and sale of unauthorized flavored cartridge-based e-cigarettes (other than tobacco or menthol) within 30 days risk FDA enforcement actions. Manufacturers that wish to market any ENDS product – including flavored e-cigarettes or e- liquids – are required by law to submit an application to FDA that demonstrates that the product meets the applicable standard in the law, such as whether the product is appropriate for the protection of the public health. Before marketing a tobacco product to reduce harm or the risk of tobacco-related disease, manufacturers must submit a Modified Risk Tobacco Product Application (MRTPA) and receive an FDA order authorizing that the product reduces harm or the risk of tobacco-related disease. On December 20, 2019, the President signed legislation to amend the Federal Food, Drug, and Cosmetic Act, and raise the federal minimum age of sale of tobacco products from 18 to 21 years.

12. In FY 2019, FDA invested more than $226 million in scientific research with a focus on reducing youth initiation of tobacco use, reducing tobacco product harms, and encouraging those who already use tobacco products to quit. In FY 2019, FDA funded 112 research projects via NIH. In FY 2019, FDA funded 41 new grants to support regulatory science research on tobacco products in the fields of biomedical, behavioral, and social sciences. Since the beginning of FY 2019, as part of the Youth Tobacco Prevention Plan, FDA has taken the following actions to stop youth use of, and access to, JUUL and other e-cigarette products: conducted well over 150,000 retail inspections to crack down on the sale of tobacco products, including e-cigarettes, to minors at both brick-and-mortar and online retailers issued thousands of warning letters and civil money penalties to retailers for illegally selling e-cigarette products to minors. FDA has also been working tirelessly alongside CDC and other federal, state, and local partners to

investigate the distressing incidents of severe lung injuries and deaths associated with the use of vaping products. As of October 31, 2019, FDA had contracts for tobacco retailer compliance check inspections in 54 states and territories, and one tribal jurisdiction. FDA conducts compliance check inspections and issues advisory and enforcement actions such as Warning Letters, Civil Money Penalties, and No-Tobacco-Sale-Orders when violations are found. FY 19 there 146,905 inspections, 14,673 warning letters, 4,707 civil money penalties (18% in Ohio) and 13 no-tobacco-sale-orders. FDA has four active youth campaigns (ages 12-17) in market - "The Real Cost" Cigarettes campaign, "The Real Cost" Smokeless campaign, "The Real Cost" E-Cigarette Prevention campaign, and the "Fresh Empire" campaign.

Center for Tobacco Products FY 19 - FY22
(thousands)

	FY 19 Final	FY 19 Actual	FY 20 Enacted	FY 21 President's Budget	FY 21 Law	FY 22
Revenues	686,991	686,991	661,739	762,612	762,612	763,000
Total Tobacco Expenditures	666,832	686,991	661,739	762,612	662,612	763,000
Center	652,065	676,457	647,055	747,765	647,765	74,782
Field Tobacco Control Act	14,767	10,534	14,684	14,847	14,847	15,218
FTE	942	942	1,016	1,068	1,068	1,079

Source: Hahn, Stephen. FDA FY 21 Justification of Estimates for Appropriations Committees. Pgs. 247 & 268

13. The FY 2021 Budget Request is $762,612,000 all from user fees. This amount is $100 million above the FY 2021 level authorized in the Tobacco Control Act less the amounts for GSA Rent, FDA Headquarters, FDA White Oak Consolidation, and Other Rent and Rent Related, which are shown in their own sections of the budget request. This amount is $100,873,000 above the FY 2020 Enacted Budget. The Center for Tobacco Products amount in this request is $747,765,000. Currently, the Tobacco Control Act does not provide a means for FDA calculation of user fees for ENDS products and certain other deemed products. These products represent an increasing share of the tobacco marketplace as well as FDA's tobacco regulatory activities. The FY 21 proposal includes a request to enable FDA to include all deemed products in the tobacco user fee assessments. To escape the number of the beast the FDA requests an additional $100 million and requests authority to include manufacturers and importers of all deemed products among the tobacco product classes for which FDA assesses tobacco user fees. Although the FY 21 data is inconclusive the CTP does not appear to have fled the persecution of the number of the beast in less than 42 months (Revelation 13:10). The

increase in teen e-cigarette 2016 to 2017 probably marks the time when 42 months between $600 and $700 million elapsed. There is no denying the proposal to increase user-fee on e-cigarette manufacturers and importers by $100 million to increase revenues from $662 million to $763 million FY 21. However, with per FTE spending of $714,000, demand for tobacco revenues to reduce federal outlays, need to eliminate spending on youth anti-smoking propaganda, no accountability for anything but $15 million in field inspection work that produces nearly all the statistics, $226 million in scientific research of irregular quality, and liability for up to $100 million to settle all felony monopolization cases involving HHS, including tobacco product adulteration, attempt to prohibit coronavirus curing menthol, it is proposed to reduce CTP spending by 50%.

14. It has been advised that the Center of Tobacco Product be abolished, because FDA inspectors should not spend their tobacco and other revenues on "tobacco". Alcohol, Tobacco, Tax and Trade Bureau (TTB) was formed in January 2003, under the Homeland Security Act of 2002, but its history began more than 200 years ago as one of the earliest federal tax collection agencies. The history of taxation and regulatory control on the alcohol and tobacco industries the first Federal taxes levied on distilled spirits in 1791 by Alexander Hamilton that paid off the Revolutionary War debts at the cost of a Whiskey Rebellion. The Alcohol and Tobacco Tax and Trade Bureau (TTB) was created in January of 2003, when the Bureau of Alcohol, Tobacco and Firearms (ATF), was extensively reorganized under the provisions of the Homeland Security Act of 2002. TTB is the third largest tax collection agency in the U.S. government, behind the Internal Revenue Service (IRS) and U.S. Customs and Border Protection (CBP). Annual revenues from the alcohol, tobacco, firearms, and ammunition industries are approximately $22 billion. TTB excise tax collections reached an historic high of nearly $24 billion in FY 2010, principally due to an unfair increase in the price of pre-rolled and roll-your-own tobacco that has driven dwindling consumers to smoke pipe tobacco and causing steadily dwindling tobacco revenues. TTB collected nearly $22 billion in excise taxes and other revenues from more than 14,000 taxpayers in the alcohol, tobacco, firearms, and ammunitions industries FY 17.

15. Historical Table 2.4 regarding Excise Taxes OMB lists alcohol and tobacco as separate spending categories, ignores other less significant sources of revenues and produces a total that is $2.7 billion higher than total revenues reported by TTB. This could be explained by $3 billion in excise taxes on alcohol and tobacco imports by Customs, that should be left with Customs. To normalize agency reporting OMB Table 2.4 is advised to be simplified by consolidating alcohol and tobacco excise taxes into a figure that exactly matches net collections reported by TTB. Due to the unfairness of the 2010 tobacco both total TTB excise tax revenues and smoking rates are in decline. TTB has no recourse but to propose a federal excise tax on recreational marijuana to Congress. TTB is highly advised to change the name of their agency to Alcohol, Tobacco and Marijuana (ATM), to support the taxation of recreational marijuana by Congress and release of nonviolent drug prisoners from federal prison, with the clever acronym for a Treasury agency that needs to remind consumers to pay in cash for alcohol, tobacco and marijuana. Congress and the Attorney General must only repeal marijuana from Schedule I(c)(17) of the CSA under 21USC§812(c).

§328 Health Resources and Services Administration

A. The Health Resources and Services Administration (HRSA) provides national leadership, program resources and services needed to improve access to culturally competent, quality health care. As the Nation's Access Agency, HRSA focuses on uninsured, underserved, and special needs populations in its goals and program activities: 1. Improve Access to Health Care. 2. Improve Health Outcomes. 3. Improve the Quality of Health Care. 4. Eliminate Health Disparities. 5. Improve the Public Health and Health Care Systems. 6. Enhance the Ability of the Health Care System to Respond to Public Health Emergencies. 7. Achieve Excellence in Management Practices.

B. The Fiscal Year (FY) 2022 President's Budget requests $12.6 billion for HRSA, which is $497 million above FY 2021 enacted. This total includes $7.8 billion in discretionary budget authority and $4.7 billion in mandatory funding and other sources. The FY 21 HRSA budget extended mandatory funding for Health Centers, National Health Service Corps, and Teaching Health Centers Graduate Medical Education, Home Visiting, and Family- to-Family Health Information Centers after being threatened with cuts. HRSA has stopped cutting programs and zero growth policies is allowing for 3% service sector inflation in both mandatory and discretionary categories. Now that the nursing students have their grant money they don't torture for FBI aggravated theft and the only "MRSA with the HRSA" budget is that there is cancerous growth in terrorist finance for the new Behavioral Health Workforce Development Programs. It is difficult to add the HRSA budget up and there is a margin of error that tends towards overestimation. Now that the budget has been stabilized it is no longer necessary to follow the minutiae and only the major spending categories are followed. While there is no accuracy check for the addition, without civil rights controversy there is little reason to doubt the mathematical integrity of a program level that coincidentally agrees with prior sweat equity. The Budget invests in a number of actionable public health challenges identified by the President and his Administration, including the *Ending the HIV Epidemic* initiative, *Improving Maternal Health in America* initiative, transforming rural health in America, and implementing the Executive Order on Advancing Kidney Health. The budget supports the delivery of direct health care services through Health Centers, the Ryan White HIV/AIDS Program, and Title X Family Planning. These programs deliver affordable, patient-centered, and high-quality services to more than 30 million people across the United States.

Health Resources Services Administration FY 17 – FY 24
(millions)

	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Bureau of Primary Health Care	4,999	5,081	5,618	5,627	5,684	5,639	5,808	5,982

Bureau of Health Workforce	1,202	1,221	1,548	1,650	1,679	1,811	1,865	1,921
Maternal and Child Health Bureau	1,134	1,159	1,329	1,326	1,358	1,483	1,528	1,573
Ryan White HIV/AIDS Program	2,314	2,303	2,319	2,389	2,424	2,555	2,632	2,711
Healthcare Systems	103	103	115	124	129	136	140	144
Rural Health	156	155	316	318	330	400	412	424
Other Activities	448	446	449	452	453	529	545	561
Total, Discretionary Budget Authority	6,003	5,975	6,835	7,047	7,218	7,834	8,069	8,311
Mandatory Funding	4,316	4,612	4,843	4,819	4,819	4,700	4,700	4,700
Federal outlays	10,319	10,587	11,678	11,866	12,037	12,534	12,769	13,011
User Fees	19	18	19	19	19	19	19	19
Total Program Level	10,338	10,605	11,697	11,885	12,056	12,553	12,788	13,030
FTEs			2,114	2,159	2,516	2,690	2,717	2,744

Source: HRSA All Purpose Table Macrae, James. Acting Administrator. Health Resources and Services Administration. FY 2017 Budget. Justification of Estimates for Appropriations Committees. Pgs. 17-20; HHS FY 21 & 22 Budget-in-brief pgs. 28-29

1. The Budget supports the delivery of direct healthcare services through Health Centers and the Ryan White HIV/AIDS Program. These programs deliver affordable, patient-centered, and high-quality services to more than 30 million people across the United States. Approximately 1,400 health centers operate more than 12,000 service delivery sites nationwide, serving more than 28 million people. In 2018, nearly half of all health centers served rural areas, providing care to 8.9 million patients or one in five people living in rural areas. 65 percent of health center patients with hypertension controlled their blood pressure, exceeding the national average of 57 percent. Among health centers patients with diabetes, 68 percent controlled their blood sugar levels (HbA1c $\leq$ 9%), exceeding the national average of 61 percent. There is controversy regarding the norm for the HcA1c, 8% is used by the Indian Health Service and 6% in Great Britain. Studies on the effectiveness of garlic and onions, with otherwise free food, regular diabetes treatment, and Gingko giloba, on reducing blood sugar are solicited.

2. Millions of lives have been lost or disrupted due to HIV since the first cases were reported in the United States in June 1981. Nearly 38,000 people were diagnosed with HIV in the United States in 2018, and an estimated 1.2 million people in the United States are living with HIV. Of those people, one in seven did not know they are infected. HRSA's Ryan White HIV/AIDS Program provides a comprehensive system of primary medical care, essential support services, and medication for low- income people living with HIV. In 2019, health centers provided over 2.7 million HIV tests to more than 2.2 million patients and treated 1 in 5 patients diagnosed with HIV nationally. More than half of AIDS patients are treated through the Ryan White Program each year, which equates to more than half a million people. In 2019, 88.1 percent of Ryan White HIV/AIDS Program clients were virally suppressed, which exceeds the national average of 64.7 percent. Given the success of the program, the budget expands Part A ($666 million) for medical and support services to counties and cities that are the most severely affected by the HIV/AIDS epidemic, Part B ($1.3 billion) for states to improve the quality, availability, and organization of HIV health care and support services, including prescription drugs, and Part C ($207 million) for local community-based organizations to provide comprehensive primary health care and support services in an outpatient setting, which is collectively $46 million above FY 2021 enacted for Parts A-C. In addition, the budget increases funding for the Ending the HIV Epidemic in the United States by providing an additional $85 million above FY 2021 enacted, for a total of $190 million. This funding will support HIV care and treatment for an estimated 50,000 clients in the 57 geographic locations that currently have more than 50 percent of new HIV diagnoses nationally.

3. For more than 50 years, Title X family planning clinics have ensured access to a broad range of family planning and related health services for millions of low-income or uninsured individuals. The budget provides $340 million, an increase of 19 percent, to the Title X Family Planning program to improve access to vital reproductive and

preventative health services and advance gender and health equity. The FY 2022 Budget request is expected to support family planning services for approximately 3,500,000 persons, with approximately 90 percent having family incomes at or below 200 percent of the federal poverty level. Despite medical care advances and improved access to care, the pregnancy-related death rate has risen from 7.2 deaths per 100,000 live births in 1987 to 16.9 deaths per 100,000 live births in 2016 and 17.2 deaths per 100,000 live births in 2017. Black, American Indian, and Alaska Native women are two to three times more likely to die from pregnancy-related causes than white women are – and this disparity increases with age. Although opiate overdose is not the leading cause of maternal mortality, it is a big problem and there is a lot of propaganda regarding bupernorphine and subloxone being approved to treat pregnant women with opiate addiction, it would be a good idea to blow the whistle on the epidural and advocate for childbirth without pain-killers or non-opiate analgesics such as cannabis derived CBD. The leading causes of maternal mortality in the United States are Cardiovascular conditions, 15.5%; Infection or sepsis, 12.7%; Cardiomyopathy, 11.5%; Hemorrhage, 10.7%; Thrombotic pulmonary or other embolism, 9.6%; Cerebrovascular accidents, 8.2%. Hawthorn is the supreme herb for the heart and it helps to reduce cholesterol, regulate arrhythmias and normalize high and low blood pressure and eliminate *Staphylococcal* lesions after they have been sterilized in an Epsom salt bath or saline or chlorine swim, the daily, regular frontline treatment for methicillin resistant *Staphylococcus aureus* (MRSA). To treat infection and sepsis, Pneumovax is highly safe and effective at preventing all pneumococcal infections and thereby excruciating toxic shock syndrome in conjunction with MRSA, is not contraindicated for pregnancy and is in fact the mainstay of health professional immunity. Furthermore pregnant women need to be prescribed non-teratogenic broad—spectrum antibiotics especially clindamycin to make sure MRSA is treated as best as possible. They need money to eat non-spoiled fresh food, particularly green leafy vegetables, soybean and canola oil, with vitamin K.

4. The budget provides a total of $1.8 billion for HRSA workforce programs—including $430 million in mandatory and other sources of funding—in order to ensure that all Americans have access to high-quality clinicians and other health professionals, particularly in areas across the country where shortages of health professionals exist. This effort includes strategic investments in National Health Service Corps and workforce diversity. The National Health Service Corps provides scholarships and loan repayment to improve access to quality primary care, dental, and behavioral health in underserved urban, rural, and tribal areas. In FY 2019, an estimated 13.1 million patients received care from 16,000 National Health Service Corps clinicians. Another 1,479 future primary care professionals are either in school or in residency preparing for future service with the Corps programs. A recent development is that more than one in three (39 percent) of National Health Service Corps clinicians is a behavioral health provider, and the Corps provides care to an estimated 5.34 million urban and rural residents. It is interesting to note that although they comport themselves with military rank exceeding that of a "private" citizen, law enforcement officers, are not required so much as an Associates degree, and almost never have the Bachelor degree that is required to prevent recidivism and partnership in crime. For the academic reason that, as a rule, health professionals have not achieved a Bachelor in liberal arts, the health professions have been taken

hostage in the contemporary drug war to avoid condemning psychiatric drug abuse. The rise of risky behavioral health in HRSA, that does combine mental health and substance abuse in the brain, but falls short of prohibiting substance abuse with psychiatric drugs and laboratory supplies, is probably due to concern that, as a group physicians have become exceedingly crazy, violent, suicide risks. It is important to note, especially when involuntarily exposed to psychotropic substances they pay for with their DEA registration they have no legitimate use for and are highly advised and must be defended by HRSA and other agencies, to boycott under 21CFR§1300.11.

5. In CY 2018, the 340B Program provided $24 billion in discounted medications to safety-net providers. The 340B Program helps approximately 12,000 designated safety-net hospitals and clinics to purchase pharmaceuticals at savings between 25 to 50 percent on what they would have otherwise paid for covered outpatient drugs, as condition for participating in Medicaid. There are 113,000 Americans on waitlists for lifesaving organ transplants – 20 of whom die each day. In CY 2019, the number of deceased donor organs transplanted was 35,742, which is an 8.8 percent increase over the CY 2018 total of 32,857. The National Cord Blood Inventory (NCBI) Program is charged with building a genetically and ethnically diverse inventory of at least 150,000 new units of high-quality umbilical cord blood for transplantation. Blood stem cell transplantation is potentially a curative therapy for many individuals with leukemia and other life-threatening blood and genetic disorders. Each year, nearly 18,000 people in the U.S. are diagnosed with illnesses for which blood stem cell transplantation from matched donors is their best treatment option. Often, the first-choice donor is a sibling, but only 30 percent of people have a fully tissue-matched brother or sister. The other 70 percent, or approximately 12,600 people, often search for a matched, unrelated adult donor or a matched umbilical cord blood unit.

6. The National Vaccine Injury Compensation Program is highly ineffective because physicians wrongfully boycott it and refuse to submit evidence of children who have obviously been injured as the result of vaccines. Most progress in vaccines, such as the removal of Pertussis from the DT, and new attempt to create an attenuated, rather than live rubella vaccine, has been the result of adverse event reporting to the FDA, that does not compensate the victimized patient for their deformity. Furthermore, millions of people have died due to the COVID-19 pandemic because of felony monopolization of the news media and government by influenza-like COVID-19 vaccine propaganda. Although reputed to prevent mortality and severe illness, with an overall effectiveness estimated at 30% the COVID-19 vaccine is only slightly more effective than the seasonal influenza vaccine, that is only 5% effective at preventing the contagious state in some pandemic years, yet due to the same propaganda the public is subjected to, health professionals often do not know how to diagnose and treat either influenza or coronavirus. It seems necessary that the VICP make every effort to require thatpharmacy, news media and government vaccine advertisement does not fail to inform the public: Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis and eucalyptus, or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most

effective strategy is probably to place eucalyptus, lavender or peppermint soap in showers, baths and public restrooms, with instruction to "wash your nose". Intensive care units, waiting rooms and public airspaces may be sterilized with eucalyptus scented humidifiers (diffusers) not used since the 1950s.

§329 Indian Health Services

A. The Indian Health Service (IHS) is responsible for providing federal health services to American Indians and Alaska Natives to raise the physical, mental, social and spiritual health to the highest level. As of 2019, there were an estimated 5.7 million people who were classified as American Indian and Alaska Native (AI/AN) alone or in combination with one or more other races. This racial group comprises 1.7 percent of the total U.S. population. The IHS provides comprehensive primary health care and disease prevention services to approximately 2.6 million American Indians and Alaska Natives through a network of over 605 hospitals, clinics, and health stations on or near Indian reservations. Facilities are predominantly located in rural primary care settings and are managed by IHS, Tribal, and urban Indian health programs. The IHS provides a wide range of clinical, public health and community services primarily to members of 566 federally recognized Tribes in 35 states.

1. The provision of health services to members of federally-recognized tribes grew out of the special government-to-government relationship between the federal government and Indian tribes. This relationship, established in 1787, is based on Article I, Section 8,'Clause 3 of the Constitution, and has been given form and substance by numerous treaties, laws, Supreme Court decisions, and Executive Orders. The Snyder Act of 1921 Public Law 67-85 of November 2, 1921 provides the formal legislative authority for the expenditure of funds for the "relief of distress and conservation of health of Indians" under 25USC§13. In 1934, Congress provided the specific authority to enter into medical service contracts for American Indians and Alaska Natives in the Johnson O'Malley Act of April 16, 1934, as amended, under 25USC§452. The Indian Self-Determination and Education Assistance Act of 1975 (ISDEAA), as amended, under 25USC§5301 *et seq*. and the Indian Health Care Improvement Act of 1976 (IHCIA), as amended, under 25USC§1601 *et seq*. provided new opportunities for the IHS and Tribes to deliver quality and accessible health care. Where no IHS or Tribal facilities exist IHS is authorized to purchase services from private health care providers by the Purchased/Referred care Program (PRC). The Supreme Court held in *Miller v. Arkansas*, 352 U.S.187 (1956), that a state may not require a federal contractor to be licensed by the state as a precondition of being able to perform under a federal contract. Accordingly, state licensure laws are inapplicable to federal contractors in performance of their duties. These legal principles apply to federal health care practitioners as noted in *Taylor v. United States*, 821 F.2d 1428, 1431 (9th Cir. 1987) and *Lucas v. United States*, 807 F.2d 414 (5th Cir. 1986). The President presents an annual report to Congress on IHS programs and its achievement of the goals of the IHCIA under 25USC§1671.

B. After an initial budget cut attempt by the Trump Administration, the IHS budget did remarkably well, and in the future 3% growth should be the rule. The Fiscal Year (FY)

2022 President's Budget requests $8.5 billion for the Indian Health Service (IHS), an historic increase of $2.2 billion or 36 percent above FY 2021 enacted. The budget includes for the first time ever an advance appropriation for IHS of $9.0 billion in FY 2023 that is not immediately accounted for being cancelled as both an expense, nor undistributed offsetting receipt, in this review. These advanced appropriations would bring reported IHS FY 22 spending to $17.5 billion FY 22 and would be a unique kindness to explain that advanced appropriations reduce the deficit because they are treated as undistributed offsetting receipts used to pay obligations in the beginning of the new fiscal year. FY 21 IHS had approximately 15,261 employees, down from 15,369 FY 17. 8,945 were directly employed and the other half 6,187 were reimbursed. The FY 22 budget hopes to increase FTEs 5.3% from 15,585 to 16,408 FY 22. The agency should aim for stable 1% employment growth in the future. The budget makes high-impact investments that will expand access to health care services, modernize aging facilities and information technology infrastructure, and address urgent health issues, including HIV and Hepatitis C, maternal mortality, and opioid use. It also includes funding to improve health care quality, enhance operational capacity, fully fund operational costs for Tribal health programs to support tribal self- determination, and recruit and retain health care providers. To restore purchasing power and maximize the impact of programmatic investments, the budget fully funds current services (including population growth, pay costs, and inflation) at an increase of $207 million over FY 2021 enacted.

Indian Health Service FY 17 – FY 24
(millions)

Program	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Clinical and Contract Services	4,494	4,469	4,925	5,135	5,217	6,820	7,024	7,235
Facilities	545	542	879	912	1,019	1,650	1,700	1,750
Total, Discretionary Outlays	5,039	5,011	5,804	6,047	6,236	8,471	8,724	8,985
Diabetes Grants	150	150	150	150	150	147	150	150
Collections	1,199	1,202	1,202	1,244	1,244	1,285	1,324	1,363
Program Level	6,388	6,363	7,156	7,291	7,480	9,756	10,198	10,498

Source: Weahkee, Michael. Assistant Surgeon General, Indian Health Service. Justification of Estimates for Appropriations Committees. Indian Health Service FY 2019 and 2021. CJ-8 v. HHS FY 21 & 22 Budget-in-brief pg. 37 & 38 respectively
1. The budget providing $5.2 billion for Clinical Services programs, an increase of $1.3 billion above FY 2021 enacted. These programs provide essential health services and community-based disease prevention and promotion in tribal communities. They provide direct patient care services across the IHS system, including inpatient, outpatient, ambulatory care, dental care, and medical support services, such as laboratory, pharmacy, nutrition, behavioral health services, and physical therapy. The budget makes significant investments in core health programs including Hospitals and Health Clinics (+$465 million), Purchased/ Referred Care (+$216 million), and Dental Health (+$73 million). This funding builds on significant resources provided in the American Rescue Plan for Mental Health, Alcohol and Substance Abuse Treatment, and other health care services. The FY 2022 budget will support an estimated 39,472 inpatient admissions, 12.4 million outpatient visits, and 1.1 million dental visits. Additional funding for Purchased/Referred Care will expand access to contract health care services that are not available in IHS or Tribal health facilities by providing an estimated 8,312 additional inpatient admissions, 195,465 additional outpatient visits, and 10,086 additional patient travel trips. The budget also includes $317 million for the Indian Health Care Improvement Fund—more than quadrupling the FY 2021 enacted funding level.

2. The budget provides $1.5 billion for Facilities programs—an increase of $583 million above FY 2021 enacted—to support projects on the Health Facilities Construction Project Priority List, fund sanitation construction projects, purchase medical equipment, support maintenance and improvement of health facilities, and support the Facilities and Environmental Health Support program. Lack of access to adequate sanitation facilities and safe drinking water continues to be a major challenge in Indian Country, with 12.5 percent of AI/AN homes lacking adequate sanitation facilities. These infrastructure deficiencies have a direct impact on the health status and quality of life for AI/AN people. Families with access to safe water and sewer systems in their homes require appreciably fewer medical services. The budget includes $351 million for the Sanitation Facilities Construction Program, an increase of $155 million above FY 2021 enacted. It is held that to improve their morale, general health and physical fitness and facilitate free camping, Reservations have a responsibility to construct hiking trails from urban to wilderness areas and national recreational scenic trails, and this should be a joint financial effort between IHS and tribal government.

3. The budget provides $526 million for the Health Care Facilities Construction Program, an increase of $266 million above FY 2021 enacted. This funding will support the next phase of each project on the Priority List, including: Phoenix Indian Medical Center in Phoenix, Arizona; Whiteriver Hospital in White River, AZ; Gallup Indian Medical Center in Gallup, New Mexico; and outpatient facilities in Bodaway Gap, Arizona, Albuquerque, New Mexico, and Sells, Arizona. The budget provides $125 million to fully fund staffing and operating costs for 9 newly constructed or expanded health care facilities that are expected to open in FY 2022, including: Yukon-Kuskokwim Primary Care Center in Bethel, Alaska; Naytahwaush Health Center in Naytahwaush, Minnesota;

Northeast Ambulatory Care Center (Salt River) in Scottsdale, Arizona; Phoenix Indian Medical Center in Phoenix, Arizona; Ysleta Del Sur Health Center in El Paso, Texas; Alternative Rural Health Center in Dilkon, Arizona; Omak Clinic in Omak, Washington; Elbowoods Memorial Health Center in New Town, North Dakota; and North Star Health Clinic in Seward, Alaska. These investments will expand access to health care services in local communities where existing capacity is overextended. Six of these projects are part of the highly successful Joint Venture Construction program, where tribes fund construction of a new or replacement facility, and IHS works with Congress to fund staffing and operating costs.

C. American Indians and Alaska Natives (AI/ANs) bear a disproportionate burden of death, disease, disability, and injury compared to other racial and ethnic groups in the United States. Historical trauma and chronic underinvestment significantly contributed to the perpetuation of health disparities in Indian Country. AI/AN people born today have a life expectancy that is 5.5 years fewer than the U.S. all-races population, with some tribes experiencing life expectancy as much as 12 years fewer than the general population. They also experience disproportionate rates of mortality from most major health issues, including chronic liver disease and cirrhosis, diabetes, unintentional injuries, assault and homicide, and suicide. The pandemic compounded the impact of these disparities in tribal communities, with AI/ANs experiencing disproportionate rates of COVID- 19 infection, hospitalization, and death.

1. AI/ANs have a higher prevalence of obesity than their white counterparts do (33.9 percent versus 23.3 percent for men and 35.5 percent versus 21 percent for women), and are more than twice as likely to have diagnosed diabetes as non-Hispanic whites (16.1 percent to 7.4 percent). of adults 45 to 74 years of age have diagnosed diabetes, with prevalence rates reaching as high as the non-Hispanic white population (7.4 percent). In some AI/AN communities, more than half 60 percent have diabetes. The Special Diabetes Program for Indians (SDPI) grant program provides funding for diabetes treatment and prevention to approximately 301 Indian Health Service (IHS) since 1998. The average blood sugar level (as measured by the A1C test) decreased from 9.0 percent in 1996 to 8.1 percent in 2019, nearing the A1C goal for most patients of less than 8 percent. Improving Blood Lipid Levels Average LDL cholesterol (i.e., “bad” cholesterol) declined from 118 mg/dL in 1998 to 90 mg/dL in 2019, surpassing the goal of less than 100 mg/dL. Reducing Kidney Failure The rate of new cases of kidney failure due to diabetes leading to dialysis declined by more than half (54 percent) in AI/AN people from 1996 to 2013.

2. IHS estimates between 40,000 and 100,000 American Indian and Alaska Native people are living with Hepatitis C (HCV). The CDC estimates that of 3.5 million persons in the U.S. with HCV, approximately 3.4%, 120,000 identify as AI/AN. This is more than twice the rate of other races and explains why AI/AN people have the largest increase of liver and intrahepatic bile duct cancer compared to any other race/ethnic groups. From 2010 to 2016, the annual number of HIV diagnoses increased 46 percent among American Indians and Alaska Natives. Sexually transmitted disease (STD) rates, gonorrhea and syphilis, are also rising in Indian Country. Native communities have the highest drug use

rate of 1.7 percent, substantially higher than other ethnicities: whites (0.7 percent), Hispanics (0.5 percent), Asians (0.2 percent), and African-Americans (0.1 percent). Data from the National Institutes for Justice and the Center for Disease Control show that more than 1.5 million American Indian and Alaska have experienced violence, including sexual violence in their lifetime.

3. American Indian and Alaska Native women are more than two times more likely to die from pregnancy- related causes than white women regardless of education and socioeconomic status. I/AN women had significantly higher proportion of pregnancy-related deaths for hemorrhage and hypertensive disorders of pregnancy than non-Hispanic white women did. AI/AN populations have higher rates of diabetes and obesity than the general population, which can increase their risk for pregnancy-related morbidity or death. Improving women's health overall in the preconception, pregnancy and postpartum period and increasing awareness of 'warning signs' can improve maternal outcomes. In addition, opioids, alcohol and other drugs continue to affect the nation, contributing to deaths of AI/AN pregnant woman, affecting their health and pregnancy outcomes and increasingly affecting their newborn infants. The President is committed to reducing maternal mortality and morbidity and making the United States one of the safest countries in the world for women to give birth. In FY 2021 IHS will dedicate $5 million towards the HHS-wide *Improving Maternal Health in America Initiative*, to fund (1) support for IHS preventive, perinatal, and postpartum care, (2) address the needs of pregnant women with substance use disorder including opioids, alcohol, and other drugs, and (3) improve quality of services and health outcomes in order to reduce maternal morbidity by 50 percent.

4. Across all age groups, AI/ANs suffer disproportionately from dental disease. When compared to other racial or ethnic groups, AI/AN children 2-5 years old have more than double the number of decayed teeth and overall dental caries experience as the next highest ethnic group. In the 6-9 year-old age group, 8 out of 10 AI/AN children have a history of dental caries compared with only 45 percent of the Hispanics, and more than four times that of U.S. white children. general U.S. population, and almost half of AI/AN children have untreated tooth decay compared to just 17 percent of the general U.S. population in this age group. In the 13-15 year-old age group, eight out of ten AI/AN dental clinic patients have a history of tooth decay, compared to just 44 percent in the general U.S. population, and almost five times as many413-15 year-old AI/AN youth have untreated decay compared to the general U.S. population. In adults, the disparity in disease is equally as pronounced. 64 percent of AI/AN adults 35-49 years have untreated decay compared to just 27 percent of the general U.S. population, and across all other age groups studied (50-64 years, 65-74 years, and 75 and older), AI/AN adults have more than double the prevalence of untreated tooth decay as the general U.S. population. In addition, the rate of severe periodontal disease in AI/AN adults is almost double that of the general U.S. Population. It is important that all people be instructed from a young age to brush their teeth within 10 minutes of eating sugar.

5. Suicide rates among AI/ANs are historically higher than those of the total U.S. population. In 2016, the suicide rate for AI/AN adolescents and young adults ages 15 to

34 (19.5 per 100,000) was 1.3 times higher than the national average for that age group (14.5 per 100,000). Suicide is the eighth leading cause of death among all AI/AN across all ages. The Substance Abuse and Suicide Prevention Program provides prevention and intervention resources developed and delivered by local community partners to address the dual crises of substance abuse and suicide in AI/AN communities. Levels of alcohol dependence were reported to range from 21 to 56 percent for men and 17 to 30 percent for women, both higher when compared to the U.S. national averages for men and women (19 percent and 8.9, respectively In 2016, Centers for Disease Control and Prevention (CDC) reported that the American Indian and Alaska Native (AI/AN) population had the highest overdose rates from all opioids (13.9 deaths/ 100,000 population), including the largest percentage increase in the number of deaths between 1999-2015. In 2017, the age-adjusted rate of drug overdose deaths was 9.6 percent higher than the rate for 2016. During that time, deaths rose more than 500 percent among AI/ANs. In addition, due to misclassification of race and ethnicity on death certificates, the actual number of deaths for AI/ANs may be underestimated by up to 35 percent. IHS supports naloxone for first responders, and helps providers register with SAMHSA and DEA to prescribe buprenorphine and suboxone (buprenorphine with naloxone) as medication for pregnant women with opioid use disorder. Alcohol-induced death rates are 2.8 times greater for urban AI/AN people than urban all races. In the Billings area 4 times greater, the Phoenix area 6 times greater, the Tuscon area 6.7 times greater and the Great Plains area 13.4 times greater alcohol-induced rate of mortality. Fetal alcohol spectrum disorders include disorders such as fetal alcohol syndrome, alcohol-related neuro developmental disorder, and alcohol-related birth defects. The rates of fetal alcohol syndrome are higher among AI/ANs than the general population. Screening with intervention has been shown to be effective in reducing alcohol misuse in pregnancy and to reduce the incidence of fetal alcohol syndrome.

D. Although health outcomes, like its people, may be poor, IHS is the only comprehensive provider of medical care in the HHS budget and its program budget is superb; there is no need to treat the minutiae. There is some room for criticism. On the toxic front, to reduce suicide and murder, recruitment by the FBI/DEA lethally infringing on tribal government email, it is important to inform the public, especially unnecessarily DEA registered primary care physicians whose IHS visitation statistics indicate seem to foreshadow suicide, that exposure to dimethoxymethylamphetamine (DOM) causes a three day panic attack followed by six month recovery from severe mental illness if not immediately washed off with water. Like CMS, the IHS budget is advised to stop sustaining the felony monopolization of marijuana theft to sell methamphetamine of the Office of National Drug Control Policy (ONDCP), by eliminating reference to ONDCP and change the title of their increasingly eloquent “drug control” section to Addiction. Primary pain relief should come from Epsom salt baths or bathing in a saline or chlorine swimming pool or ocean. To balance the prescription for buprenorphine IHS is advised to help defend the boycott against DEA registration and fee, for all health care providers who do not, and have no legitimate reason to, prescribe UN Controlled Substances under 21CFR§1301.11 and 21USC§823. Furthermore, psychiatric drug Zyprexa mixed with alcohol causes diabetes and death in diabetics, especially when the counterfeit is injected.

It is a matter of felony monopolization that Zyprexa is manufactured by the Eli Lilly, the same price gouging, insulin hyper-inflating US manufacturer of Humulin brand insulin.

1. Obesity and diabetes are major problems in AI/AN and a greater emphasis on exercise is needed to redress these issues and should also help somewhat with mental health and substance abuse. It is a matter of great consternation that many or most Indian Reservations do not have wilderness trails and often completely prohibit camping, forcing people to live two families to a trailer, and drive or hitchhike dangerous highways. To regain their healthy pre-wheel and horse life-style, many outdoors-people emulate, not least AI/AN, it is essential that tribal governments make an effort to construct trails from town to wilderness, legalize free camping and facilitate living in traditional dwellings. Reservation markets and farmers need support to sell affordable fresh fruit and vegetables, especially onions and garlic that are thought to treat diabetes and improve insulin production, to accompany processed starches and meat given out free to poor people with cake. For dental health it is important that children are taught to brush their teeth within ten minutes of eating sugar, as well as eat plenty of animal products or take care to consume adequate calcium and phosphorus to make apatite.

2. Safe and effective herbal and over-the-counter remedies should also be prescribed by IHS and sold in local markets, although IHS may be struggling to keep up the appearance of a first world medical provider, they will now hopefully take for granted. Gingko giloba is thought increase the production of insulin and treat diabetes and prediabetes. Some Indian reservations have suffered significantly higher rates of death and severe disease from the COVID-19 pandemic than other people. Many reservations have also engaged in the most Draconian lockdowns in the nation. It is interesting to note that IHS spends more on ineffective influenza vaccines than any other vaccine, and that people who have received COVID-19 vaccines must still treat their contagious allergic rhinitis Pinocchio nose [sic]. It is said that hydrocortisone, eucalyptus, lavender or peppermint help water and vaccines cure coronavirus and eucalyptus or lavender also cure influenza. Menthol is made from mint, although Hall's menthol cough drops or menthol cigarettes cure coronavirus it is wise to make sure the remedy contains eucalyptus, eg. mentholyptus cough drops are the frontline treatment for both coronavirus and flu.

§330 Centers for Disease Control and Prevention

A. The Centers for Disease Control and Prevention (CDC) was founded in 1946, under the name of Communicable Disease Center (CDC) to help control malaria, CDC has remained at the forefront of public health efforts to prevent and control infectious and chronic diseases, injuries, workplace hazards, disabilities, and environmental health threats. The workforce at CDC/ATSDR (Agency for the Toxic Substances and Disease Registry) totals more than 11,000 employees in 170 occupations with a public health focus, including physicians, statisticians, epidemiologists, laboratory experts, behavioral scientists, and health communicators. National headquarters are in Atlanta. The Centers for Disease Control and Prevention (CDC) works 24/7 to protect America from health, safety, and security threats, both foreign and in the United States. Whether diseases start at home or abroad, are chronic or acute, curable or preventable, human error or deliberate

attack, CDC fights disease (and one or two other styles of martial arts without regard for the laws of war) and supports communities and citizens to do the same. CDC's and public health's primary vulnerability to propaganda, medical negligence and corrupt violence is the need for CDC to stop tolerating fighting words, double-speak and prohibit incitement under Art. 20 of the Covenant on Civil and Political Rights (1978) and *New York Times v. Sullivan* 376 U.S. 254 (1964).

1. The CDC pandemic response has been [sic] and felonious monopolization by public health does not do their deprivation of rights justice. A drug abuse warning regarding pseudo-ephedrine and statin brain shrink needs to put out by the Secretary under 42USC§242. Health sector "two bag meth" abuse in furtherance of the Office of National Drug Control Policy (ONDCP) grant funding for CDC to steal marijuana and push methamphetamine began FY 19. The US Supreme Court has been illiterate since June 20, 2019, before the COVID-19 pandemic began in December. Pseudo-ephedrine is probably the most highly effective oral medication at curing viral and bacterial sinusitis, but the insomnia and most of all brain shrink side-effect is too debilitating, [sic] and life-threatening to Alzheimer's patients to allow. The Department of Justice (DOJ) and CDC must be charged with the harbor and concealment of ONDCP bio-terrorists, specifically the FBI / DEA who want to be abolished, under 18USC§2339 and §175 by the Secretaries of Health and Human Services under 42USC§242 and Defense under §175a without deviating from usual commanding officer non-judicial punishment reporting of laid off law enforcement under 24USC§419 and all ONDCP financing prohibited under 18USC§2339C(a)(1)(B). CDC must advocate for the repeal of Office of National Drug Control Policy (ONDCP) statute under 21USC§1701 *et seq*. and amendment of federal torture statute to comply with Arts. 2, 4 and 14 of the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (1987) by repealing the phrase "outside the United States" from 18USC§2340A(a)(tampered in 2009). To reduce voluntary use and involuntary opioid and other psychotropic substance abuse and the general infringement of undereducated law enforcement officers on corruptible health practitioners, who don't have a Bachelor degree in liberal arts, CDC and public health departments shall encourage health practitioners to boycott DEA Registration they have no legitimate use for under 21CFR§1300.11.

B. The Fiscal Year (FY) 2022 President's Budget requests $15.4 billion for CDC and the Agency for Toxic Substances and Disease Registry (ATSDR) a 22% increase from $12.6 billion FY 21. This total includes $8.7 billion in discretionary funding, a 55% increase from $5.6 billion FY 21, which reflects the largest budget authority increase in nearly two decades. In addition, the budget includes $903 million from the Prevention and Public Health Fund, a 1% increase from $894 million FY 21. The as of yet unfulfilled proposal for funding from the Public Health Services Evaluation Funds has been reduced to $139 million FY 22 from $542 million FY 21. The original budget error of the CDC is that the Vaccines for Children funding from the Center for Medicare and Medicaid Services (CMS) $4.6 billion FY 20, before rising to $5.5 billion FY 21 and going down to $5.1 billion FY 22, needs to be included in the CDC programs total to be cancelled in the Less Funds from Other Sources tabulation with Energy Employee Occupational Illness Compensation Program, and World Trade Center Health Program. In this program level

table scattered (non-add) Public Health Service Evaluation Funds, Prevention and Public Health Fund and User Fees are not included although they are subtracted, this does not affect the budget totals, nor does it describe their distribution, as CDC must.

1. The dramatic increase in funding is attributed to exaggerating relief from the American Rescue Plan Act of 2021, and mostly unauthorized mandatory funding for the ONDCP conspiracy with the Attorney General to launder twice the amount, per agency, $5 billion FY 23 – FY 29, than what should not have been reauthorized in 21USC§1706(p). FY 22 needs to be redressed to sustain normal 3% inflation: Spending for Injury Prevention and Control needs to be reduced from $1,103 million to $318 million. Spending for Occupational Safety and Health need to increase to keep up with inflation from $345 million to $355 million. Spending for Public Health Preparedness needs to increase from $842 million to $867 million, a 25% increase, on top of the $35 million deposited in a new trust fund. Due to wide-spread corruption of CDC by ONDCP meth CDC wide spending needs to be reduced from $709 million substance abusing high to the generous inflation adjusted level of $381 million. These adjustments change the total program level request from $15.4 billion to $14.3 billion FY 22 a 13.5% increase from $12.6 billion FY 21 and total discretionary budget request from $8.5 billion to $7.5 billion FY 22 a 33% increase from $5.6 billion FY 21. This large increase is justified by prohibiting ONDCP meth terrorism finance from the White House, DOJ and CDC and prescribing hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus and end the germaphobic COVID-19 pandemic..

Centers for Disease Control and Prevention FY 17 – FY 24
(millions)

Program	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Immunization and Respiratory Disease	793	745	783	790	821	946	974	1,004
Vaccines for Children (CMS)	4,437	4,401	4,176	4,578	5,468	5,140	5,294	5,453
HIV/AIDS, Viral Hepatitis, STIs and TB Prevention	1,115	1,110	1,124	1,274	1,314	1,421	1,464	1,508

Emerging and Zoonotic Infectious Diseases	576	568	624	636	648	678	708	729
Chronic Disease Prevention and Health Promotion	1,114	1,078	1,185	1,240	1,277	1,453	1,497	1,542
Birth Defects, Developmental Disabilities, Disability and Health	137	137	155	161	168	173	178	184
Environmental Health	215	178	209	214	223	333	343	353
Injury Prevention	286	284	648	677	683	1,103 / 318	327	336
Public Health and Scientific Services	496	494	526	578	592	742	764	787
Occupational Safety and Health	334	333	335	343	345	345 / 355	366	377
World Trade Center	351	420	517	491	551	641	567	585

Health Program								
Energy Employee Occupational Illness Compensation Program	50	55	51	51	51	51	53	54
Global Health	434	432	494	571	593	698	719	741
Public Health Preparedness and Response	1,402	840	835	827	842	842 / 867	893	867
Buildings and Facilities	10	10	30	25	30	55	31	32
CDC-Wide Activities and Program Support	274	257	327	359	284	709 / 381	392	404
Agency for Toxic Substances and Disease Registry (ATSDR)	75	74	75	77	78	82	85	87
Total Program Level	12,099	11,415	12,094	12,892	13,968	15,412 / 14,334	14,655	15,043
Less								

Funds from Other Sources								
Vaccines for Children	4,437	4,401	4,176	4,578	5,468	5,140	5,294	5,453
Energy Employees Occupational Illness Compensation Program	50	55	51	51	51	51	53	54
World Trade Center Health Programs	351	420	517	491	551	641	567	585
PHS Evaluation Funds	0	0	0	0	0	139	0	0
Prevention and Public Health Fund	891	805	805	854	856	903	930	958
User Fees	2	2	2	2	2	2	2	2
Total Discretionary Budget Authority	6,368	5,732	6,543	6,916	7,040	8,536 / 7,458	7,809	7,991
FTEs inc. ATSDR	11,774	11,519	11,318	11,464	12,149	12,684	12,811	12,939

Source: HHS Budget-in-brief FY 19, FY 21; Redfield, Robert R. Department of Health and Human Services FY 21 Centers for Disease Control and Prevention. Justification of Estimates for Appropriations Committees.

C. Through the discretionary Immunization Program and mandatory Vaccines for Children program, CDC improves access to immunization services for uninsured and underinsured U.S. populations and supports the scientific evidence for vaccine policy and practices. CDC also provides critical epidemiology and laboratory capacity to detect, prevent, and respond to vaccine-preventable, respiratory, and related infectious disease threats and conducts preparedness planning for pandemic influenza. Preparing for and implementing a COVID-19 vaccination program at a national scale served as a pressure test for the country's adult immunization infrastructure and provided the opportunity for CDC to identify areas for improvement. CDC estimates that influenza has resulted in 9 million- 45 million illnesses, 140,000-810,000 hospitalizations, and 12,000-61,000 deaths annually since 2010. $25 million to continue supporting implementation of the influenza planning and response activities outlined in the 2020-2030 National Influenza Vaccination Modernization Strategy. CDC estimates that, for the 2017-2018 influenza season, vaccinations prevented over 6 million illnesses and more than 3 million influenza-associated medical visits. However, although flu vaccines are the hardest sold and highest selling of all vaccines, probably outselling childhood vaccines and Pneumovax combined, flu vaccines are notoriously ineffective. In some years flu vaccine effectiveness is estimated at 5%. Nearly every year there are news reports of outbreaks and of hospital staff becoming infected after the failure of the vaccine, wrongfully asking for the development of a new vaccine.

1. President's September 2019 Executive Order, "Modernizing Influenza Vaccines in the United States to Promote National Security and Public Health" set bad precedence for the felony monopolization of COVID-19 vaccine development. The influenza vaccine is a topic of felony monopolization whereby vaccine manufacturers make a lot of money selling a defective product, the public health sector engages in leaky laboratories without informed consent regarding the high level of evidence of the effectiveness of eucalyptus and lavender at curing the wet cough of influenza. Mentholyptus (containing eucalpytus) cough drops are the frontline treatment for influenza. Prescription Oseltamivir (Tamiflu), Zanamivir (Relenza) and Amantadine (Symmetrel) are also highly effective oral medications for treating influenza, that should be advertised when there are influenza outbreaks, not desperate pleas for the development of a new flu vaccine whenever there is another outbreak of defective flu vaccination.

D. The Budget prioritizes funding to protect Americans from infectious and chronic diseases and end the HIV epidemic. In FY 2019, Congress established the Infectious Disease Rapid Response Reserve Fund to allow HHS to rapidly and effectively respond to emerging infectious disease outbreaks. To date, the Fund has been used to address critical needs, including Ebola outbreaks and COVID-19 response efforts. The FY 2022 budget includes $35 million for deposit into the Fund to provide HHS with funding that can be used to rapidly and effectively respond to emerging domestic or global infectious

disease threats. This however does not make up for the cuts in regular funding estimated at $25 million FY 22 that are redressed in this review.

1. Scientific advancements in prevention and treatment tools have made a future free of HIV, viral hepatitis, sexually transmitted infections (STI), and tuberculosis possible. HHS's *Ending the HIV Epidemic* multi-year initiative targets 48 counties, Washington, D.C., and San Juan, Puerto Rico, which together account for more than 50 percent of new HIV diagnoses, and 7 states that have a substantial rural HIV burden with additional expertise, technology, and resources. These investments will advance HHS's efforts to reduce new HIV diagnoses by 75 percent in 5 years and by 90 percent by 2030. The four strategies of the initiative: prevent, diagnose, treat, and respond. These activities include increasing HIV testing in clinical settings, making testing more accessible in non-traditional settings, promoting rapid and comprehensive care for all persons diagnosed with HIV, improving use of Pre-exposure prophylaxis (PrEP), and detecting potential clusters of HIV transmission early to prevent outbreaks. $275 million funding for EHE will result in approximately 14,000 new diagnoses, 12,000 people re-linked to health care, 13,000 people enrolled in pre-exposure prophylaxis services and treatment, and investigation of and response to 75-100 HIV clusters or outbreaks. The United States is experiencing a significant increase in STIs; in 2018 there were more than 2 million cases of chlamydia, gonorrhea, and syphilis (including congenital syphilis in babies) combined, more than ever previously reported. The nation has seen a 4-fold increase in reported cases of Hepatitis C from 2010 to 2017. The United States continues to experience a public health crisis involving opioids (including heroin, fentanyl, prescription medications). The increase in substance use has resulted in more injection drug use nationwide. CDC estimates 28,000 people have been diagnosed with Hepatitis A due to recent outbreaks, 862,000 Americans are living with chronic Hepatitis B, and 2.4 million are living with Hepatitis C. The opioid crisis has fueled increases in new viral hepatitis infections due in large part to increased rates of injection drug use. Hepatitis A outbreaks comprise the largest increases in Hepatitis A infection in the U.S. in nearly two decades.

2. CDC protects the country from public health threats by preventing and controlling a wide range of infectious diseases outbreak response, surveillance, laboratory expertise, health disparities and support for state and local health departments. These threats include diseases caused by bacteria (like anthrax or Salmonella), viruses (like Zika or Ebola), or fungi (like Valley Fever). Tick-borne diseases, such as Lyme disease, account for 80 percent of all reported vector-borne disease cases each year and represent an important emerging public health threat in the United States. The number of reported cases has doubled since 2004 and reached a record high of more than 59,000 cases in 2017. The geographic ranges of ticks have also expanded. The NIH has reported that some tic born disease may cause red-meat allergy and although this has been uncertainly corroborated it is more likely to be due to MRSA contamination of spoiled animals products in the outdoors. Antibiotic resistance is one of there serious subversive forms of health propaganda because the convention treatment of these infections are accidentally or maliciously forgotten to solicit for research reinventing the wheel. CDC's *2019 Antibiotic Resistance Threats Report* estimates that more than 2.8 million illnesses and about 35,000 deaths are caused by Antibiotic Resistance in the United States each year,

leading to billions in excess costs to the U.S. healthcare system. As a rule doxycycline treats Lyme disease, bubonic plague and methicillin resistant Staphylococcus aureus (MRSA). The frontline treatment for MRSA is usually sterilized with Epsom salt bath, chlorine or saline swim. Metronidazole treats antibiotic resistant *Clostridium difficile, Helicobacter pylori* and *Bactroides fragilis*. Ampicillin treats Azithromycin resistant pneumonia, sinusitis and meningitis. Pneumovax is 80% effective for ten years against a variety of pneumococcal infections of the heart, lung and brain. Nine months of the combination of INH and rifampin chemotherapy will result in roughly 95% cure rates, therapy with INH, rifampin and ethambutol helps avoid the complication of drug resistance with non-tubercular mycobacterial disease, the addition of pyrazinamide can reduce treatment time to six months, but is toxic.

3. CDC will expand the quarantine network to include additional quarantine stations and extend CDC response capabilities to achieve 24/7 coverage at the most heavily trafficked airports and land border crossings. Infected persons may fly or sail to any location in the world, often in less time than it takes to develop symptoms of disease, and there are statutes authorizing their quarantine. However, it is gravely disturbing that CDC has neither discredited the myth regarding the asymptomatic COVID-19 patients, nor know how wash their "Pinocchio nose". The general grant of authority for cooperation with states, is somewhat vague in regards to misinterpreting 'the prevention and suppression of communicable diseases' to include blocking information (communication) regarding what prescription to treat the communicable disease with under 42USC§243. Quarantine statute also fails to "treat" animals and people with precise medical "prescriptions" under 42USC§264. This seems to be an international oversight and millions of minks were sacrificed due to COVID-19 that could have been easily treated with a eucalyptus, lavender or peppermint scented bath and environmental cleaning. Not to mention the millions of humans who died because they were not prescribed hydrocortisone, eucalyptus, lavender or peppermint in order to prevent "vaccine reluctance". The sick have a right to cheap, safe and effective treatment.

E. The FY 2022 budget includes $742 million for Public Health Scientific Services (PHSS). The FY 2022 budget includes $106 million for Public Health Workforce and Career Development programs, which is a $50 million increase above FY 2021 enacted. Within PHSS, the budget includes $150 million, $100 million above FY 2021 enacted, to support CDC's Public Health Data Modernization Initiative. The National Center for Health Statistics is the nation's principal health statistics agency, for which the budget provides $175 million. The National Center for Health Statistics shall be under the direction of a Director who shall be appointed by the Secretary under 42USC§242k. The Center shall conduct and support statistical and epidemiological activities for the purpose of improving the effectiveness, efficiency, and quality of health services in the United States. The Center shall collect statistics on - 1. The extent and nature of illness and disability of the population of the United States (or of any groupings of the people included in the population), including life expectancy, the incidence of various acute and chronic illnesses, and infant and maternal morbidity and mortality. 2. The impact of illness and disability of the population on the economy of the United States and on other aspects of the well-being of its population (or of such groupings). 3. Environmental, social, and other health hazards. 4. Determinants of health. 5. Health resources, including

physicians, dentists, nurses, and other health professionals by specialty and type of practice and the supply of services by hospitals, extended care facilities, home health agencies, and other health institutions. 6. Utilization of health care, including utilization of (i) ambulatory health services by specialties and types of practice of the health professionals providing such services, and (ii) services of hospitals, extended care facilities, home health agencies, and other institutions. 7. Health care costs and financing, including the trends in health care prices and cost, the sources of payments for health care services, and Federal, State, and local governmental expenditures for health care services. 8. Family formation, growth, and dissolution.

F. Injuries and violence can affect anyone, regardless of age, race, or economic status. In the first half of life (ages 1-44), more Americans die from violence and injuries, such as motor vehicle crashes, falls, or homicides, than from any other cause. The FY 2022 budget includes $1.1 billion, an increase of $420 million, for the National Center for Injury Prevention and Control. In addition to the discretionary investments included in FY 2022 for the Community Violence Intervention Initiative, the budget includes a total of $2.5 billion in unauthorized mandatory funding for CDC, beginning in FY 2023 and continuing through FY 2029. This complements a similar unauthorized investment of the Department of Justice for a government-wide total of $5 billion from fiscal years 2023-2029, four times the amount that should not have authorized in 21USC§1706(p)(6). CDC claims to be the nation's leading authority on violence and injury prevention and is committed to stopping violence before it begins. However, CDC is sorely challenged to stop this robbery (first degree murder 18USC§1111) that began FY 19 when Injury Prevention and Control was corrupted with $400 million of Office of National Drug Control Policy finance stolen from honor for the Substance Abuse Mental Health Administration (SAMHSA) under Title II of the National Narcotics Leadership Act of 1988 that amended the Public Health Services Act under 42USC§300x-21 *et seq*. The current and proposed ONDCP funding for CDC and the Attorney General is not authorized by law, is two times, per agency, in excess of that which should not have been authorized under 21USC§1706(p)(6).

1. CDC claims this money is invested in Opiate Abuse and Overdose Prevention. However, it would seem that the White House, by terminating accounting for all but the White House ONDCP Office itself, that intoxicates the President under 21USC§1711, has foisted the distribution calculators of the extremely corrupt High Intensity Drug Trafficking Areas (HIDTA) and Drug-Free Communities (DFC) grant programs, that have always been counterproductive, on the notoriously corrupt Attorney General and novel CDC fighting word propaganda since 2019. HIDTA steals marijuana to push methamphetamine. The COVID-19 pandemic has brought to light that the Drug Free Community program has been adopted by the germaphobic Public Health Service to further prevent the public from being informed of life-saving treatment for the coronavirus or virtually any common ailment one would consult an unnecessary surgery selling doctor about or search online. After a brief decline in opiate use and overdose in the second half of 2018, with some concern regarding an increase in methamphetamine overdoses, these gains were lost to the COVID-19 pandemic and in 2020 there were a record 90,000 overdoses.

2. What has occurred is that after great success getting the message across to consumers and physicians, with information regarding life-saving opiate agonists naloxone and development of biosimilars, the FDA approved buprenorphine for use in pregnant women, without condemning the epidural to sell CDB pain killers and opiate use is popular again, thank to the vast amount of HHS wide opiate funding and being the only drug referred to by name in the 21st Century Cures Act. To make matters domestically violent in the health sector, the public health service has cultured "two bag meth" pseudo-ephedrine and TMJ causing psychiatric drug. The HHS wide opiate propaganda from the 21st Cures Act needs to be abolished to finance regular growth for Substance Abuse Prevention and Treatment funding. SAMHSA addiction programs are professional but need to diversify 'substance abuse' to treat bio-terrorist prescription drug abuse, especially their fundamental hypocrisy failing to condemn psychiatric drugs, and laboratory supply abuse, that plague their grant programs especially and society in general, under 42USC§242 and §262 respectively.

3. The FY 2022 budget claims to includes a set of critical investments that will allow CDC to advance efforts to reduce all forms of violence–including community violence, gun violence, intimate partner violence, gender-based violence, and sexual violence. Specifically, the budget includes an additional $5 million for domestic violence community projects, allowing to CDC to expand the questionably militant language of the Domestic Violence Prevention Enhancement and Leadership Through Alliances (DELTA) program by funding up to 20 additional recipients to build capacity to implement and evaluate proven intimate partner violence prevention strategies in their states. It is true, violence prevents intimate partnership. Since the degradation of torture statute in 2009 the jealous, tyrannical and slated to be abolished FBI /DEA wiretap routinely stalks everyone who petitions the Attorney General. The inherent gullibility for DEA Registration, the vast majority have no legitimate use for, makes health students and professionals, without the slightest Bachelor of liberal arts, particularly vulnerable to enlistment, victimization, and suspicion, for which CDC and the public health department must help defend a boycott for practitioners who have no legitimate reason to register under 21CFR§1300.11. Enlisting an intimate partner or rivalry prone family member or roommate to poison their loved one is particularly cruel. Estrangement is the only response and in these common cases of government conspiracy and poisoning the estrangement must unfortunately be permanent because they are as certain to recidivate, no matter how skillfully disciplined the agent is, maybe for only so long as the FBI / DEA continue to enjoy the full faith and credit of their hostage United States government and adversarial possession of UN Controlled Substances. The violent perpetrator of intentional poisoning is never going to understand because they opted to break a law even more fundamental than economic law, the laws of war in the land of love and Hippocratic Oath. Because of the unconstitutionally vague language the DELTA program must not be approved. Investments of $12.5 million, for a total of $25 million, from within the Injury Prevent program, rather than in addition, will support firearm injury and mortality prevention research and data collection to identify the most effective ways to prevent firearm related injuries and deaths. There is no need for any other investment. Dimethoxymethylamphetamine (DOM) that causes a three day panic attack, followed by six month recovery from severe mental illness, washes off with water.

4. According to the CDC's National Center for Health Statistics, provisional overdose mortality fell by 5 percent for the 12 months ending in the second quarter of 2018. However, in 2020 and the beginning of 2021 there has been an increase in arrests of major opiate dealers, and rates of opiate abuse and overdose are thought to have gone up with the COVID-19 dissatisfaction with public health. CDC notes the emergence of increased methamphetamine use, incidental to CDC ONDCP finance. More than 70,000 Americans died from drug overdoses in 2017 alone. Opioids, mainly synthetic opioids (other than methadone), are currently the main driver of drug overdose deaths. Opioids were involved in 47,600 (68 percent) of all drug overdose deaths in 2017. Additionally, overdose deaths involving methamphetamine and other stimulants are increasing, and in a growing number of states are responsible for more deaths than opioids. Enforcement of the Drug Free Communities Act of 1997 intending to reduce substance abuse among youth seems to have become a major ephedrine abusing justifier of denying people life-saving medicine during the COVID-19 pandemic. Both the CDC and the Attorney General need to abolish the counterproductive Office of National Drug Control finance.

5. The terrorism finance by the Injury Prevention and Control program is so severe that it is proposed that "Control" be removed from its name because the somewhat frightening concept, when thought about in the light of tyrannically controlling the population with disease, has become so drug abused since the 1970s, the state of mindfulness advocated by the use of the term "control" by the Center for Disease Control and Prevention (CDC) since 1946 has driveled into perjury and false claims whereby the lot of the perjurer is the opposite pursuant to the Hippocratic Oath, whereby all CDC fighting words require a double take, and the term "Control" is not usually used in regards to Injury Prevention, although controlling one's temper is not unheard of, no one would dream of advocating for violence control, because violence is so often used to control others, and in the context of Injury Prevention, violence control describes the self-defense justification of hand-to-hand and armed violence against attackers, that is so often abused and financing a martial arts school, runs contrary to even CDC's extremely loose ethics regarding propaganda and fighting words, that got them into this trouble in the first place.

6. The major fraud underlying the global COVID-19 pandemic, felony monopolization of the news media and government by vaccine propaganda, and consequential deprivation of rights seems to be that CDC Injury Prevention and Control was corrupted by Office of National Drug Policy funding FY 19 they are not entitled to. ONDCP terrorism finance is primarily characterized by stealing marijuana in order to push methamphetamine, but maintains an office in the White House, not unlike concealment of the fact mentholyptus cough drops are the frontline treatment for both the wet cough of influenza and allergic rhinitis of coronavirus, with a little nose washing by seasonal influenza and coronavirus vaccine propaganda. ONDCP finance was wrongfully transferred to the Attorney General, whose offices have been dominated by FBI/DEA torture since the hacking of torture statute in 2009, after being terminated by the White House FY 18, where a small staff remains to intoxicate the President. Instead of terminating this *ultra vires* financing, they are not entitled to, when brought to their attention, CDC has increased funding for Injury Prevention and Control and joined the Attorney General in a $100 million gun

fight, that fails to provide militants with the critical civilian command information that FBI criminal informant administered dimethoxymethylamphetamine (DOM) causes a three day panic attack followed by six month recovery from severe mental illness if not washed off with water. Due to their failure to abolish ONDCP, FBI and DEA both the Department of Justice and CDC must be charged with the harbor and concealment of bio-terrorists under 18USC§2339 and §175 by the Secretaries of Health and Human Services under 42USC§242 and Defense under §175a without deviating from usual commanding officer non-judicial punishment of laid off law enforcement under 24USC§419 and ONDCP financing totally prohibited under 18USC2339C(a)(1)(B). Regular, 3% annual inflation adjusted, substance abuse and prevention funding for SAMHSA.

7. The corruption of the CDC public health agency by ONDCP FY 19 has given rise to an even more brain shrinking epidemic of voluntary and involuntary "two bag meth" pseudo-ephedrine and TMJ discomfort causing psychiatric drug abuse amongst health professionals and law enforcement. The US Supreme Court has not published since June 20, 2019. Pseudo-ephedrine is suspected in making them unable to cope with the incessant FBI computer hacking from the Microsoft infringement exacerbated since the Windows 8 release. Pseudo-ephedrine (Mormon tea) is derived from Ephedra that is found in the Great Basin of Utah and Nevada and is an old trick of corrupt law enforcement to foist false charges on unwitting lawyers, judge and jury, that is probably the main reason for the quintupling of incarceration since 1980. It is interesting to note that although the brain shrinking, insomnia and illiteracy side-effects are intolerable, and there are many safe and effective alternatives without any side-effects at all, pseudo-ephedrine is probably the most effective oral medication for clearing the sinuses of viral and bacterial infection. This has probably not been suggested because the users, both voluntary and involuntary, who have been leading the public information campaigns regarding COVID-19 although physically awake and not tired, are too stupid, ill-tempered, without being excessively mad, and only barely mentally capable to amuse themselves with burn piles and copying things they don't necessary believe [sic]. Neither pseudo-ephedrine nor DOM, the drugs most abused by corrupt law enforcement, are listed in the unprofessional list of UN Controlled Substances, justifying armed infringement of under educated law enforcement officers on the Bachelor of liberal arts deficit of medical practice and psychotropic drug addiction, nor should they be included in the ineffective CSA hallucination. To make peace and free the Departments of Justice from torture, the Attorney General must abolish the FBI, DEA and ONDCP and repeal marijuana from Schedule I(c)(17) of the CSA under 21USC§812(c).

G. Every 4.5 minutes, a baby in the United States is born with a major birth defect, and 1 in 6 children have developmental disabilities. CDC enriches the quality of life of vulnerable populations through efforts to identify and address the causes of birth defects, infant disorders, and developmental disabilities. Every 15 minutes, a baby is born with neonatal abstinence syndrome, which occurs when newborn babies experience withdrawal after being exposed to drugs in the womb. The *Surveillance for Emerging Threats to Mothers and Babies* initiative, launched in FY 2019, currently supports 13 jurisdictions and public health organizations to monitor and determine the impact of serious threats, such as Zika virus, syphilis, and Hepatitis C, on mothers and babies, and

to track the occurrence of birth defects and developmental disabilities as children age. Toward the HHS-wide *Improving Maternal Health in America Initiative*, CDC will expand Maternal Mortality Review Committees to all 50 states and DC. A number of factors contribute to the high maternal mortality rate among Black and American Indian/Alaska Native women. One of these factors is implicit bias, which can impact how a health care provider communicates with a woman and executes medical decisions. Hear Her encourages health care providers to really listen when a woman tells them something does not feel right, and to find curative alternatives to prescribing opiates and epidurals for pain.

1. Although opiate overdose is not the leading cause of maternal mortality, it is a big problem and there is a lot of propaganda regarding bupernorphine and subloxone being approved to treat pregnant women with opiate addiction. It would be a good idea to blow the whistle on the epidural and advocate for childbirth without pain-killers or non-opiate analgesics such as cannabis derived CBD. The leading causes of maternal mortality in the United States are Cardiovascular conditions, 15.5%; Infection or sepsis, 12.7%; Cardiomyopathy, 11.5%; Hemorrhage, 10.7%; Thrombotic pulmonary or other embolism, 9.6%; Cerebrovascular accidents, 8.2%. Hawthorn is the supreme herb for the heart and it helps to reduce cholesterol, regulate arrhythmias and normalize high and low blood pressure and eliminate *Staphylococcal* lesions after they have been sterilized in an Epsom salt bath or saline or chlorine swim, the daily, regular frontline treatment for methicillin resistant *Staphylococcus aureus* (MRSA). To treat infection and sepsis, Pneumovax is highly safe and effective at preventing all pneumococcal infections and thereby excruciating toxic shock syndrome in conjunction with MRSA, is not contraindicated for pregnancy and is in fact the mainstay of health professional immunity. Furthermore pregnant women need to be prescribed non-teratogenic broad—spectrum antibiotics especially clindamycin to make sure MRSA is treated as best as possible. They need money to eat non-spoiled fresh food, particularly green leafy vegetables, soybean and canola oil, with vitamin K. CDC monitors cases of Acute Flaccid Myelitis (AFM), a rare but serious condition affecting the nervous system, particularly in children.

H. CDC protects Americans against everyday hazards found in air, water, or food. The budget increases funding for the Childhood Lead Poisoning Prevention Program to support activities in 53 state and local jurisdictions. The budget also includes funding to continue support for the Lead Exposure Registry, an innovative, one-of-a-kind registry originally funded in FY 2021. Climate-related events such as heat waves, floods, droughts, and extreme storms affect everyone, but not everyone is affected equally. Factors such as age, location, race, and occupation all affect an individual's resilience to climate-related health risks. The National Institute for Occupational Safety and Health (NIOSH) is the lead research agency focused on worker safety and health. Through NIOSH's efforts, CDC helps protect the nation's 163 million workers and provides the only dedicated federal investment for research needed to prevent occupational injuries and illnesses that cost the United States $250 billion annually. The September 11, 2001 terrorist attacks required extensive response, recovery, and cleanup activities exposing thousands of responders and survivors to toxic smoke, dust, debris, and psychological

trauma. The World Trade Center Health Program was established by the James Zadroga 9/11 Health and Compensation Act of 2010 and reauthorized in 2015 until 2090 to serve all eligible responders, as well as survivors who were in the New York City disaster area. The budget includes $641 million in mandatory federal share funding to provide monitoring and treatment benefits to eligible responders and survivors, conduct research on related health conditions, and maintain a health registry to collect data on those affected. To date, the program has enrolled over 106,000 eligible participants and paid claims for treatment and medication for more than 36,000 enrollees.

1. As evidenced by the COVID-19 pandemic, the country faces health threats in today's highly connected world. Local disease outbreaks can escalate into regional, national, and global emergencies. As seen in the last two decades with H1N1, Ebola, Zika, SARS-COV-1 and SARS-COV-2, new diseases can emerge, or formerly localized diseases can be transported to create devastating impacts on human health and prosperity. Natural disasters occur regularly and can escalate into widespread emergencies. Other threats, whether chemical, biological, radiological or nuclear, man-made, or naturally occurring, are present and growing. The budget provides $842 million for CDC's public health preparedness and response activities. Public health capacity at the state and local levels is critical to ensure effective preparedness response and recovery from public health emergencies. The budget includes $695 million for the Public Health Emergency Preparedness cooperative agreements. In FY 2022, CDC will continue to provide funding to 62 awardees, which includes all 50 states, four major cities, and eight territories and will continue support for more than 2,400 staff that provide critical public health expertise at the local level which enables faster and more effective responses.

2. Diseases can spread from a remote village to a major city in as little as 36 hours. CDC works globally to detect and respond to diseases where they occur. The budget includes $698 million for CDC's global health activities that help protect Americans from major health threats such as Ebola, Zika virus, and pandemic influenza. With new resources in FY 2022, CDC will expand in- country staffing in the 19 intensive support countries. There is deep concern that CDC/ONDCP Injury Prevention and Control finance is responsible for intoxicating the response of national and global public health, government response in order to justify Draconian control measures, dominate the populace and push meth so everyone is on the same dumb and unhealthy wavelength. While the United States is obviously not as responsible as the World Health Organization for declaring and continuing to declare that there is no readily available treatment for coronavirus, other than their quasi delusional possibly self-enriching vaccine drive, the United States is a powerful and often unethical actor, fond of dominating global affairs when not being falsely accused by other perpetrators and victims of third parties. The COVID-19 pandemic has driven home that fact that disease surveillance, although important, is worthless to tyrannical, if it does not treat the disease, or seeks to push expensive, ineffective or unavailable remedies such as the COVID-19 vaccine millions of people die waiting for and in the end does not cure coronavirus as well as hydrocortisone, eucalyptus, lavender or peppermint help water.

3. The Agency for Toxic Substances and Disease Registry (ATSDR) is the lead public health agency responsible for representing the study of toxicology and implementing the health-related provisions of Superfund (the Comprehensive Environmental Response, Compensation and Liability Act of 1980) for which reason it has Environmental Division (ED). ATSDR is charged with assessing health hazards at specific hazardous waste sites, helping to prevent or reduce exposure and the illnesses that result, and increasing knowledge and understanding of the health effects that may result from exposure to hazardous substances. With staff in Atlanta as well as 10 regional offices and 25 State health departments across the country, ATSDR is available 24 hours a day, seven days a week to respond to local concerns and protect the public's health during environmental emergencies like chemical spills and natural disasters. Superfunds must pay for residents to relocate to a nice new home, from their condemned homes, after exposure to radiation from the West Lake Landfill site near St. Louis, Missouri. The lesson learned is that radiation therapy to treat child cancers caused by radiation is fatal in three out of three cases. The mission is supported by the Agency goals: 1. Evaluate human health risks from toxic sites and take action in a timely and responsive public health manner through the study of epidemiology. 2. Ascertain the relationship between exposure to toxic substances and disease provide for a registry of individuals who are exposed to hazardous waste. 3. Develop and provide reliable, understandable information for affected communities, tribes, and stakeholders. 4. Build and enhance effective partnerships. In FY 2020, ATSDR responded to over 2,200 requests COVID-19 related inquiries from the public and health care professionals. New resources in FY 2022 will enable continued and expanded geospatial public health analyses, including COVID-19 variant, cluster, and outbreak analysis.

I. The FY 21 budget and congressional justification did not explain any of CDCs activities regarding the COVID-19 pandemic and the FY 22 budget and both suffers from COVID-19 vaccine hesitancy and failure to prescribe hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus; eucalyptus or lavender also cure influenza – mentholyptus cough drops are the frontline treatment for both influenza and coronavirus, with a little nose washing. Eucalyptus, lavender or peppermint soap in public restrooms is probably the best way to end the COVID-19 pandemic. As the multi-jurisdictional public health authority CDC has been the lead federal proponent of wrongful influenza symptoms of wet cough and fatigue being used to describe the allergic rhinitis of coronavirus, Draconian lockdowns and antisocial policies, to justify vaccine development, while failing to prescribe hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus and eucalyptus or lavender also cure influenza. In their defense, and departmental shame, they were probably intoxicated by pseudo-ephedrine from the newfound dramatic increase in funding for and abuse of Office of National Drug Control Policy propaganda in their Injury Prevention and Control program. "Drug free communities" propaganda requires the highest level of criticism as being a major cause of their and other federal government, and health practitioner inability to prescribe curative drugs/OTC remedies. Advocates of remedies and decision-makers are assaulted with intimate partner violence with pseudo-ephedrine, blocking of information and fraudulent government counter-propaganda to render the authors illiterate and fake propaganda foisted decision-makers [sic] respectively. [Sic] means

copied but not believed. Millions of people have been killed worldwide as the result of waiting for COVID-19 vaccines, that do not eliminate the contagious state of allergic rhinitis.

1. CDCs official response to the WHO COVID-19 pandemic requires dissemination. Most importantly CDC, and other US public agencies, were not competent to overrule the WHO vaccine research propaganda declaration that there is no treatment for coronavirus. Millions have died because of felony monopolization of the news media and government by vaccine propaganda that hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus and eucalyptus or lavender also cure influenza. CDC has not and did not immediately disseminate WHO COVID-19 symptom propaganda mixing up the wet cough and fatigue of influenza with the allergic rhinitis that fills up the lungs with fluid of coronavirus. The FDA combination coronavirus test tests positive for coronavirus for both coronavirus and influenza. The COVID-19 vaccine is highly effective at preventing death and severe illness from coronavirus but is only about 30% effective at preventing the contagious state of allergic rhinitis and is not effective against influenza, the combination test mistakes for coronavirus. CDC has not managed to wash their nose (and chest) with eucalyptus, lavender or peppermint soap, after no face touching rules and OCD-like hand washing advisories. CDC's sensitive Pinocchio nose has not overruled the asymptomatic patient incubation period justifying excessive germaphobic quarantine. In 2021, the second year of COVID-19 pandemic, CDC did recognize that the coronavirus Pinocchio nose, regarding the asymptomatic patient, does go away while swimming, but is quickly reinfected when leaving the water, and legalized the reopening of swimming pools. California made a dramatic recovery and water was recognized as the primary ingredient to the prescription for hydrocortisone, eucalyptus, lavender or peppermint help water to cure coronavirus.

2. CDC relaxation of COVID-19 quarantine restriction and lockdowns and mask requirements due to the purported effectiveness of vaccines, is very reassuring to the American public. This is especially comforting to the President, news media, and Supreme Court, including lawyers, believed to be particularly under the influence of mostly CDC financed ONDCP pseudo-ephedrine control. The actual medical reason for the reduction in infection is probably that by removing the germy mask requirements for the public, the last repository of the infection, masks used more than 8 hours, were discarded. The pandemic is however not over and people who do not know how to treat themselves, including vaccinated persons, are still contagious and often wear a mask, to induce a feeling of medical negligence regarding their need for medical instruction regarding hydrocortisone, eucalyptus, lavender or peppermint curing coronavirus, e.g. take a mentholyptus cough drop and wash your nose.. Another medico-legal reason is that to declare the success of vaccines, vaccine/ testing center leak terrorists, or authorization, was exported to India for a vaccine drive there. There is concern that vaccinated people continue to be contagious, publicly reported deaths are now without cause and the public must know how to treat coronavirus and influenza. A recent study showed that unvaccinated people in nursing homes, who ostensibly know how to treat coronavirus with OTC remedies, had lower rates of confirmed coronavirus infection (0.1%), than fully vaccinated people (1%) or half vaccinated people (4.3%).

Although COVID-19 vaccines are more effective than influenza vaccines, COVID-19 and influenza vaccine propaganda is a learning disability, hard selling a disproportionately large share of these defective vaccines on the pandemic intimidated public, far in excess of childhood vaccines and effective Pneumovax, without informed consent. It is medically and legally necessary that public health authorities, including CDC and WHO, cease their felony monopolization of vaccine propaganda in the news media and government, to ensure the public knows to treat their pandemic -

Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis and eucalyptus, or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus or lavender soap in showers, baths and public restrooms, with instruction to "wash your nose". Intensive care units, waiting rooms and public airspaces may be sterilized with eucalyptus scented humidifiers (diffusers) not used since the 1950s.

§331 National Institutes of Health

A. The National Institutes of Health (NIH) is an agency of the Public Health Service established under 42USC§281 to (i) provide for a broad range of research and education activities relating to biomedical, epidemiological, psychosocial, and rehabilitative issues, including studies of the impact of such diseases in rural and underserved communities; (ii) identify priorities among the programs and activities of the National Institutes of Health regarding such diseases; and (iii) reflect input from a broad range of scientists, patients, and advocacy groups that focuses on (a) providing for research on matters that have not received significant funding relative to other matters, responding to new issues and scientific emergencies, and acting on research opportunities of high priority; (b) supporting research that is not exclusively within the authority of any single agency of such Institutes. There are a total of 21 institutes and 3 centers. In order to assist the advancement of medical and related sciences and to aid the dissemination and exchange of scientific and other information important to the progress of medicine and to the public health, there is established the National Library of Medicine under 42USC§286. Every year there are one or more new institutes proposed, but they rarely approved. The FY 2021 Budget continues the request from FY 19 consolidates the activities of the Agency for Healthcare Research and Quality (AHRQ) into NIH as the National Institute for Research on Safety and Quality (NIRSQ). NIH funds over 50,000 research grants to more than 300,000 individuals at more than 2,500 universities, medical schools, research facilities, small businesses, and hospitals. To date, 163 NIH supported researchers have been sole or shared winners of 96 Nobel Prizes.

B. The FY 2022 President's Budget includes $52 billion for NIH, an increase of $9 billion above FY 2021 enacted. Of the $9 billion increase, $6.5 billion will support the establishment of the Advanced Research Projects Agency for Health (ARPA-H) that will speed transformational innovation in health research, but is doomed to fail, like all proposed new institutes in recent years, in this case due to subversive UN propaganda for

research funding that feloniously monopolized the COVID-19 vaccine development response causing millions of fatalities due to a failure to prescribe hydrocortisone, eucalyptus, lavender or peppermint. Precision medicine pursuant to the 21st Century Cures Act is not about opiates for the masses, or expensive monopolistic laboratory science reinventions of the placebo effect to make money concealing and confusing effective medicine, but research that reviews historical treatment options and selects cheap, safe and effective ones for promotion. The NIH budget habitually does not precisely differentiate the Labor share for the National Institute of Environmental Health Sciences in the budget request total, resulting in an imprecise figure that do not uphold Generally Accepted Accounting Principles (GAAP). Furthermore, the Administration for Community Living brainlessly infringes with flagrant disregard for human research protection against statin, pseudo-ephedrine and Galantamine abuse bioterrorism on random NIH funding for Alzheimers, Limb Replacement and Paralysis research and CDC Traumatic Brain Injury Act they must not lay false claim to owning by knowing. Although the rambling Division A Title II of the Further Consolidated Appropriations Act of 2020 P.L. 116-94 provides appropriations for certain institutes, the Public Health Service Act as amended through P.L. 117–8, enacted April 23, 2021 failed to update the underestimate of authorization of appropriations form FY 20 for the NIH in § 402A of the PSA under 42USC§282a.

National Institutes of Health FY 17 – FY 24
(millions)

	Institute	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
1	National Cancer Institute	5,660	5,651	6,121	6,440	6,559	6,826	7,031	7,242
2	National Heart, Lung and Blood Institute	3,210	3,185	3,482	3,625	3,665	3,846	3,962	4,080
3	National Institute of Dental and Craniofacial Research	425	423	461	478	485	516	532	547
4	National Institute of Diabetes & Digestive & Kidney Diseases	2,010	2,008	2,176	2,265	2,282	2,361	2,432	2,505
5	National Institute of Neurological Disorders and	1,779	1,772	2,246	2,447	2,511	2,783	2,867	2,953

	Stroke								
6	National Institute of Allergy and Infectious Diseases	4,906	4,873	5,545	5,876	6,067	6,246	6,433	6,626
7	National Institute of General Medical Sciences	2,646	2,633	2,822	2,937	2,991	3,096	3,189	3,286
8	Eunice K. Shriver National Institute of Child Health & Human Development	1,377	1,371	1,501	1,798	1,838	1,942	2,000	2,060
9	National Eye Institute	731	728	794	823	749	873	885	911
10	National Institute of Environmental Health Sciences Labor / HHS Appropriation	713	709	772	803	815	937	965	994
11	National Institute of Environmental Health Sciences: Interior Appropriation	77	77	79	81	82	84	87	89
12	National Institute on Aging	2,049	2,035	3,080	3,546	3,900	4,036	4,157	4,282
13	National Institute of Arthritis & Musculoskeletal & Skin Diseases	557	554	603	625	634	680	700	721

14	National Institute on Deafness and Communication Disorders	436	434	473	491	498	512	527	543
15	National Institute of Mental Health	1,605	1,591	1,872	2,043	2,106	2,214	2,280	2,349
16	National Institute on Drug Abuse	1,071	1,083	1,408	1,458	1,480	1,853	1,909	1,966
17	National Institute on Alcohol Abuse and Alcoholism	482	480	525	547	555	570	587	605
18	National Institute of Nursing Research	150	149	163	172	175	200	206	212
19	National Human Genome Research Institute	528	525	575	604	616	633	652	672
20	National Institute on Biomedical Imaging and Bioengineering	N/a	N/a	388	405	411	422	435	448
21	National Institute on Minority Health and Health Disparities	288	287	313	336	392	652	672	692
22	National Center for Complementary and Integrative Health	134	134	146	152	154	184	190	195
23	National Center for Advancing Translational	704	701	816	833	855	879	905	932

	Sciences								
24	Fogarty International Center	72	72	78	81	84	96	99	102
25	National Library of Medicine	407	405	441	457	462	475	489	504
	Office of the Director	1,729	1,706	1,908	2,007	2,175	2,245	2,312	2,382
	21st Century Cures Innovation Accounts	N/a	N/a	196	157	109	150	155	159
	Buildings and Facilities	129	128	199	200	200	250	258	265
25	Advanced Research Projects Agency for Health	0	0	0	0	0	6,500	0	0
	Additional Opioids Allocation	0	0	750	0	0	0	0	0
	Total Program Level	34,229	34,067	39,933	41,685	42,936	51,953 / 45,453	46,916	48,322
	Less Funds from Other Sources								
	PHS Evaluation Funds (NIGMS)	-824	-819	-1,147	-1,381	-1,422	-1,413	-1,455	-1,499
	Current Law Mandatory Funding – Type 1 Diabetes (NIDDK)	-140	-151	-150-	-150	-150	-141	-150	-150
	Interior HHS Appropriation	-77	-77	-79	-81	-82	-84	-87	-89
	Labor / HHS Appropriation	33,188	33,020	38,557	40,073	41,282	50,315 / 43,815	45,224	46,584

	FTEs	N/a	N/a	17,227	17,619	18,781	19,299	19,492	19,687

Source: HHS FY 19, 21 & 22 Budget-in-brief

1. The Budget prioritizes biomedical research to respond to the opioids crisis, climate change, end the HIV epidemic, racial disparities and prevent and control tick-borne illness. The FY 2022 President's Budget requests an historic investment to end the opioid crisis including $2.2 billion across NIH Institutes and Centers for opioids, stimulant, and pain research, an increase of $627 million above FY 2021 enacted. Within this total, $811 million supports the Helping to End Addiction Long-term (HEAL) Initiative . Over $1.4 billion supports ongoing research in this critical area, that should mostly be dedicated to finding non-opiate, non-stimulant alternatives for treating pain – e.g. cannabis derived CBD, to replace the epidural. Through HEAL, the Advancing Clinical Trials in Neonatal Opioid Withdrawal Syndrome (ACT NOW) study is informing care for infants exposed to maternal opioid use while in the womb. These infants often experience extreme irritability, problems eating and sleeping, and seizure and neonatal opioid withdrawal syndrome, with an estimated frequency of seven per 1,000 hospital births. The budget provides an additional $330 million to enhance health disparities and inequities research, including $250 million for the National Institute on Minority Health and Health Disparities. The remaining $80 million is targeted for cardiovascular, nursing, and international health disparities and inequities research. FY 2022 President's Budget provides $26 million, an increase of $10 million above FY 2021 enacted, for NIH-sponsored Centers for AIDS Research to prevent new infections, and develop optimal treatments, including pre-exposure prophylaxis (also known as PrEP). The number of reported cases tick-borne diseases (including Lyme disease) in the United more than doubled from 2004 to 2016, and reached a record high of more than 59,000 cases in 2018. Studies indicate red meat allergies are associated with tick bites, but it may be MRSA from spoiled animal products due to outdoor living.

2. Lower back pain is one of the most common forms of chronic pain among adults worldwide. NIH's Back Pain Consortium will address critical gaps in chronic lower back pain characteristics and treatment, and will test the safety and efficacy of complementary and alternative medicine approaches, non-addictive drugs, biologics, and devices to relieve chronic lower back pain and improve physical function. The primary treatment for back pain and other pain, that should be tried, is Epsom salt bath, saline or chlorine swim to treat hypothetical infection of the spine, and other areas, by methicillin resistant *Staphylococcus aureus* (MRSA) more effectively than doxycycline, the most effective antibiotic. Pneumovax is important to eliminate excruciating pain from toxic shock syndrome from co-occurring *Streptococcus* infection, otherwise treated with antibiotics. To eliminate saline sterilize MRSA lesions, before they are re-infected, doxycycline is the most highly effective antibiotic, but other organ specific herbal treatments, such as Hawthorn, the supreme herb for the heart, or Gingko giloba, for the pancreas, are helpful. It is extremely important that NIH's Back Pain Consortium take steps to enhance control of dangerous monoclonal antibodies to the spine, probably leaked from NIH oncologic or other research consuming large quantities of such monoclonal antibodies to the spine, that contaminate Social Security local office disability questionnaires in behalf of the HHS Secretary under 42USC§262. The MRSA infection of the targeted sacrum at

induction leading up the spine to ankylosing spondylitis after further exposure is sterilized with an Epsom salt bath, but a complete recovery takes more than a week.

3. More than 700 American women die each year as a result of pregnancy and childbirth and over 50,000 experience severe complications. In response to rising U.S. rates of pregnancy-related deaths, or maternal mortality, NIH launched the Implementing a Maternal health and Pregnancy Outcomes Vision for Everyone (IMPROVE) initiative. The budget includes an additional $30 million investment for IMPROVE. In FY 2021 NIRSQ will dedicate $7 million towards the HHS-wide Improving Maternal Health in America Initiative and expand the Medical Expenditure Panel Survey to include an additional 1,000 interviews. The highest priority is paid maternity leave and public assistance for pregnant women and 6 months of exclusive breastfeeding. The leading causes of maternal mortality in the United States— cardiovascular disease, infection, and immunity—as well as contributing health conditions or social factors, such as mental health disorders, diabetes, obesity, substance use disorders, and structural and healthcare system issues. The leading causes of maternal mortality in the United States are Cardiovascular conditions, 15.5%; Infection or sepsis, 12.7%; Cardiomyopathy, 11.5%; Hemorrhage, 10.7%; Thrombotic pulmonary or other embolism, 9.6%; Cerebrovascular accidents, 8.2%. Hawthorn is the supreme herb for the heart and it helps to reduce cholesterol, regulate arrhythmias and normalize high and low blood pressure and eliminate *Staphylococcal* lesions after they have been sterilized in an Epsom salt bath or saline or chlorine swim, the daily, regular frontline treatment for methicillin resistant *Staphylococcus aureus* (MRSA). To treat infection and sepsis, Pneumovax is highly safe and effective at preventing all pneumococcal infections and thereby excruciating toxic shock syndrome in conjunction with MRSA, is not contraindicated for pregnancy and is in fact the mainstay of health professional immunity. Furthermore pregnant women need to be prescribed non-teratogenic broad—spectrum antibiotics especially clindamycin to make sure MRSA is treated as best as possible. They need money to eat non-spoiled fresh food, particularly green leafy vegetables, soybean and canola oil, with vitamin K. The diabetes grant to Indian Health Service should seriously look into the insulin production stimulated by the use of onions and garlic to supplement the free processed starches, meat and cake eaten by low-income AI / AN, as well as Gingko giloba.

4. Nearly 40,000 people in the U.S. die from firearm- related injuries each year and many more have experienced non-fatal firearm injuries. When firearms are involved with violent events, the risk for injury and mortality increases. Firearm violence is responsible for three quarters of homicide deaths and is the most common and lethal means of suicide. Firearm injury and mortality also contribute to health disparities— among males aged 20-24, the firearm homicide rate is more than 10 times higher for black men than for white men. The Administration is committed to addressing gun violence as a public health issue and the budget doubles funding within NIH to $25 million for firearm violence prevention research. NIH will expand efforts to improve understanding of the determinants of firearm injury, the identification of those at risk of firearm injury (including both victims and perpetrators), the development and evaluation of innovative interventions to prevent firearm injury and mortality, and the examination of approaches to improve the implementation of existing, evidence- based interventions to prevent

firearm injury and mortality. Clean weapons are important. FBI criminal informant administered Dimethoxymethylamphetamine (DOM) causes a three day panic attack followed by six month recovery from severe mental illness if not washed off with water.

5. The budget includes $25 million within the National Institute of Mental Health for research to understand the risks, mechanisms, and treatment in response to COVID-19 among individuals at risk for, or experiencing, mental disorders, across the full lifespan. The COVID-19 pandemic has had a negative impact on the mental health of people from all age groups and especially in the health sector where to avoid being quarantined for treating a patient who tests providers have shifted to telemedicine. A great deal of the mental illness in people who have been treated in the health system and been exposed to the justice system, may be due to unwitting pseudo-ephedrine exposure, that is suspected in rendering the US Supreme Court unpublished since June 20, 2019 due to an inability to cope with incessant FBI hacking. Pseudo-ephedrine indicated for clearing the sinuses of viral and bacterial infections, is probably the most effective oral treatment for coronavirus however the side-effects of insomnia and shrinkage of the brain are so severe that the medicine must be contraindicated in even stronger terms than the TMJ causing psychiatric anti-anxiety drugs is combined with to make “two bag meth”. Statins not only shrink the brain and cause acute dementia, but the consumer is extremely prone to chronic meningitis that indefinitely prolongs the dementia and makes it mean. The meningitis does not heal with a course of antibiotics, due to the slow rate with which the brain damage heals. To prevent meningitis Pneumovax is necessary for statin drug consumer. Furthermore, to prevent meningitis Pneumovax is the only medicine approved for mental illness, and is in fact approved to cure and prevent pneumococcal infection of health, lung and brain damage in all people whether over or under age 65.

6. Influenza is a respiratory infection that can be easily spread person to person. Each year seasonal influenza infection causes nearly 650,000 deaths worldwide and up to 56,000 deaths in the United States, influenza pandemics can vastly increase this total. It is not true, the easiest and most effective way to prevent influenza is through vaccination [sic]. The $200 million initiative to develop a a universal vaccine to protect adults and children by eliminating the need to update and administer the seasonal flu vaccine each year, would be nice, but coughing is an immune reaction and prior attempts to create a flu vaccine receive a failing grade at best, there is no guarantee of success, and no one with a flu is cured, now. The easiest and most effective way to prevent influenza is to treat the wet cough of flu by informing the population that eucalyptus or lavender cure influenza. Mentholyptus cough drops are the most effective frontline treatment for the wet cough of influenza. In refractive cases prescription Oseltamivir (Tamiflu), Zanamivir (Relenza) and Amantadine (Symmetrel) also cure influenza. Seasonal flu vaccines are notoriously ineffective. The President’s Executive Order on Modernizing Influenza Vaccines in the United States to Promote National Security and Public Health tries to “make flu vaccines work”, a strategy that is doomed to the highest level of failure, megamurder due to felony monopolization of the COVID-19 vaccine of news media and government although hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus. It is alarming that more seasonal influenza vaccines are hard sold than childhood vaccines and effective Pneumovax, that should be marketed to working age adults to prevent

pneumococcal infection of heart, lung and brain damage, combined. A thorough investigation of conflicts of interest and bribery between public health agencies and government officials and flu and COVID-19 vaccine manufacturers is warranted. NIH transits a massive amount of data per day on its network, all while blocking 36 million malicious emails and tens of thousands of intrusion attempts every single day [sic]. The false, lay computer virus allegation has been used too many times by unforgivably malicious prosecutors (e.g. psychiatric), and invariably future malicious laboratory supply and prescription drug abuse bio-terrorists, searching for a libelous computer FBI / DEA infringement conspiracy. Not to forget to appoint the Back Pain Consortium principal investigator of SSA local office disability questionnaire monoclonal antibody to the sacrum and spine treated for MRSA with Epsom salt bath under 42USC§262.

7. Although they use research primates to make up for their lack of Pinocchio nose or treatment, NIH is leading efforts to understand how SARS-CoV-2, the virus that causes COVID-19, affects "snot-nosed" children, who account for roughly 13 percent of the total confirmed cases of COVID-19 in the United States. The Collaboration to Assess Risk and Identify Long-term Outcomes for Children with COVID (CARING for Children with COVID) research program is developing and funding studies to investigate why some children are at greater risk for SARS-CoV-2 infection than others, why symptoms vary among children who are infected, and how to identify children at risk for severe illness from SARS-CoV-2 infection, like multisystem inflammatory syndrome in children or Long COVID. The budget provides $15 million within the Eunice K. Shriver National Institute of Child Health and Human Development to enroll additional children into existing studies, expand sites across the country where the studies could occur, and allow for long-term follow-up of these children to understand lasting effects. Although the COVID-19 vaccine may reduce death and severe infection it only reduces allergic rhinitis by an estimated 30%. To end influenza and COVID-19 pandemics it is necessary that everyone, including vaccinated people, know how to treat their "Pinocchio nose" - Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis. Eucalyptus or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the frontline treatment for both influenza and, with a little face washing with water, coronavirus. Eucalyptus or lavender scented soaps in public restrooms, for an informed public to wash their face and nose, might be the most effective way to bring an end to the COVID-19 pandemic.

§332 Substance Abuse Mental Health Services Administration

A. The Substance Abuse and Mental Health Services Administration (SAMHSA) was established by an act of Congress in 1992 under Public Law 102-321 that abolished the Alcohol, Drug Abuse, Mental Health Service Administration (ADAMHA) that was itself established May 4, 1974 when President Nixon signed P.L. 93-282. The Center for Mental Health Services (CMHS) seeks to improve the availability and accessibility of high-quality community-based services for people with or at risk for mental illnesses and their families. The mission of the Center for Substance Abuse Prevention (CSAP) is to bring effective substance abuse prevention to every community, nationwide. The Center for Substance Abuse Treatment (CSAT) promotes the availability and quality of

community-based substance abuse treatment services for individuals and families who need them. SAMHSA's Office of Applied Studies (OAS) gathers, analyzes, and disseminates data on substance abuse practices in the United States. OAS is responsible for the annual National Household Survey on Drug Abuse, the Drug Abuse Warning Network, and the Drug and Alcohol Services Information Services System, among other studies. In the aftermath of the "opioids for the masses" propaganda, whereby opioid propaganda for other agencies shall be terminated, psychiatric drug use is criticized as genuine abuse of others, and non-mental health and psychiatric health care providers administer Pneumovax to prevent pneumococcal infection of heart, lung and brain damage of people diagnosed with "mental illness", the SAMHSA FY 22 budget should go down dramatically, but must take great care to bide not more than 42 months of the number of the beast.

B.The FY 2022 President's Budget provides $9.7 billion for SAMHSA, a 64.% increase of $3.8 billion above $5.9 billion FY 2021 enacted. Provided 3% growth continues the alarming increase from $3.9 billion FY 21 to $6.4 billion FY 22 will achieve >$7 billion by FY 25 and passes the test (Revelation 13:10). Nonetheless, to justify this significant increase in spending SAMHSA is advised to increase employment from 484 to the proscribed level of 615 to more than 700 by FY 24, less than 42 months, but seems to have trouble employing people who can both support mental health and substance abuse treatment, without being either excessively corrupt or critical to be tolerated and not retaliated against. There are some minor mathematical errors in the analysis of the budget corrected herein.

Substance Abuse Mental Health Services Administration FY 17 – FY 24
(millions)

	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Mental Health	1,178	1,172	1,552	1,678	1,792	2,937	3,025	3,116
Substance Abuse Prevention	222	222	205	206	208	217	224	230
Substance Abuse Treatment	2,709	2,694	3,817	3,838	3,855	6,409	6,601	6,799
Health Surveillance and Program	150	149	162	162	162	172	177	183

Support								
Total Program Level	4,258	4,237	5,735	5,884	6,017	9,734	10,027	10,328
Prevention and Public Health Fund	-12	-11	-12	-12	-12	-12	-12	-12
PHS Evaluation Funds	-134	-133	-134	-134	-134	-134	-134	-134
Data Request and Publication User Fees	-2	-1	-2	-2	-2	-2	-2	-2
Total Federal Outlays	4,111	4,091	5,588	5,737	5,870	9,587	9,879	10,180
FTEs	590	614	491	452	484	615	650	700

Source: McCance-Katz, Elinore F. M.D., Ph.D. Assistant Secretary for Mental Health and Substance Use. Substance Abuse Mental Health Services Administration. Justification of Estimates for Appropriations Committees.Department of Health and Human Services. Fiscal Year 2019. HHS Budget-in-brief FY 19, 21 & 22

1. The Budget prioritizes prevention and treatment for opioid use disorder, methamphetamine use disorder, addressing serious mental illness, preventing suicide, and supporting the mental health needs of students. The budget provides $6.4 billion for substance use prevention and treatment activities, a 20% increase of $1.5 billion over $4.9 billion FY 2021 enacted. At stable 3% growth this spending category shall achieve $7 billion and the 3% growth should be stronger for successfully weathering the storm. The budget includes $3.5 billion for the Substance Abuse Prevention and Treatment Block Grant (SABG)— an increase of $1.7 billion over FY 2021 enacted—to expand implementation of evidence-based treatment and prevention programs for individuals, families, and communities across the nation. This funding will allow SAMHSA to serve 2.1 million people in FY 2022. The SABG program distributes funds to 60 eligible states, territories, one eligible tribe. The budget also provides $2.3 billion for the State Opioid Response (SOR) grant program, an increase of $750 million over FY 2021 enacted. Since the SOR program began, approximately 646,854 patients have received treatment services for opioid use disorder, including 240,571 who have received medication-

assisted treatment. $75 million for tribal programs. $105 million for the drug court program to serve 10,247 clients, up from 7,200 people in 2020. Drug courts play an integral role in diverting people from the criminal justice system and into treatment. The budget includes a new 10 percent set-aside for the SABG to direct funds to states for recovery support services. Currently only 140 communities have a recovery community organization. The budget also includes $20 million for the Building Communities of Recovery program double that provided FY 21. The budget invests $49 million in the Pregnant and Postpartum Women (PPW) program, an increase of $17 million above FY 2021 enacted, expand the accessibility and availability of services for pregnant women with substance use disorder by providing outpatient and intensive outpatient services, residential treatment services, and family-based services.

2. The FY 2022 budget provides $2.9 billion for SAMHSA's mental health activities, a 61% increase of $1.1 billion over FY 2021 enacted. Calls to mental health helplines have increased across the country as Americans deal with increased anxiety, depression, risk of suicide, and trauma-related disorders. In FY 2022, SAMHSA will dedicate $180 million for SAMHSA's suicide prevention programs, an increase of $78 million over FY 2021 enacted. American Indian and Alaskan Native communities have strikingly higher suicide rates compared to the overall U.S. Population. In July 2022, the National Suicide Lifeline will transition from a 10-digit number to a 3-digit hotline (9-8-8). To ensure the Lifeline is prepared for the transition, the FY 2022 budget invests $102 million in the Suicide Lifeline program, an increase of $78 million over FY 2021 enacted. The budget invests $1.6 billion into the Community Mental Health Block Grant double FY 21. In 2019, the MHBG served 8.1 million clients. Seventy-five percent of clients reported improved functioning as a direct result of the mental health care services they received. To address the mental health needs of people involved in the criminal justice system, the FY 2022 budget invests $51 million in SAMHSA's Criminal and Juvenile Justice programs, an increase of $45 million over FY 2021 enacted. The budget includes $375 million in the Certified Community Behavioral Health Clinics (CCBHC) grant program, an increase of $125 million. Since the inception of the CCBHC program in FY 2018, CCBHC grantees have served over 54,000 individuals. CCBHC participants showed a 72 percent decrease in mental health care hospitalization in the past 30 days and a 63.2 percent decrease in emergency room visits.

3. In FY 2022, SAMHSA will invest $172 million in Health Surveillance and Program Support, a 6% increase of $10 million over FY 2021 enacted. The budget includes $83 million for Program Support, a $4 million increase over FY 2021 enacted. This investment in program support will increase available staff by 131 FTEs to effectively manage and implement SAMHSA programs and may need to be increased from within the SAMHSA budget, to overcome evident hiring and retention difficulties. The budget also invests $15 million in the Drug Abuse Warning Network—a 50%, $5 million increase over FY 2021 enacted—to support surveillance efforts tied to the opioid and substance use epidemic. These key programs will allow SAMHSA to effectively conduct oversight over SAMHSA programs and to support nationwide Health Surveillance efforts. In the absence of a meaningful condemnation of psychiatric drugs and other drug based, toxic and infectious disease causing bio-terrorist weapons abused by health

surveillance and extra-judicial terrorism supporters, closely affiliated with substance abuse and mental health grants, and psychiatric drug poisoning psychiatrists at the heart of the corruption in the health sector and law enforcement drug war, a drug abuse warning must be put out on all psychiatric drugs and pseudo-ephedrine brain shrink by the Secretary under 42USC§242 without any cardiotoxin or other laboratory supplies prohibited by the Secretary under §262 or prohibited corrupt for-profit hospital affiliated emergency services infringing slave trade propaganda or other unprofessional retaliative coercion by the Secretary in violation of Sec. 503 of the Americans with Disabilities Act under 42USC§12203.

C. An estimated 19.3 million American adults had a substance use disorder in 2019, and approximately 841,000 people have died from a drug overdose between 2000 to 2019. After the CDC reported an unprecedented reduction in the second half of 2018, preliminary data suggest that overdose deaths accelerated during the pandemic from 71,130 in 2019 to 85,519 in 2020, a 20% increase. An estimated 21.2 million Americans needed treatment for a serious substance abuse problem in 2018. Substance misuse increases the likelihood of homelessness, loss of employment, loss of family unity, failure to complete education, and suicide. Drug overdose deaths have risen the past two decades, and are the leading cause of death from injury in the United States. From 2000 to 2018, it is estimated that nearly 754,000 people died from drug overdoses. In 2018, after Centers for Disease Control and Prevention's National Center for Health Statistics, reported that provisional overdose mortality fell by 5 percent for the 12 months ending in the second quarter of 2018, the age-adjusted rate of drug overdose deaths in the United States was 4.6 percent lower than the rate in 2017. In 2018, the number of individuals who misused opioids in the past year declined by more than one million. Despite this progress, the epidemic remains a public health emergency, as first declared by the Acting Secretary in October of 2017. Opioids contribute to over two-thirds of the 192 deaths that occur daily from drug overdose. SAMHSA data released in September of 2019 indicated more than 2 million Americans met diagnostic criteria for opioid use disorder in the past year, including 652,000 who had a heroin use disorder—the highest number recorded in 15 years. Overdose deaths involving methamphetamine and other stimulants are increasing; in a growing number of states, they are responsible for more deaths than opioids. From 2012 through 2018, the rate for deaths involving psychostimulants with abuse potential increased from 0.8 percent to 3.9 percent. FDA has approved medications and clinicians have identified a gold standard treatment protocol for opioid use disorder. However, that is not the case for methamphetamine and other stimulants. Since 2016 synthetic opioids, specifically fentanyl have become far and away the leading cause of fatal drug overdose. In 2019 in order of frequency synthetic opioids accounted for 11 deaths per 100,000 population, cocaine 5 per 100,000, psycho-stimulants with abuse potential 5 per 100,000, heroin 5 per 100,000, and prescription drugs 5 per 100,000. It is unlikely all fentanyl exposures, such as the rare fentanyl bedspread for melanin speedballing insomniacs, are accounted for.

D. In 2018, approximately 19 percent of American adults met the medical standard for a mental, behavioral, or emotional disorder that substantially interfered with major life activities. Of these 48 million people, approximately 11 million people—or 4.6 percent of

all American adults—had a serious mental illness. Suicide is a leading cause of death in the United States with over 47,143 people dying from suicide in 2017. This exceeds the number killed by automobile accidents. Americans were experiencing growing rates of mental illness. In 2019, 51.5 million adults had a diagnosable mental illness, an 18 percent increase over 2008 and 5% over 2018 the prior year. These mental health challenges have accelerated during the COVID-19 pandemic, particularly for our vulnerable populations. In June 2020, adults reported anxiety disorder symptoms at 3 times the level reported in 2019 and depressive disorder at 4 times the level reported in 2019. The COVID-19 pandemic has been associated with mental health challenges, including suicidal ideation. In June 2020, about 11 percent of CDC survey respondents reported seriously considering suicide in the prior 30 days. This rate was significantly higher among young adults, minority racial/ethnic groups, Black respondents, unpaid caregivers, essential workers and people receiving treatment for preexisting psychiatric conditions are disproportionally impacted by rising "germaphobia" defined as a malinformed or irrational fear of germs and/or their treatment.

1. It has been suggested that many of these suicide deaths may be preventable by improving the training of healthcare providers in existing health systems. This may however be misinterpretation of the statistic that 80% of people who committed suicide paid an office visit to a doctor during their last year, but only 20% the hospital. It is hypothesized that the threat is that physicians are not only notoriously non-supportive, militant, suicidal and undereducated liberal artists when it comes to family, but their DEA registration without legitimate use or strength in numbers of hospital employees, unwittingly poisons their patients with dimethoxymethylamphetamine (DOM) that causes a three day panic attack and six month recovery from severe mental illness if not washed off with water. Merely making record of the domestic violence, abuse and addiction suicide risks might only makes patients more vulnerable. It is necessary that doctors without any legitimate use, join psychiatrists and online pharmacy in the boycott of DEA registration and fees under 21CFR§1300.11.

2. Mental health concerns, often by mentally distressed parents prone to patronize psychiatry regarding their sympathetic test subject, have been rising among youth since before the COVID-19 pandemic. Impacts of the COVID-19 pandemic, such as isolation, disruption to daily life, and anxiety about illness, have also hit children hard. Children aged 12 to 17 accounted for the majority of mental health-related emergency department visits in 2019 and 2020. To respond to the mental health needs of children, and it must be added, their parents, the FY 2022 budget includes $155 million for Project AWARE, an increase of $49 million above FY 2021 enacted, without increasing total spending for notoriously corrupt juvenile psychiatric hospitals and affiliated courts. Psychiatric hospitalization and psychiatric drug abuse are unforgivable sins of child abuse. The budget also provides $12 million for the Mental Health Awareness Training program, which provides training to law enforcement personnel and other stakeholders to recognize the signs and symptoms of mental disorders.

3. In 2014, 1,053 inmates died in local jails, an 8% increase from 2013 (971) and the largest number of deaths in custody since 2008. Between 2000 and 2014, an average of 82% of jails reported zero deaths. In 2014, 80% of jails reported zero deaths and 14% reported one death. Suicides accounted for 31% of deaths during that period. From 2005 to 2014, the suicide rate increased 28% from 39 per 100,000 local jail inmates to 50 per 100,000 local jail inmates. Suicides increased 30% from 2013 to 2014 after a 6% decrease from 2012 to 2013. Suicides accounted for 7% of all state prison deaths in 2014 —the largest percentage observed since 2001. The state prisoner mortality rate (256 per 100,000 state prisoners) was 14% higher than the federal prisoner mortality rate (225 per 100,000 federal prisoners) 2001-2014. Court-ordered psychiatric medicine has been reported by the Bureau of Prisons to have become a crisis in federal pre-trial where involuntary antipsychotic consumption has become accepted as competency to stand trial, in lieu of informing the prisoner of the maximum time they could serve for the crime for which they are accused, such as the robbery of a recreational drug dealer in *United States v. Lettiere*, 640 F.3d 1271, 1273 (9th Cir. 2011), *Washington v. Harper* (1990), *Olmstead v. LC* (1999), *Blakely v. Washington* (2004) or *Booker v. United States* (2005).

E. The general feeling is that although mental health counseling may be helpful, psychiatric medication is always inappropriate and constitutes a serious form of "substance abuse" like all poisonings, that requires the strict scrutiny of SAMHSA, mental health and substance abuse counselors in general. Antipsychotic drugs and sleep aids are consistently the second leading cause and childhood stimulants the fifth leading cause of fatal drug overdose reported to the Poison Control Centers. Withdrawal from antidepressants is particularly prone to violence. To varying degrees there is a serious problem with the chemical formulation of all psychiatric drugs, and there is no credible benefit to be had from them, other than reported by corrupt psychiatrists, abusive family members and legal custodians, coerced patients and some un-coerced "mentally ill" offenders who are later convicted of murder or other heinous crime. Biomedical and behavioral research on psychiatric drugs in prisons and state mental institutions violates human research protections involving prisoners under 45CFR§46.306(b). Risk associated with psychiatric drugs has gotten worse in recent decades due to the intentional and malicious engineering of psychiatric drugs to torture, causing physically and mentally harmful and potentially lethal side-effects. Psychiatrists describe these side-effects as working for the third party clients of their enslaved or otherwise tricked "mentally ill" patients. Before 2000 antipsychotic drugs were known to cause tardive dyskinesia and anhydrosis. Nonconsensual research on psychiatric prisoners revealed that combining two antipsychotic drugs together cause potentially lethal Parkinson-like extra-pyramidal symptoms for which the highly effective antidote was Cogentin (benztropine).

1. Third generation antipsychotic drugs that hit the market in the beginning of the new millennium were designed to cause the potentially lethal extra-pyramidal symptoms with one regular dose, clinicians would time consumingly wean a person up to, before they were released, flushed the drugs down the toilet, or left them in their medicine cabinet and took one in a time of stress, developed extra-pyramidal symptoms and went to the

emergency room to get treated with Cogentin and/or the benadryl used as a first resort by emergency medical doctors, that may or may not work. Then to make matters even more lethal Cogentin was withdrawn from the market by its manufacturer, without sufficient explanation. Subsequently the FDA approved the flu drug Amantadine (Symmetrel) to treat extra-pyramidal side effect of antipsychotic drugs and Cogentin appears to have been re-marketed. Even newer anti-anxiety medicines such escitalopram oxalate cause temporomandibular (TMJ) discomfort, similar to the oral spasms of extra-pyramidal syndrome, but much more akin to the side-effect of methamphetamine, to such a degree, that their primary use is as a component of "two bag" involving the stimulant and sinus clearer pseudo-ephedrine. To redress the fundamental hypocrisy of psychiatric and prescription drug abuse underlying the contemporary tyranny regarding addictive drugs, it is necessary to develop and implement a comprehensive, culturally competent, program to stop turning a blind eye to treating prescription (psychiatric and other) drug and laboratory supply abuse.

2. Mentally ill patients, more often than not, need to detoxify from voluntary or involuntary exposure to some addictive and/or severely intoxicating substance, they may or may not be aware of, especially of concern is dimethoxymethylamphetamine (DOM) that causes a three day panic attack and six month recovery from severe mental illness if not washed off with water, or re-exposed. Brain shrinkage from pseudo-ephedrine and statin exposure is a major reason that the US Supreme Court has been so unable to cope with the incessant computer hacking of the FBI/DEA, the Court has not published since June 20, 2019. Pseudo-ephedrine makes the intoxicated particularly illiterate and unable to overturn the simplest of false charges [sic]. Statin use and abuse almost certainly result in pneumococcal meningitis unless the patient is vaccinated with Pneumovax. Because pneumococcal meningitis is such an obvious cause of delusional, hallucinatory, nearly severe, mental illness, and mental dissatisfaction, and antibiotics are, at best, only temporarily effective, as the damaged brain is nearly certain to be re-infected before it is sufficiently healed, Pneumovax is highly recommended to cure and prevent suspected pneumococcal meningitis in all people diagnosed with mental illness. This makes Pneumovax the only medicine recommended for the treatment of mental illness. Furthermore, the recommendation for Pneumovax needs to be extended from just people over age 65, smokers, health professionals and people impressed enough with the safety and effective of Pneumovax to read the fine print, to the working age population in general, to prevent pneumococcal infection of heart, lung and brain damage. The best way forward seems to be to make Pneumovax, to cure and prevent pneumococcal meningitis for ten years, the only approved drug for the treatment of mental illness.

F. To do the mentally ill and institutionalized persons justice regarding the COVID-19 pandemic it is medically necessary that they, like everyone, be informed that hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus; and eucalyptus or lavender also cure influenza; and it is especially necessary that institutionalized persons be provided for. First, drug abuse warnings: Although pseudo-ephedrine may be the most highly effective drug treatment for the immediate elimination of bacterial, fungal and viral sinusitis, including coronavirus allergic rhinitis, it must be contraindicated in the strongest of terms, especially in the ineffective treatment of brain

cancer, where it overtly prescribed, because it causes brain damage and this does not help the brain heal, and hydrocortisone crème is the right conventional medical treatment, to reduce Cushing's disease from dexamethasone, bettered by essential oils of eucalyptus, lavender or peppermint that do not have side-effects. Pseudo-ephedrine shrinks the brain, it is highly abused by unlawful covert operations to render the civil justice system illiterate and unable to contest false criminal allegations, and the COVID-19 pandemic has served to create a kind of dependency whereby pseudo-ephedrine abuse is free of allergic rhinitis that is easily mistaken by a shrunken brain for good time, albeit illiterate and without informed consent.

1. Although the COVID-19 vaccine may reduce death and severe infection it only reduces the contagious state of allergic rhinitis by an estimated 30%. To end influenza and COVID-19 pandemics it is necessary that everyone, including vaccinated people, know how to treat their "Pinocchio nose" - Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis. Eucalyptus or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the frontline treatment for both influenza and, with a little face washing with water, coronavirus. Don't drop the soap: Eucalyptus, lavender or peppermint scented soaps in public restrooms, for an informed public to wash their face and nose, might be the most effective way to bring an end to the COVID-19 pandemic. Conventional laundry detergents seem adequate. To sterilize the atmosphere of public indoor facilities, where coronavirus is endemic, such as courtrooms, classrooms, public offices, waiting rooms, dining halls, and intensive care units (ICUs) it would be prudent to reinstate the practice from the 1950's of eucalyptus scented humidifiers (diffusers) and inform the public, who unlike pseudo-ephedrine, psychiatric drug or vaccine abuse, have no need to consent, because they have no right to object, because there are not side-effects or allergies, and a eucalyptus scented mist would create an environment that is curative of and relatively free of the extremely contagious coronavirus and influenza viruses.

Art. 4 Health Insurance

§333 Private Health Insurance

A. Private health insurance is the predominant source of health insurance coverage in the United States. The private health insurance market includes both the group market, largely made up of employer-sponsored insurance, and the non-group market, commonly referred to as the individual market, which includes plans directly purchased from an insurer both on and off the Affordable Care Act (ACA) health insurance exchanges. In 2019, out of a total population of 323 million, these private health insurance markets covered an estimated 179 million individuals, 55.4% of the U.S. Population were enrolled in group plans and 42 million individuals, 13.1% of the U.S. Population were enrolled in individual plans. 18.1% of the population was insured by Medicare, 19.8% by Medicaid/CHIP, 2.7% TRICARE, 2.2% VA Care and 9.2% were uninsured in 2019. Although prepaid health insurance is popular, only one study underhandedly proved that it actually improves health outcomes.

1. Most working people complain about the high cost and hyperinflation of private health insurance premiums, that time-consumingly and infuriatingly drives self-employed workers from one plan to the next. The high cost of deductibles and copays also makes private health insurance economically useless for the average healthy worker, who only benefit from catastrophic coverage as protection from bankruptcy. The primary underlying problem justifying the high cost of private insurance and hyperinflation in premiums, is that hospitals, in particular, but also health care providers, in general, charge outrageously irregular bills, with which private health insurance companies are expected to negotiate a rate that is only slightly higher than that paid by Medicaid, but less than their asking price, rather than the Medicaid price set by the government. The end result of this time-consuming haggling, that detracts from the study of medicine, is a two or three tiered system of biased care whereby the rich receive the most expensive surgical care, rather than safest and cost-effective medical treatment, the poor are refused treatment during cheap office visits and medical providers and health care industry completely forget to cure their patients, in pursuit of profits from chronic pain and disease, private insurance companies have only some skill at dealing with, for more than the Medicaid price. A fundamental problem in private health insurance, although a plethora of outpatient and overnight surgical procedures have been developed, physicians dedicate most of their office visits to peddling, sans curative medicine, is that, the only chronically sick people who actually spend more than the deductible are unable to work and pay private health insurance premiums for so long they lose their private insurance coverage that is mostly designed to swiftly treat catastrophic accidents in workers. As recently as 1981, only 8% of families filing for bankruptcy did so in the aftermath of a serious medical problem By contrast, in 2001 illness or medical bills contributed to about half of bankruptcies. 69.1% of debtors met the legacy definition of medical bankruptcy in 2010 study, a 22.9% increase (49.6% relative increase) from 2001, when 46.2% met this definition.

2. In 2020, the average national cost for health insurance is $456 for an individual and $1,152 for a family per month. The average full-price plan across the 38 states that used HealthCare.gov in 2020 was $595/month, but the average after-subsidy premium was just $145/month. Nobody purchasing coverage through the marketplace has to pay more than 8.5% of their household income (an ACA-specific calculation) for the benchmark plan. And people with lower incomes are expected to pay a smaller-than-normal percentage of their income for the benchmark plan – as low as $0 for people with income that doesn't exceed 150% of the poverty level. 2% for 200% of FPL, 4%-6% for 250% - 300% of FPL and 6%-8.5% for 300% - 350% of FPL. The overall average deductible of plans was $2,825, consistent with the $2,835 average for the 2020. The private insurance industry is nearly entirely federally regulated by amendments made by the Affordable Care Act (ACA), although state regulators retain considerable autonomy. The individual mandate to required all people to buy insurance under civil penalty was overruled by the zero penalty of the Tax Cuts and Jobs Act (TCJA) in 2017 and is likely to be repealed in its entirety by *California v. Texas*. The burden of providing universal coverage does not fall upon the individual, but upon the fairness of state subsidies for professional health care. The ACA has done a service by setting a rational income bracketed 8.5% of income limit on taxation to sustain a national health service at a reasonable rate of taxation. However, in reality, the product is defective and subsequent to the decrease in uninsured from

17.8% in 2010 to less than 10% in 2016 and going up again to 10.9% in 2019, after the overturning of the individual mandate penalty, the under age 65 death rate increased. The more workers were insured, the more they died, and the working age death rate remains higher than it was before the ACA.

3. Private health insurance is a major component of the overestimate of the highest national National Health Expenditure (NHE) as a percent of gross domestic product (GDP) in the world. NHE is estimated to have increased from 5.6% in 1965, to 7.1% in 1970, to 8.9% in 1980, to 12.6% in 1990 to more than 16% in 2000 to 17.8% in 2013 when the 17.3% of GDP deflator of 2009-2013 was broken to a high of 18% in 2019. However, typical of most health care bills, this is an overestimate, intended to elicit more payments but actually resulting in widespread non-payment and insolvency. Redoing the national health expenditure accounts, using the $451 billion (2013) estimate of private insurance spending from the National Association of Insurance Commissioners (NAIC) and Center for Insurance Policy Research (CIRP) *2014 Analysis of the Health Insurance Industry,* rather than the $846 billion (2013) estimate in Health, United States (2014) it is provisionally estimated that NHE will be about $2.6 trillion, 13.0 % of a $20 trillion GDP in 2019. Still the highest in the world, but about as credible as a duplicate or triplicate hospital bill. For their part in the overestimate the Congressional Research Service article of January 26, 2021, adds all revenues of health insurance companies with all private health insurance spending for medical services, resulting in a figure that is nearly two times reality. This overestimate is dangerous insofar that the intention of the overestimate is to overcharge the federal government and public health programs, but only serves to obstruct universal coverage by making it seem unaffordable.

4. In Sustainable health financing, universal coverage and social health insurance A/58/20 WHO defined Universal coverage as access to key promotive, preventive, curative and rehabilitative health interventions for all at an affordable cost, thereby achieving equity in access and financing where households contribute to the health system on the basis of ability to pay. The principle of financial-risk protection ensures that the cost of care does not put people at risk of financial catastrophe. There are two methods of achieving universal coverage. The first is use of general tax revenue as the main source of finance for risk pooling, a system also referred to as tax-funded health financing. The second is introduction of social health insurance, where specific contributions for health are collected from workers, self-employed people, enterprises and the government, and pooled into a single, or multiple, social health insurance funds. American society and even most Democrats abandoned universal coverage as an issue after 1994, focusing on incremental efforts that led to passage of the 1996 Health Insurance Portability and Accountability Act (HIPAA) and the 1997 Children's Health Insurance Program. Universal coverage was lost in the pursuit of individual prepaid health insurance – identity theft. Health insurance is thought to be one of the common felony monopolizations in international law whereby lay fascination with a profession infringes on the right of all poor people to social security benefits or in this case to free medical care and social security disability to compensate for the economic tortures and added personal costs of disease. In the United States the legislation of Medicare and Medicaid heralded the end of the Marcus Welby era of medicine and all significant progress in medical science and health, other than expensive surgeries. Much of what

was learned, for instance regarding the treatment of "antibiotic resistance" with metronidazole, doxycycline and ampicillin, has been lost in poisonous organized criminal pursuit of chronically sick people to justify withdrawals from health insurance funds with laboratory diagnostics for idiopathic diseases, patently ineffective medical treatment, and unnecessary surgery .

5. The United States has the highest rate of health expenditure in the world. National Health Expenditure as a percent of gross domestic product (GDP) is estimated to have increased from 5.6% in 1965, to 7.1% in 1970, to 8.9% in 1980, to 12.6% in 1990 to more than 16% in 2000 to 17.8% in 2013 when the 17.3% of GDP deflator of 2009-2013 was broken to a high of 18% in 2019. Private health insurance premiums are a major portion of this cost, however, typical of most health care bills, this is probably an overestimate. Redoing the national health expenditure accounts, using the $451 billion (2013) estimate of private insurance spending from the National Association of Insurance Commissioners (NAIC) and Center for Insurance Policy Research (CIRP) *2014 Analysis of the Health Insurance Industry,* rather than the $846 billion (2013) estimate in Health, United States (2014) it is provisionally estimated that NHE will be about $2.6 trillion, 13.0 % of a $20 trillion GDP in 2019. Out of pocket payments, including copayments and deductibles were estimated at $339 billion (2013).

B. Because the tax system heavily subsidizes employer-sponsored insurance (ESI), most non-elderly Americans get their health insurance at work. Employer contributions to employee health insurance are treated as nontaxable fringe benefits and are not considered part of total compensation for income or payroll tax purposes. The tax subsidies for ESI reduced income and payroll tax receipts by as much as $200 billion in fiscal year 2007. Section 125 of the Internal Revenue Code allows employers to administer certain employee benefits. Employees choose to receive part of their compensation either as cash wages or as one or more nontaxable fringe benefits, including health insurance. The self-employed may deduct their health insurance premiums from income tax. The fundamental premise of private insurance is that each insurance contract has a price, called a premium rate. The premium rate is the amount of money that the insured pays the insurer for the coverage promised in the contract. Premiums are usually paid monthly, but may be paid less frequently, such as semi-annually or annually. The actuary must consider many factors to ensure that the premium rate is both adequate and reasonable. The basic components of the gross premium rate for health insurance are expressed:

Premium = Claims + Reserves + Expenses + Margin + Profit – Investment Income

1.The largest component of the gross premium rate is the cost of benefits, also known as the claim cost or expected claim. To estimate claim costs the concept of morbidity is used to explain the frequency and severity of insured events. An individual health insurance policy usually is not issued to a person in poor health who could be expected to become disable or hospitalized soon. The law allows different premium rates to be charged based on demographics, but no individual can be charged a different premium rate based on his or her own health history. There are also limits on what an insurer can

charge a small employer. For individual coverage most states require that an insurance company return a percentage, such a 50%, of the policy's expected premium income to insureds in the form of paid benefits.

2. The Health Insurance Portability and Accountability Act (HIPAA) of 1996 was the first major health insurance legislation enacted at the federal level. The act expands access to health insurance by requiring individual health insurers to provide coverage to people who lost their group coverage because they changed or lost their job; limits the pre-existing condition exclusion; requires all small group insurers to accept every small employer who applies; increases the health insurance tax deduction to 80% in 2006. A group policy usually permits a 31 day grace period for the payment of premiums. Claims incurred after the end of the grace period are not paid unless the policy is reinstated

C. Historians trace the concept of prepaid health care to the 1800s, when railroads, lumber, mining and textile firms hired company doctors to treat their injured employees. Relatively few American bought health insurance in the early 1900s because medical services were inexpensive and patients often found home remedies just as effective. Several companies offered indemnity politics that reimbursed policyholders for some portion of their medical care, but most people paid their doctor and hospital bills with cash or charity. Early insurance legislation in the United States was concerned largely with taxation, licensing and solvency but was too limited to adequately protect the insurance buying public. During the 1850s states began to establish special departments to look after insurance matters. The first state insurance department was created in New Hampshire in 1851, within the next ten years most states had insurance departments. In 1871 the National Convention of Insurance Commissioners was formed. *Health, United States,* estimates for Private Health Insurance spending need to be downwardly revised in accordance with Net Earned Premiums reported in the National Association of Insurance Commissioners (NAIC) and Center for Insurance Policy Research (CIRP) *2014 Analysis of the Health Insurance Industry*. Using NAIC private health insurance and NHE totals are much lower as percent of GDP in table 3 of this supplement.

1. For centuries religious orders have provided an embryonic form of hospital care. Some health care was also provided publicly by local parish and municipal government. The state was also increasingly involved in the accreditation or licensing of doctors, as signaled by the UK's Medical Act 1858. Germany is viewed as the pioneer in national health care by virtue of Otto van Bismakr introducing a public, compulsory system of health and sickness insurance and for industrial workers in 1883. In France a system of medical assistance established a right to medical care for the poor in 1893 and legislation to support and encourage social insurance provision by mutualist societies in 1898. Health insurance was made compulsory for all employees in 1930 and extended to farmers and the self-employed in the 1960s. Health care in the UK has been shaped by a series of milestone reforms, beginning with the New Poor Law of 1834. The health insurance system instituted in 1911 was a contributory scheme for working men. In 1946 it was replaced by the tax funded and universalist National Health Service. Further reform brought some organization consolidation in 1974 and more radical restructuring again 1991.

2. A system of salaried district physicians was established in Sweden as early as the eighteenth century, reflecting a powerful and highly developed public administration. County councils were formed in the 1860s charged with operating somatic hospitals. Public subsidies helped to finance voluntary sickness funds from 1891, their membership increasing after 1931 once they were required to provide medical as well as cash benefits to their members. It was not until the mid-twentieth century that a universal national health insurance scheme was implemented in Sweden in the mid 1950s. Fee for service payment for hospital physicians were abolished in 1959 and all other private activity in public hospitals prohibited by the Seven Crowns Reform of 1970 which made hospital doctors fully salaried civil servants. County councils were made responsible for planning all health services in 1983.

3. In the United States the system of benefits introduced after the Civil War for veterans and their survivors was, in important ways, a forerunner to Social Security. The campaign for national health insurance in the United States commenced during the Progressive era. The Populist platform of 1896 called for a progressive income tax and public works programs to provide jobs in times of depression, very similar to what FDR would do forty years later. Nor was America too poor a country to afford such programs. The US in the 1920s was substantially richer than European countries, yet France, Germany and the United Kingdom all had substantial program of public aid several times as large as those in America. In 1912 the Public Health and Marine Hospital Service changed its name to the Public Health Service (PHS) in 37 Stat. L. 309.

4. The American Association for Labor Legislation (AALL) founded in 1906 as a Progressive political group of academic social scientists, labor activists and lawyers led the movement for health insurance. Within its first decade the group successfully pressed states to adopt workmen's compensation legislation. Workers' compensation was the first form of social insurance in the United States. The first U.S. workers' compensation law was enacted in 1908 to cover federal civilian employees engaged in hazardous work. The rest of the federal workforce was covered in 1916. Nine states enacted workers' compensation laws in 1911. By 1921, all but six states and the District of Columbia had workers' compensation laws. Workers' compensation provides cash benefits and medical care to employees who are injured on the job and survivor benefits to the dependents of workers whose deaths result from work-related incidents. In 1915 the organization drafted a model bill for compulsory health insurance to submit to state legislatures. Buoyed by a 1916 editorial in the Journal of the American Medical Association that praised national health insurance, "no other social movement in modern economic development is so pregnant with benefit to the public". By 1920 the movement for compulsory health insurance stalled because the AMA influenced by a revolt from conservative segments of its membership against the national leadership. The opposition lasted for over a half a century.

5. In 1927 the Committee on the Cost of Medical Care, composed of about sixty prominent health professionals and laypersons, was organized to address the needs of Americans who could not afford the new, improved standards of medical care. After five years the Committee issued a final report which concluded, "as the result of our failure to

utilize fully the results of scientific research the people are not getting the service they need, first because in many cases its cost is beyond their reach and second because in many parts of the country it is not available. The report recommended that doctors and other health professionals form groups so that they could provide a comprehensive array of preventative and therapeutic services. Funding for these services should come from periodic insurance payments and taxes, which would distribute the financial burden of illness evenly throughout the population .

6. In 1930 the Randsall Act, P.L. 71-251, 46 Stat. L. 379 renamed the Hygienic Laboratory the National Institute of Health (NIH). President Franklin Delano Roosevelt's Federal Emergency Relief Administration (FERA) formally recognized medical care a basic human right in 1933, declaring, "conservation and maintenance of the public health is a primary function of our Government." FERA used that mandate to fund medical services to indigent patients through existing state and local agencies. Against the opposition of the AMA health insurance provisions of the Social Security Act of 1935 were removed. The nation was therefore pushed into the private work related health insurance system that prevails today.

7. In 1936 Isidore S. Falk and the American Medical Association disagreed. The greatest need is not to find more money for the purchase of medical care, but to find newer and better ways of budgeting the costs and spending the money wisely and effectively. The AMA condemned any form of corporate medical practice that would be financed through private or public intermediary agencies. Such measures would limit patient's choice, increase the cost and lower the standards of medical care, encourage illness, degrade the medical profession and lead to a compulsory system of care. Organized medicine continued to use these arguments to oppose nearly every health care reform proposed during the next six decades. In 1942 the War Labor Board provided incentives for companies to offer fringe benefits. When the war ended 1 in 4 Americans was covered by an on the job policy that helped pay for hospital bills. The Taft-Hartley Act further expanded coverage for workers and their dependents, as did a Supreme Court ruling against Inland Steel in the late 1940s that gave labor unions the right to negotiate benefit plans as a condition of employment.

8. Some insurers felt state regulation was too burdensome. Congress therefore passed the McCarran-Ferguson Act in 1945 where it was declared that "the continued regulation and taxation by the several states of the business of insurance is in the public interest and that silence on the part of the Congress shall not be construed to impose any barrier to the regulation or taxation of such business by the several states". Most states adopted fair trade practice laws to prohibit unfair methods of competition and unfair practices. The insurance department is usually vested with broad powers to: license insurance companies and agents, examine companies, liquidate or rehabilitate insurance companies in financial difficulties and approve policy forms, certificates, booklets and rate manuals.

9. The 1946 Hill-Burton Hospital Survey and Construction Act, P.L. 79-725, revolutionized medical care for the poor. In exchange for federal assistance hospital administrators would offer free and reduced- price care for the poor. Since 1946, more

than $4.6 billion in Hill-Burton grant funds as well as $1.5 billion in loans have aided nearly 6,800 health care facilities in over 4,000 communities. 838 facilities are still obligated by the Hill-Burton Act. The Cooperative Health Federation of America was organized in 1946 to establish standards for prepaid organizations and to promote cooperative health care. After joining with other like minded organizations the federation emerged as the Group Health Association of America (GHAA) and moved its national office to Washington DC in 1965. The organization represented 21 prepaid health care plans and 75 supporting organizations, but not Kaiser Permanente. Between 1941 and 1946 the number of rural health cooperatives more than doubled to eighty six programs with 140,000 members.

10. Kaiser Permanente began when the steel maker Henry J. Kaiser arranged for a few doctors to provide prepaid care to his workers and their dependants at the Grand Coulee Dam construction site in the late 1930s. By the late 1960s the Kaiser Foundation Health Plan, Kaiser Foundation Hospitals and Permanente Medical Groups had six regional divisions operating and was the largest prepaid organization in the nation, serving more than half of the prepaid subscribers in the nation.Henry J. Kaiser said in 1971, "Of all the things I've done, I expect to be remembers only for the Hospitals and Health plan. They're the things that are filling the people's greatest need- the need for good health care at a cost that the average family can afford". The growing availability of private health care insurance for workers and their families during the late 1950s and early 1960s spawned what some have called the "golden age of American medicine". Consumer expectation and demand for medical services reach an all time high. Blue Cross and Blue Shield plans that set reimbursement standards for the industry, were controlled by hospital boards and physicians, who compensated themselves generously.

D. In the 1950s many western industrialized nations nationalized their health services so that all citizens would have access to care. But in 1953 Congress and the IRS institutionalized the link between private health insurance and work by making company contributions to employee benefit plans tax deductible. Health insurance became a massive subsidy for the employed. In 1958 older people reported spending more than double what younger people spent on their health care each year. As age increased, income decreased and health declined, making it even harder to pay medical bills. In 1962 only 38 percent of retired Americans had health insurance. Data from the National Health Survey for the years 1958 through 1960 show that half of elderly's short hospital stays were not covered by health insurance. Even so, older adults with insurance used about two and a half times as much hospital care as uninsured older adults, indicating a positive correlation between availability of insurance and health care use. P.L. 88-164, the Mental Retardation Facilities and Community Mental Health Centers Construction Act, provided for grants for assistance in the construction of community mental health centers nationwide. 1965--P.L. 89-105, amendments to P.L. 88-164, provided for grants for the staffing of community mental health centers. Before this time mental institutions had been used to warehouse elderly people.

1. In 1964 a Blue Cross spokesman testified before Congress that "insuring everyone over the age sixty-five is a losing business that must be subsidized". President Lyndon B.

Johnson signed the amendment to the Social Security Act in 1965 that created Medicare and Medicaid that subsidized medical care for millions of elderly and low income Americans. Concessions to the AMA and American Hospital Association were however costly. Federal and state costs for Medicare and Medicaid rose about 20 percent each year between 1966 and 1970. The federal government quickly became the largest purchaser of health care services. The final bill extended Medicare to nearly three million seniors who were not eligible for social security. Lyndon Johnson signed the bill on July 30, 1965 in the presence of Harry Truman in Independence, Missouri declaring that the enactment of Medicare meant that "no longer will older Americans be denied the healing miracle of modern medicine. No longer will illness crush and destroy the savings they have so carefully put away over a lifetime so that they might enjoy dignity in their latter years. No longer will young families see their own incomes and their own hopes eaten away simply because they are carrying out their deep moral obligations".

2. Medicare is unique among international health insurance programs. "No other industrial democracy" Theodore Marmor observes, "has compulsory health insurance for its elderly citizens alone and none started its program with such a beneficiary group". Medicare was created by amendments to the Social Security Act in 1965 which established two health care programs for person aged 65 or older, a hospital benefit plan and a medical benefits plan. Medicare benefits are also payable to persons receiving Social Security disability benefits and can begin after 29 months of disability. The act also provides government financed medical care of the poor, for inpatient and outpatient hospital services, laboratory and x-ray services, skilled nursing home services, physicians services, home health services, screening and diagnosis for children under age 21 and family planning.

3. The Health Maintenance Organization Act of 1973 transformed medical care from a cottage industry of private practitioners and benevolent community hospitals into a for-profit corporate enterprise whose officers care more about rewarding investors than helping the sick. Most reformers agree that by the late 1960s the passage of Medicare and Medicaid in 1965 has created an immense national health care crisis. Before the Health Maintenance Act of 1973 120 new prepaid health plans were started, afterwards only 40 more were created 1974-1978. HMOs generally assumed one of three organization forms: a staff model, a group practice model or an independent practice association. The White House and Congress responded to rapidly rising public and private health care costs by introducing more than two-dozen bills between 1970 and 1973. The legislative process pitted Democratic proposals for nationalized health care against Republican solutions that promoted free enterprise and competition. Prepaid health plans lobbied for conditions that would enable them to compete successfully in the marketplace. Organized medicine on the other hand opposed any legislation that might alter its traditional fee for service system. The HMO Act that Nixon signed in December 1973 was less comprehensive than the bills circulated, instead of $3.9 billion in appropriations the final bill allocated a mere $325 million over five years, to assist new HMOs with marketing, initial operating costs and planning, construction and renovation of facilities. Few HMOs enrolled public beneficiaries in the 1970s and 80s. Inconsistent public policies, inflexible government staff and procedures, late reimbursements and

worst of all, low compensation levels made long term participation impossible. In 1976 the HMO Act was amended to require federal certification of HMOs serving Medicare and Medicaid beneficiaries and to limit the enrollment of public beneficiaries in HMOs to no more than 50% whereas private subscribers were thought to motivate health plans to provide better services.

4. In 1977 Secretary of Health, Welfare and Education Joseph Califano moved Medicare administration out of the SSA and merged it with Medicaid administration in a new agency the Health Care Financing Administration (HCFA). In 1980 HEW was divided into the Department of Education and the Department of Health and Human Services (HHS). Different approaches to managed care developed in the 1980s in an effort to control the unsustainable inflation in health care costs. HMOs exist in three main forms, with some variations. Managed care organizations (MCOs) represent systems that combine finance and health care delivery. Preferred provider organizations (PPOs) represent agencies that develop and sell the services of broad provider networks (usually physician dominated). Provider sponsored organizations (PSOs) represent providers capable of bearing risk and providing a full range of services, they deal directly with purchasers, without an insurance carrier or intermediary. One new direction was based on the longstanding example of nonprofit HMOs, like Kaiser Permanente (established in the 1950s). The idea of "health maintenance" derived from the premise that capitation (as opposed to Fee for service) created both an incentive and the flexibility to invest in keeping people healthy rather than treating them only after they become ill.

E. American society and even most Democrats abandoned universal coverage as an issue after 1994, focusing on incremental efforts that led to passage of the 1996 Health Insurance Portability and Accountability Act (HIPAA) and the 1997 Children's Health Insurance Program. In his State of the Union Address on January 26, 1994, President Clinton made it clear that the major goal of his health plan is to guarantee universal health insurance coverage for all Americans. To achieve this goal the Clinton plan relies primarily on a mandate requiring all employers to pay up to 80 percent of the cost of health insurance premiums for their workers. About 66 million wage and salary workers received insurance benefits from their employers in 1994. Under the Clinton plan another 45 million workers would be covered, although all but 18 million were already covered in some other way such as through a spouses benefit. The plan intended to finance health care, not by raising taxes, but by sending a bill to employers. On September 14, 1995 Republican congressional leaders unveiled their plan to overhaul Medicare, the federal health insurance program for elderly and disabled Americans. They sought to end Medicare's status as a budgetary entitlement by imposing a cap on program spending. They called for a reduction in Medicare expenditures of $270 billion over seven years, a 30% decrease that represented the largest spending cut in Medicare's history. They proposed transforming Medicare into a competitive market by expanding beneficiaries' options to leave the traditional Medicare system for private health insurance plans. Newt Gingrich, Speaker of the House of Representatives, promoted Medicare reform as the, "heart of this fight" to balance the federal budget. Republican National Committee chairman Haley Barbour warned that Medicare was "the Achilles

heel" of the Republican revolution and urged the party to leave it alone until after the 1996 national elections.

1. In 1996, a compromise measure, the Mental Health Parity Act (MHPA) (P.L. 104-204), was enacted which provided partial parity for the private health insurance marketplace. It prohibited separate annual and lifetime dollar limits for mental health care, but did not stop group plans from imposing restrictive treatment limits or cost sharing. In addition, the MHPA was specifically not applicable to substance abuse treatment. As a consequence, mental health and substance abuse treatment are still not on parity with physical health care. Revenue losses forced the closure of four hundred emergency departments between 1992 and 1997, mostly in inner city and rural communities, where medically indigent patients used them as a regular and sole source of outpatient care. Even with fewer emergency rooms, emergency visits increased from 95 million in 1997 to 108 million in 2000. Wait time increased 33 percent.

2. The Balanced Budget Act of 1997 mandated a wide variety of key policy changes, including a balanced federal budget 2002. Among the BBA provisions was a series of Medicare reforms and substantial cuts, of $115 billion over five years, in the rate of growth in Medicare spending. The BBA established a National Bipartisan Commission on the Future of Medicare. The State Children's Health Insurance Program (SCHIP) was also enacted as part of the Balanced Budget Act of 1997 (BBA). The original state children's health insurance program (SCHIP) was financed by an increase in the federal excise tax on cigarettes. In 1998, for the first time in three decades, the Congressional Budget Office, announced a federal budget surplus, forecasting a surplus of $131 billion for 2000 and $381 billion by 2009. In 2001, HCFA was renamed the Centers for Medicare & Medicaid Services (CMS).

F. The Patient Protection and Affordable Care Act of 2010, Pub. L. No. 111-148, 124 Stat. 119 (2010), known as the Affordable Care Act (ACA) was signed into law by President Barack Obama on March 23, 2010. The ACA is codified under 42USC§18001 *et seq*. thoroughly amended the Public Health Service Act requirements relating to health insurance under 42USC§300gg *et seq*. and created the Internal Revenue Code premium tax credit and cost sharing subsidy under 26USC§36B. When the ACA was written, it was expected that everyone living in poverty would be eligible for Medicaid. But two years after the law was enacted, the Supreme Court ruled that states couldn't be forced to expand Medicaid, and some states still haven't expanded coverage. This results in a coverage gap for people with income below the poverty level in those states. However people eligible for Medicaid, or Medicare, or CHIP are not eligible for ACA subsidies. Adults with children who are eligible for CHIP or Medicaid are not eligible for subsidies for their children and must purchase ACA plans for adults only. The Kaiser Family Foundation reported that, following the ACA, the number of uninsured non-elderly Americans declined by 20 million, to an historic low in 2016, from 17% in 2010 to 10% in 2016. However, beginning in 2017, the number of uninsured non-elderly Americans increased for three straight years, growing by 2.2 million from 26.7 million in 2016 to 28.9 million in 2019, and the uninsured rate increased to 10.9% in 2019.

1. Paying for more health insurance is an unconstitutional ideology in the nation with the highest health expenditure as a percent of GDP in the world. Despite the high cost the United States has high rates idiopathic diseases because the least is known about the most common (expensive) diseases pursuant to the enforcement of the law of perversity by ruthlessly extortionate, anti-antibiotic, toxic, identity thefting, bioterrorist health care workers. Although there is a lot of bioterrorism and simple cures to redress, Pneumovax 23 every ten years for all working age people, not just smokers, might greatly reduce deaths from pneumonia, rheumatic heart disease and meningitis. Hydrocortisone creme cures aspergillosis, mold allergies and coronavirus also cured with eucalyptus, lavender or peppermint. Mentholyptus cough drops cure both influenza and coronavirus, with a little nose washing. Epsom salt bath cures methicillin resistant *Staphylococcus aureus* (MRSA) that often infects the spine and causes skin tags. Health professionals must not neglect these over-the-counter remedies in their pursuit of expensive surgeries, experimental treatments and chronic life-threatening conditions to extort. With more than half of bankruptcies health related, the only health financing law Congress can afford is to repeal 'Medical records and payments' from the Fair Credit Reporting Act under 15USC§1681a(x)(1) pursuant to the negotiation of fair Medicaid prices for safe and effective medical diagnosis and treatment.

2. Starting in 2022, the No Surprises Act protects patients from surprise out-of-network charges and balance billing in most situations where surprise bills occur. Patients often incur these surprise charges when they receive emergency care from a health care provider or facility that is out of their plan's network. Even in instances where a patient is receiving planned care at an in-network facility, they still may be subject to balance billing if, for example, an ancillary provider who administers services to the patient is not part of the network. In these cases, the provider may bill the patient for the difference between what the provider charges and what the patient's insurance company paid the provider for the out-of-network care. These surprise bills can run into the thousands of dollars and patients often have no advance notice that the provider is out of their plan's network. For emergency services, including air ambulance services, the No Surprises Act protects consumers from having to pay more than the in-network cost-sharing amount under their plan, regardless of whether the emergency service is provided in-or-out of network. For scheduled services, the consumer must be notified and have an opportunity to consent in advance of receiving care from an out-of-network provider. The No Surprises Act also sets up an arbitration process for health plans and issuers, providers, and uninsured consumers to settle any disagreements about the payment rates for out-of-network services. These surprise billing protections, as well as many related price transparency provisions, will apply to most consumers.

§334 Centers for Medicare & Medicaid Services

A. The Social Security Act of 1965 H.R. 6675, in five Social Security Amendments, established the Federal Hospital Insurance Trust Fund and Federal Supplemental Medical Insurance Trust Fund as separate accounts in the U.S. Treasury and the Medicaid Program. Medicare and Medicaid, came into being in 1965 as part of President Johnson's "Great Society" legislation. The established both Medicare and Medicaid. Medicare was

a responsibility of the Social Security Administration (SSA) and State Medicaid programs were administrated by the Social and Rehabilitation Service (SRS). Until 1977, the Social Security Administration (SSA) managed these programs, when the Health Care Financing Administration (HCFA) took over. Health and Human Services (HHS) was created in the Education Reorganization Act of 1978. In 1995 SSA left HHS and became an independent agency. State Children's Health Insurance Program (SCHIP or CHIP) was created by the Balanced Budget Act of 1997. In the Social Security Act of 2001 HCFA changed its name to Centers for Medicare, Medicaid and State Children's Heath Insurance Programs (CMS), it is now known as the Centers for Medicare & Medicaid Services (CMS).

1. This review estimates Centers for Medicare and Medicaid Services (CMS) outlays of $1,316 billion FY 22 with 3% growth from the previous year, the President $1,320 billion FY 22 overestimating 6% growth to over-emphasize his predecessors' cuts to program management and fail to blame him for 9% CMS "hydroxychloriquine" inflation FY 20 – FY 21 rather than prescribe hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus. CMS requests funding for four annually-appropriated accounts including Program Management (PM), discretionary Health Care Fraud and Abuse Control (HCFAC), Grants to States for Medicaid, and Payments to the Health Care Trust Funds. Children's Health Insurance Program (CHIP) spending is included in Grants to States. Federal outlays are supplemented with State payments, mostly for Medicaid and CHIP, interest income, withdrawal from trust funds, certain interagency transfers and substantial premium revenues, designed to pay 25% of cost, for Supplemental Medical Insurance (SMI). Not including less than $100 billion transfers from states for Medicaid and CHIP, Total Program Level (P.L.) for CMS is estimated at $1,677 billion FY 22, $361 billion more than outlays. Concessions to the American Medical and Hospital Associations in the legislation of Medicare premiums, for only social security beneficiaries, primarily serves to cause hyperinflation. Medicare insured a total of 62.2 million OASDI beneficiaries for a total cost of $711 billion and is predicting super-hyperinflation FY 20 - FY 22. Medicare estimates spending of $995.7 billion for 65.0 million beneficiaries FY 22. In FY 2022 more than 77 million people will be insured by Medicaid for only $467 billion. Although Medicare premiums and treatment is much nicer than private health insurance, it costs more than twice as much to treat 12 million fewer people, and is the reason for most subversive propaganda regarding there being more elderly people than children, although Medicaid pays half of nursing home dollars, Medicare's willingness to pay for medical hyperinflation, permit copays, deductibles and unfair competition with even more expensive private insurance, is responsible for most of the national health overspending. Going forward with a Medicaid price for all strategy, CMS must study how a dwindling number of health professionals and hospital beds cause medical hyperinflation.

2. The *HHS Budget-in-brief* is a crude estimate of medical spending that falls somewhere between total federal outlays and program level including premiums, state spending, and withdrawals from trust funds but excluding deductibles and co-pays. CMS *Justification of Estimates for Appropriations Committees* do not add-up to explain total CMS outlays or program level. To arrive at an accurate estimate of federal outlays, program level and

undistributed offsetting receipts, that closely approximates, but is more accurate than the higher total spending estimated in the *HHS Budget-in-brief*, it is necessary to read the fine print regarding annual appropriations and edit the CMS *Justification of Estimates* using Medicare data from the *Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund and Federal Supplemental Medical Insurance Trust Fund* and State Medicaid spending estimated in the National Association of State Budget Officers State Expenditure Report FY17-FY19 and project 3% inflation FY 20-FY22 to estimate total CMS program level. Repeated Trump Administration efforts to cut program management spending have been thwarted with zero growth, another intolerable condition for services requiring 3% inflation. The Biden Administration American Jobs Plan hyper-inflates and the HHS budget is particularly mathematically insolvent trying to blame the Trump administration for fluctuations, both hyperinflation and cuts, that didn't occur, must not be allowed to occur under the Biden Plan and must be smoothed out in the aftermath. It seems best to assume 3% growth, except where the Medicare Trustees have made slight spending growth (over)estimates to plead looming insolvency to justify revenue schemes when what is wanted is Medicaid prices for all. The American Jobs Plan needs to justify its claim in lower costs for home care, precision medicine and provide for stable 3% inflation for services.

Centers for Medicare and Medicaid Services FY 17 – FY 24
(millions)

Accounts	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Program Management	3,966	3,948	3,966	3,975	3,975	4,316	4,446	4,579
HCFAC - Discretionary	725	725	765	786	813	837	862	888
Annual Appropriations for Grants to States for Medicaid	262,004	284,798	276,236	284,244	313,904	323,321	333,021	343,011
Advanced Appropriation	115,583	125,220	134,848	137,932	139,903	144,100	148,423	152,876

Total Annual Appropriations	[377,587]	[410,018]	[411,084]	[422,176]	[453,807]	[467,421]	[481,444]	[495,887]
State Medicaid Spending	[57,030]	[61,475]	[64,098]	[66,021]	[68,002]	[70,042]	[72,143]	[74,308]
Hospital Insurance Payroll Tax	259,700	264,600	281,400	295,900	310,500	325,600	339,300	354,500
Other HI Income & Assets	[37,800]	[40,100]	[43,200]	[49,700]	[58,000]	[68,000]	[77,700]	[74,300]
Supplemental Medical Insurance SMI Part B General	309,600	316,700	331,800	356,200	394,400	426,100	455,600	490,100
Premiums, Interest, & Transfers Part B	[112,800]	[124,900]	[113,518]	[123,619]	[154,600]	[182,400]	[179,900]	[196,100]
SMI Part D General	78,700	72,400	67,900	71,700	84,100	91,500	94,400	99,400
SMI Part D Premiums, Transfers from States, Interest	[26,500]	[27,600]	[28,500]	[28,900]	[30,300]	[40,900]	[35,400]	[38,300]

& Assets								
Total Outlays	1,030,278	1,068,391	1,096,915	1,150,737	1,247,595	1,315,774	1,376,052	1,445,354
P.L.	1,264,408	1,322,466	1,346,231	1,418,977	1,558,497	1,677,116	1,741,195	1,828,362

Source: CMS Agency Justifications of Estimates for Appropriations Committees FY 19 & FY 21 pg. 88. Advance appropriations, treated as undistributed offsetting receipts to reduce the deficit, are added to annual appropriations to equal annual appropriations. State Medicaid Spending National Association of State Budget Officers. State Expenditure Report. Washington DC. 2019. pg. 54 FY17-FY19 3% inflation FY 20-FY22. 2020 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund and Federal Supplemental Medical Insurance Trust Fund pgs. 216-220; when there is a SMI deficit the reduction in assets is added to premium and interest income, that is added to general revenues to determine program level. Other HI income – taxation of benefits railroad retirement transfers, reimbursement for uninsured persons, premiums from voluntary enrollees, payments for military wage credits, interest and other, negative net change in assets.

B. CMS requests funding for four annually-appropriated accounts including Program Management (PM), discretionary Health Care Fraud and Abuse Control (HCFAC), Grants to States for Medicaid, and Payments to the Health Care Trust Funds. The Chief Financial Officers (CFO) Act of 1990 creates a framework for the federal government to focus on the integration of accounting, budget, and other financial activities under one umbrella, that remains to be completely sorted out. The Healthcare Integrated General Ledger Accounting System (HIGLAS) is a single, integrated dual-entry accounting system, that standardizes and centralizes Federal financial accounting functions for all of CMS' programs. It reduced separate accounting payment systems for Medicare and Medicaid into one system of financial statements. As a committed steward of public funds, CMS is dedicated to moving toward a health care system that will drive down costs, give Americans more choices, and put patients and doctors in control of their health care. CMS resource needs are principally driven by workloads that grow annually and by its role in leading national efforts to improve efficiency, health care utility, and access to care. The administrative efficiency of CMS programs are greatly impaired by outrageously high, duplicate and triplicate Medicare Part A Hospital Insurance bills and copays. To begin to redress the hyperinflation underlying the highest total national health expenditure in the world, it will be necessary for CMS to enforce reasonably negotiated Medicaid prices for all – Medicare, private insurance and out-of-pocket.

1. Account transfers payments are made from the General Fund to the trust funds in order to make the Supplementary Medical Insurance (SMI) Trust Fund and the Hospital Insurance (HI) Trust Fund whole for certain costs, initially borne by the trust funds, which are properly chargeable to the General Fund. The largest transfer provides the General Fund contribution to the SMI Trust Fund for the General Fund's share of the SMI program. Other transfers include payments from the General Fund to the HI and

SMI Trust Funds, including the Medicare Prescription Drug Account, for costs such as general revenue for prescription drug benefits, HCFAC, and other administrative costs that are properly chargeable to the General Fund. A permanent indefinite appropriation of general funds for the taxation of Social Security benefits is made to the HI Trust Fund through the Payments to the Health Care Trust Funds account. Taxation of social security benefits is not generally considered an on-budget appropriation. It is important to note that the HI tax and transfers from the general fund are considered on-budget appropriations, while social security administration taxes and other revenues are considered off-budget by the Office of Management and Budget (OMB), and in review are the only "off-budget" revenues and expenditures accounted for, in the grand total.

C. FY 18- FY 19 the Department of Health and Human Services established and sustains an HHS-wide Agency Priority Goal to *Reduce Opioid Misuse*, and CMS is a supporting partner in that effort. CMS released an updated Adult Core Set of measures, including a new measure Concurrent Use of Opioids and Benzodiazepines. Additional related measures include Follow-up after Discharge from the Emergency Department for Mental Health or Alcohol or Other Drug Dependence, Initiation and Engagement of Alcohol and Other Drug Dependence Treatment, and Use of Opioids at High Dosage in Persons without Cancer. The CMS Quality Innovation Network- Quality Improvement Organization program (QIN- QIO) is working with outpatient settings including pharmacies, nursing homes, and clinical practices and with community coalitions and state based efforts across the nation to improve management and safety of opioid medication while addressing appropriate treatment of pain. The program is currently working toward goals to achieve a hospital utilization reduction of opioid admissions, observation stays, and emergency department visits for the high-risk opioid-utilizing Medicare population and a reduction in readmissions for the high risk opioid Medicare population. CMS recently updated its interactive online Medicare Part D Opioid Drug Mapping Tool that allows the public to search Medicare Part D opioid prescription claims data at the state, county, and IP code levels. CMS currently uses the Part D Opioid Drug Utilization Review (DUR) Policy and Over-utilization Monitoring System based on retrospective DUR to reduce opioid utilization in Part D, Medicare's prescription drug benefit. In conjunction with Part D opioid over-utilization policies that address prospective opioid use, this policy has played a key role in reducing high-risk opioid over-utilization. The Comprehensive Addiction and Recovery Act of (CARA), requires CMS to establish, through rule-making, a framework under which Part D plan sponsors may establish a drug management program for at-risk beneficiaries. Under such a program, sponsors may restrict at-risk beneficiaries' access to controlled substances that CMS determines are frequently abused drugs to a selected prescriber(s) and or network pharmacy(ies) through lock-in. According to the Centers for Disease Control and Prevention's National Center for Health Statistics, provisional overdose mortality fell by 5 percent for the 12 months ending in the second quarter of 2018, however a significant increase in methamphetamine use has been noted, probably consequential to the corruption of CDC by $400 million in new funding for Office of National Drug Control Policy powers to rob marijuana in order to push methamphetamine, that must be abolished. For their part, like Indian Health Service, the CMS *Justification of Estimates,*

needs to change the title of their ever-improving work on "Addiction" whereas reference to the National Drug Control Policy must be deleted and the Office completely abolished.

1. In 2012, CMS began a nationwide initiative - the *Partnership to Improve Dementia Care in Nursing Homes* to improve dementia care and reduce the use of antipsychotic medications – that has been successful at reducing the rate of nursing home population consuming antipsychotic medication by achieving targets of 20.3% in 2013, down to 15.5% in 2019. More than 3 million Americans rely on services provided by 15,600 nursing homes each year. There are 1.4 million Americans who reside in the nation's , nursing homes on any given day. Significant progress has been achieved a 29.6% percent reduction in pressure ulcers, from 8.6% to 5.5% between 2007 and 2017 when data collection was discontinued. Influenza vaccination was discontinued as a performance measure in 2015. Individuals are diagnosed with End-Stage Renal Disease (ESRD) when their kidneys are no longer able to remove excess fluids and toxins from their blood. ESRD can be cured only with a kidney transplant. Patients who have not received a transplant rely on dialysis to perform the life-saving function of blood filtration. The estimated number of prevalent Medicare ESRD patients grew by 3.2% percent to 661,648, with a total of $30.9 billion of Medicare claims paid in 2015. Hemodialysis requires repeated vascular access to large blood vessels that remove waste from blood. The three forms of vascular access are arteriovenous fistula (AVF), arteriovenous graft (AVG), and central venous catheter (CVC). A patient's vasculature and other medical and physical conditions are used to determine access type. The trend is to reduce the risk of Vascular Access Relate Infections by reducing the rate of long term Central Venous Catheter (CVC) use with the placement of an Arterio-fistula (AVF) or graft. The FY 22 budget provides home and community-based services (HCBS) to aging relatives and people with disabilities who would otherwise need to wait as many as five years to get the services they badly need.

D. Two programs—the Health Care Fraud and Abuse Control (HCFAC) Program and the Medicaid Integrity Program—comprise the largest portion of federal government investment in health care program integrity. The FY 2022 budget provides $2.4 billion in total mandatory and discretionary investments for the HCFAC and Medicaid Integrity Programs. The budget requests $872.8 million in discretionary HCFAC funding, $65.8 million above the FY 2021 level. Of the $872.8 million, Centers for Medicare & Medicaid Services (CMS) will receive $675.7 million, DOJ receives $94.9 million, and the HHS Office of Inspector General (OIG) receives $102.1 million. A top priority for increased investment in this account is Medicare medical review. This involves the collection and clinical review of medical records and related information to ensure that payment is made only for services that meet all Medicare coverage, coding, billing, and medical necessity requirements. CMS will increase the percentage of fee-for-service claims subject to medical review, which currently stands at less than one-tenth of one percent. Medicare program integrity activities, inclusive of medical review, yield over $9 to $1 spent, based on a three-year rolling average. CMS will also heighten program integrity oversight of the Marketplaces, commensurate with increasing enrollment.

1. The Medicare Part A Trust Fund provides over $1.4 billion in mandatory HCFAC resources for FY 2022 allocated to the Medicare Integrity Program and other HCFAC partners. This funding supports efforts across HHS, HHS OIG, DOJ, and the FBI to combat health care fraud, waste, and abuse. The three-year rolling average return on investment for HCFAC law enforcement activities is $4.2 recovered for every $1 spent. In FY 2019 alone, these activities returned nearly $3.6 billion to the federal government or private individuals, including $2.5 billion to the Medicare Trust Funds and $149 million in federal Medicaid recoveries and audit disallowances to the U.S. Department of the Treasury. Using HCFAC as a model, the Deficit Reduction Act of 2005 established the Medicaid Integrity Program as the nation's first program integrity effort focused on Medicaid. The mandatory appropriation for the Medicaid Integrity Program adjusts annually for inflation and will total $87.1 million in FY 2022. Combined with CMS program management and other accounts, Medicaid program integrity funding improves critical Medicaid systems supporting program integrity.

2. To learn the lesson of felony monopolization of news media and public health information by vaccine propaganda, begin to prohibit medication error propaganda perpetuating chronic disease, bring a conclusive end to the COVID-19 pandemic, and be prepared for future seasonal influenza pandemics it is essential that CMS train all hospital and home based caregivers in basic coronavirus and influenza diagnosis and treatment: Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis and eucalyptus, or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus, lavender or peppermint soap in showers, baths and public restrooms, with instruction to "wash your nose". Intensive care units, waiting rooms and public airspaces may be sterilized with eucalyptus scented humidifiers (diffusers).

§334a Medicare

A. Medicare the health insurance program for the elderly began on July 1, 1966. Medicare is available to any United States citizen over 65 years of age who is eligible for Social Security or certain other government benefits. In 1973 the program was extended to cover younger disabled people who had been eligible for Social Security or Railroad Retirement benefits for at least 24 months, most people with end-stage kidney disease, and some aged people who did not otherwise qualify who wished to pay a premium to join the program. When Medicare began, some 19,000 people enrolled. By 2000, the program served about 39 million people, including 95 percent of the aged population and about 5 million disabled people younger than 65. Initially Medicare covered only hospital insurance, Part A, Hospital Insurance (HI). Medicare was later expanded to cover physician visits and certain other medical services, a section of the program known as Part B, or Supplemental Medical Insurance. Part C was included in the Balanced Budget Act of 1997 to provide Medicare + Choice . In 2006 the Part D Prescription Drug Program was created.

1. In 2019 Medicare will insure a total of 62.2 million OASDI beneficiaries, 95% of 65.3 million OASDI beneficiaries. Medicare Part A insures an estimated 61.9 million, Part B insures 56.6 million, Part D 47.7 million and Part C 21.3 million. For HI, the primary source of financing is the payroll tax on covered earnings. Employers and employees each pay 1.45 percent of earnings, while self-employed workers pay 2.9 percent of their net income. Since 1994 the Hospital Insurance (HI) tax has no limit on taxable income, beginning in 2013, workers pay an additional 0.9% of their earnings above $200,000 (individual) or $250,000 (joint tax return). Other HI revenue sources include a portion of the federal income taxes that people pay on their Social Security benefits, and interest paid on the U. S. Treasury securities held in the HI trust fund. In Fiscal Year (FY) 2022, the Office of the Actuary estimates that gross current law spending on Medicare benefits will total $995.7 billion and the program will provide health benefits to 65.0 million beneficiaries.

Total Medicare Revenues, Expenditures and Assets FY 2014- FY 2024
(billions)

Fiscal year	Total Income	Total Expenditures	Net Change in Assets	Assets at end of year
2014	597.7	600.3	-2.6	273.6
2015	629.9	638.1	-8.3	265.3
2016	687.7	694.5	-6.8	258.6
2017	721.0	707.4	13.6	272.1
2018	744.4	711.3	33.1	305.3
2019	782.9	782.1	0.7	306.0
2020	835.2	844.5	-9.3	296.7
2021	902.2	906.1	-3.9	292.8
2022	962.8	1,011.3	-48.5	244.3
2023	1,022.2	1,044.8	-22.6	221.7
2024	1,090.8	1,075.6	15.2	236.9

Source: 2020 Annual Report of the Boards of Trustees of the Federal Hospital Insurance Trust Fund and Federal Supplemental Medical Insurance Trust Fund. pg. 215

1. The Medicare program provides hospital and supplemental medical insurance to Americans age and older and to disabled persons, including those with End Stage Renal Disease (ESRD). The program was expanded in with the introduction of a voluntary prescription drug benefit, Part D. Medicare enrollment has increased from 19 million in 1966 to 62 million beneficiaries expected in FY 19. CMS processes beneficiary claims through Medicare Administrative Contractors (MACs). A MAC is a private healthcare insurer that has been awarded a geographical jurisdiction to process Medicare Part A and

B medical claims or Durable Medical Equipment claims for Original Medicare. In addition to processing Part A and Part B claims, MACs enroll providers in the Medicare program, handle provider reimbursement services, process first- level appeals, respond to provider in inquiries, educate providers about the program, and administer the participating physician supplier program (PARDOC). These are the primary contracts for managing Medicare and are mission critical for the success of CMS. Claims volume in FY 19 is expected to be 1.3 billion - 261 million Part A and 1,077 Part B. MACPAC and Kaiser Family Foundation federal and state overestimates of Medicaid spending, do not do CMS advance appropriations justice, by undistributed offsetting receipts or rescission, to express the balance forward to pay the budget in the next year, wherefore the HHS budget-in-brief and OMB historical tables wildly overestimate federal outlays for health while underestimating congressional budget authority.

B. Medicare Part A is paid for primarily by mandatory payroll taxes levied on both employers and employees, while Part B and D are paid for by a combination of premiums from beneficiaries, covering about one-fourth of the program's costs and contributions from general federal revenues. Without Part B and D, Part A hospital co-pays and deductibles are outrageously expensive, far in excess of negotiated Medicaid prices for the same procedure or hospital stay. Within 30 days from the receipt of the claim Medicare shall notify the patient of the claims, with their infuriating, and probably toxic "you may be b(k)illed" letters. Individuals who have worked for 10 years (40 quarters) and paid Medicare taxes during that time generally receive Part A benefits without paying a premium, but most services require beneficiary coinsurance. The Federal Hospital Insurance (HI) Trust Fund is financed with a 2.9% payroll tax, plus 0.9% tax on the incomes of the wealthy in Section 1817 of the Social Security Act under 42USC§1395i. The source of health hyperinflation and the oil price hyperinflation crisis in the early 1970s seems to be that the HI payroll tax revenues increase at an average annual rate of about six percent. 6% is twice the 3% usual growth rate for health care, social work, and education welfare professional subsidy programs. Hospital insurance, Part A of Title XVIII of the Social Security Act, is provided for all people insured under old age and disability insurance provisions, and otherwise uninsured people who are entitled to transitional hospital insurance on the basis of need. Worse than uninsured, ineligible for Medicaid prices. Part A Hospital Insurance covers the emergency medical care, hospitalization and hospice care of the uninsured under Sec. 1812 of the Social Security Act under 42USC§1395d. In the case of a hospital that has a hospital emergency department, if any individual, whether or not eligible for benefits, comes to the emergency department and a request is made on the individual's behalf for examination or treatment for a medical condition, the hospital must provide for an appropriate medical screening examination within the capability of the hospital's emergency department, including ancillary services routinely available to the emergency department, to determine whether or not an emergency medical condition exists under Sec. 1867 of the Social Security Act under 42USC§1395dd.

Operations of Medicare Part A, Hospital Insurance Trust Fund 2014-2020
(billions)

Year	Payroll Taxes	Income from taxation of benefits	Railroad Retirement Account Transfers	Reimbursement for uninsured persons	Premiums from voluntary enrollees	Interest and Other	Total Income	Benefit Payments	Administrative expenses	Total expenses	Net change	Fund at the end of the year
14	227.4	18.1	0.6	0.2	3.3	11.7	261.2	264.9	4.5	269.3	-8.1	197.3
15	237.7	20.2	0.6	0.2	3.3	10.4	272.4	273.2	5.5	278.7	-6.4	195.9
16	250.5	23.0	0.7	0.2	3.2	9.6	287.1	285.6	5.1	290.6	-3.5	192.4
17	259.7	24.2	0.6	0.1	3.5	10.3	298.5	290.3	3.0	293.3	5.3	197.6
18	264.6	24.2	0.6	0.1	3.5	9.8	302.8	292.1	5.1	297.2	5.7	203.3
19	281.4	23.8	0.6	0.1	3.8	9.5	319.3	318.4	5.4	323.7	-4.5	198.8
20	295.9	27.2	0.6	0.1	4.2	8.4	336.5	340.7	5.5	346.2	-9.7	189.1
21	310.5	29.3	0.6	0.1	4.2	8.2	353.2	360.5	5.8	366.3	-13.1	176.0
22	325.6	32.1	0.7	0.1	4.7	7.5	370.7	396.7	6.1	402.8	-32.1	143.9
23	339.3	35.0	0.7	0.1	5.0	6.6	386.6	410.5	6.5	417.0	-30.3	113.6
24	354.5	38.1	0.7	0.1	5.3	5.8	404.6	422.0	6.8	428.9	-24.3	89.3

Source: 2017 and 2020 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund and Federal Supplemental Medical Insurance Trust Fund. pg. 57, 216 respectively. There have never been any payments for military wage credits so the column has been deleted.

1. Most persons aged 65 and older and many disabled individuals under age 65 are insured for HI benefits without payment of any premium, however to avoid excessive copayments and deductibles coinsurance is necessary. The Social Security Act provides that certain aged and disabled persons who are not insured may voluntarily enroll, subject to the payment of a monthly premium. In addition, since 1994, voluntary enrollees may qualify for a reduced premium if they have at least 30 quarters of covered employment. HI beneficiaries who use covered services may be subject to deductible and coinsurance requirements. A beneficiary is responsible for an inpatient hospital deductible amount, which is deducted from the amount payable by the HI trust fund to the hospital, for inpatient hospital services furnished in a spell of illness. When a beneficiary receives such services for more than 60 days during a spell of illness, he or she is responsible for a coinsurance amount equal to one-fourth of the inpatient hospital deductible for each of days 61-90 in the hospital. After 90 days in a spell of illness, each individual has 60 lifetime reserve days of coverage, for which the coinsurance amount is equal to one-half of the inpatient hospital deductible. A beneficiary is responsible for a coinsurance amount equal to one-eighth of the inpatient hospital deductible for each of days 21-100 of skilled

nursing facility services furnished during a spell of illness. No cost sharing is required for home health or hospice services. It was estimated that in 2020 there would be 7.01 million inpatient deductibles paid at $1,408 each, 1.63 million inpatient days subject to coinsurance at $352 per day (for hospital days 61 through 90), 0.81million lifetime reserve days subject to coinsurance at $704 per day, and 32.17 million extended care days subject to coinsurance at $176.00 per day. In CY 2021, beneficiaries pay a $1,484 deductible for a hospital stay of 1–60 days, and a $185 daily coinsurance for days 21–100 in a skilled nursing facility.

Hospital Insurance Cost Sharing and Premium Amounts 2020-2024
(dollars)

Year	Inpatient deductible	Coinsurance Days 61-90	Lifetime reserve days Coinsurance	SNF daily coinsurance	Monthly premium Standard	Monthly premium reduced
2020	1,408	352	704	176.00	458	252
2021	1,452	363	726	181.50	478	263
2022	1,504	376	752	188.00	496	273
2023	1,552	388	776	194.00	517	284
2024	1,600	400	800	200.00	536	295

Source: 2020 Annual Reports of the Boards of Trustees for the Federal Hospital Insurance Trust Fund and Federal Supplemental Medical Insurance Trust Fund. Pg. 191

2. All hospital claims are paid, giving priority to the aged and disabled, by reducing the share of the federal government to 45% of the total cost of hospital claims payable so long as the patient continues to have the disability under 42USC§1395i-2. The scope of entitlement to the payment of benefits in Medicare Part A in Sec. 1812 of the Social Security Act under 42USC§1395d is for inpatient hospital services, post-hospital extended care services, home health services, and hospice care during any spell of illness; including: 1. inpatient hospital services or inpatient critical access hospital services up to 150 days; 2. psychiatric hospitalization is limited to 21 days of reimbursement; 3. post-hospital extended care services for up to 100 days; 4. hospice care with respect to the individual during up to two periods of 90 days each and an unlimited number of subsequent periods of 60 days. Medicare must cease paying for involuntary commitment to general hospital psychiatric wards and psychiatric drugs. Medicare must renegotiate the price of hospital stays to be the same as Medicaid and pay for it.

3. The claim shall then be paid at, or before, the end of the quarter in Sec. 1806 of the Social Security Act under 42USC§1395b-7. Requests for Medicare payment are processed within 90 day, 1 quarter from receipt; claims that are not immediately settled receive a fair hearing no later than 120 days after receipt under Sec. 1869 of the Social Security Act under 42USC§1395ff. Benefits (1) will be provided economically and only when, and to the extent, medically necessary; (2) will be of a quality which meets professionally recognized standards of health care; and (3) will be supported by evidence

of medical necessity and quality in such form and fashion and at such time as may reasonably be required by a reviewing peer review organization in the exercise of its duties and responsibilities in Sec. 1156 of the Social Security Act under 42USC§1320c-5. The beneficiary assistance program shall provide assistance, information and counseling with respect to the Medicare program, (a) eligibility, (b) benefits (both covered and not covered), (c) the process of payment for services, (d) rights and process for appeals of determinations, (e) peer review organizations, fiscal intermediaries, and carriers and (f) recent legislative and administrative changes in the Medicare program.

4. Hospital construction was federally funded on the condition that the hospitals provide free or reduced cost care to the poor under the 1946 Hill-Burton Hospital Survey and Construction Act, P.L. 79-725. The right to arbitration in all disputes that may arise between a construction company and a hospital is guaranteed by *Moses H. Cone Hospital v. Mercury Construction Corp*. 460 US 1 (1983). For the purposes of the Medicare Rural Hospital Flexibility program, acute care inpatient services do not exceed 25 beds and the number of beds used at any time for acute care inpatient services do not exceed 15 beds for groups of physicians and nurses engaging in activities relating to planning and implementing a rural health care plan; and designating facilities as critical access hospitals for the surrounding 35 mile community and extended hinterland in Sec. 1820 of the Social Security Act under 42USC§1395i-4.

C. The Federal Supplemental Medical Insurance (SMI) Trust Fund is a premium funded health insurance program provided for in Sec. 1839 of the Social Security Act under 42USC§1395t that receives funds from the General Revenues as needed. The amount of the premium is designed to afford one-fourth of the total of the benefits and administrative costs estimated to be payable per capita from the Federal Supplementary Medical Insurance Trust Fund for services performed and related administrative costs incurred in such calendar year with respect to such enrollees and any credit due in Section 1839 of the Social Security under 42USC§1395r. Recent hyperinflation of premiums, in excess of annual social security Cost-of-living adjustments (COLA) has resulted in tripartite “hold-harmless” method of inflation whereby low-income beneficiaries pay zero or no increase in premiums, while high-income beneficiaries pay considerably more than the usual rate. Part B covers the cost of physicians, home care and medical services in Sec. 1832 of the Social Security Act under 42USC§1935k. 1. Clinical laboratory services; 2. Physical therapy services; 3. Occupational therapy services; 4. Radiology services, including magnetic resonance imaging, computerized axial tomography scans, and ultrasound services; 5. Radiation therapy services and supplies; 6. Durable medical equipment and supplies (including eyeglasses); 7. Parenteral and enteral nutrients, equipment, and supplies; 8. Prosthetics, orthotics, and prosthetic devices and supplies; 9. Home health services; 10. Outpatient prescription drugs; 11. Inpatient and outpatient hospital services; 12. Physicians for preventative yearly check-ups and diagnostic laboratory tests.

1. Medicare Part B pays for physician, outpatient hospital, End-Stage Renal Disease, laboratory, durable medical equipment, home health care unrelated to a hospital stay, and other medical services. Part B coverage is voluntary, and 91 percent of all Medicare

beneficiaries enroll in Part B through either fee-for-service or Medicare Advantage. Beneficiary premiums finance approximately 25 percent of Part B costs with the remaining 75 percent covered by general revenues from the U.S. Treasury. Part B gross fee-for-service spending will total $221.2 billion in FY 2022. After 24 months of receiving social security benefits, beneficiaries are automatically enrolled in Medicare Part B and charged a premium. If they do not want to pay beneficiaries are obligated to fill out a form rejecting initial coverage, and if they later with to re-enroll are charged a penalty. The standard monthly Part B premium is $148.50 in CY 2021, an increase of $3.90 from $144.60 in CY 2020. A statutory "hold harmless" provision applies each year to the approximately 70 percent of enrollees whose premiums are paid from their Social Security benefits, limiting the annual rise in Part B premiums to no more than the Social Security cost of living increase. For these enrollees, any increase in Part B premiums must be lower than the increase in their Social Security benefits. Some beneficiaries also pay a higher Part B premium based on income: those with annual incomes above $88,000 (single), or $175,000 (married) will pay from $207 to $505 per month in CY 2021. The Part B annual deductible in CY 2021 is $203 for all beneficiaries, an increase of $5 from $198 in CY 2020.

Operations of Part B, Supplemental Medical Insurance Trust Fund 2014-2024
(billions)

Year	Premium income	General revenue	Transfers from States	Interest and other	Total income	Benefit payments	Administrative expenses	Total expense	Net change	Balance at end of year
14	75.9	244.4	8.7	6.0	334.9	329.1	4.3	333.4	1.5	71.3
15	79.4	263.5	8.8	5.9	357.5	355.8	3.6	359.4	-1.9	69.4
16	86.1	299.5	9.8	5.3	400.6	399.5	4.4	403.9	-3.3	66.2
17	94.8	309.6	11.1	6.9	422.4	409.3	4.9	414.1	8.3	74.5
18	106.2	316.7	11.7	7.0	441.6	409.4	4.7	414.1	27.5	102.0
19	113.5	331.8	12.2	6.1	463.6	453.5	4.9	458.4	5.2	107.2
20	123.6	356.2	12.5	6.5	498.7	494.1	4.3	498.3	0.4	107.6
21	135.0	394.4	13.2	6.4	549.0	535.4	4.4	539.8	9.2	116.8
22	145.0	426.1	14.1	6.9	592.2	603.9	4.7	608.5	-16.4	100.4
23	157.2	455.6	15.2	7.5	635.5	622.9	4.9	627.8	7.7	108.2
24	171.5	490.1	16.5	8.1	686.2	641.5	5.2	646.7	39.5	147.6

Source: 2020 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund and Federal Supplemental Medical Insurance Trust Fund. pg. 218

2. Aged persons who enrolled in the medical insurance plan paid a monthly premiums which was initially set at $3. Provision was made for these premiums to be deducted from the monthly benefits of persons who receive social security, railroad retirement, or civil service retirement cash payments. Uninsured persons enrolled in the medical insurance plan make the periodic premium payments directly to the Government. The legislation enabled State welfare programs to purchase medical insurance coverage for uninsured public assistance recipients. For each enrolled individual the Federal Government is required to match the amount of their monthly premium payment with an equal amount paid from general funds. Standard premium rates are paid by most Part B enrollees. However, there are three provisions that alter the premium rate for certain Part B enrollees. First, there is a premium surcharge for those beneficiaries who enroll after their initial enrollment period. Second, beginning in 2007, there is a higher income-related premium for those individuals whose modified adjusted gross income exceeds a specified threshold. The thresholds are not indexed to inflation in the years 2011 through 2019 but are indexed thereafter. In 2020 the initial threshold was $87,000 for an individual tax return and $174,000 for a joint return. In 2014 the initial threshold was $85,000 for an individual tax return and $170,000 for a joint return. In 2019, approximately 4.3 million beneficiaries paid a Part B income-related premium. Non-social security beneficiaries who become eligible for Part B at age 65 pay the full-price of the premium and the matching subsidy. Individuals exceeding the threshold will pay premiums covering 35, 50, 65, or 80 percent of the average program cost for aged beneficiaries, depending on their income level, compared to the standard premium covering 25 percent. Third, Part B premiums may also vary from the standard rate because a hold-harmless provision can lower the premium rate for individuals who have their premiums deducted from their Social Security benefits. On an individual basis, this provision limits the dollar increase in the Part B premium to the dollar increase in the individual's Social Security benefit. As a result, the person affected pays a lower Part B premium, and the net amount of the individual's Social Security benefit does not decrease despite the greater increase in the premium. A hold-harmless provision in the law restricted Part B premium increases for most beneficiaries in 2017 to an average increase of about $4.00 per month.

Medicare Part B Standard, Deductible and Income Related Premium 2020-2024
(dollars)

Year	Standard	Deductible	35%	50%	65%	80%	85%
2020	144.60	198	57.80	144.60	231.40	318.10	347.00
2021	153.30	212	61.40	153.30	245.20	337.30	368.00
2022	157.70	221	63.00	157.60	252.20	346.80	378.30
2023	166.70	234	66.70	166.70	266.70	366.70	400.10
2024	176.60	248	70.60	176.60	282.60	388.50	423.80

Source: 2020 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund and Supplemental Medical Insurance Trust Fund. pg. 192, 193

3. Sec. 1840 of the Social Security Act under 42USC§1395s provides monthly premiums shall usually be collected by deducting the amount thereof from the amount of such monthly benefits. Such deduction shall be made in such manner and at such times as the Commissioner of Social Security shall by regulation prescribe. The Secretary of the Treasury shall, from time to time, transfer from the Federal Old-Age and Survivors Insurance Trust Fund or the Federal Disability Insurance Trust Fund to the Federal Supplementary Medical Insurance Trust Fund the aggregate amount deducted for the period to which such transfer relates from benefits under Section §202 or §223 Title II of the Social Security Act as codified at 42USC§402 and §423. Such transfer shall be made on the basis of a certification by the Commissioner of Social Security and shall be appropriately adjusted to the extent that prior transfers were too great or too small. The Actuary admits, Part B premiums may vary from the standard rate because a hold-harmless provision can lower the premium rate for individuals who have their premiums deducted from their Social Security benefits. On an individual basis, this provision limits the dollar increase in the Part B premium to the dollar increase in the individual's Social Security benefit, the person affected pays a lower Part B premium, and the net amount of the individual's Social Security benefit does not decrease despite the greater increase in the premium. However, for the 30 percent of beneficiaries to whom the provision does not apply, the 2017 Part B monthly premium rate increased substantially from $121.80 to $134.00.

4. Medicare Part C, the Medicare Advantage Program, pays plans a capitated monthly payment to provide all Part A and B services, and Part D services if offered by the plan. Plans can offer additional benefits or alternative cost-sharing arrangements that are at least as generous as the standard Parts A and B benefits under traditional Medicare. In addition to the regular Part B premium, beneficiaries who choose to participate in Part C may pay monthly plan premiums that vary based on the services offered by the plan and the efficiency of the plan. In CY 2022, Medicare Advantage enrollment will total about 29.2 million beneficiaries, or 49.1 percent of all Medicare beneficiaries who have both Parts A and B. Between 2012 and 2021, private plan enrollment grew by 13.8 million or 102 percent, compared to growth in the overall Medicare population of 25 percent for the same period. CMS data confirm 99 percent of Medicare beneficiaries have access to at least one Medicare Advantage plan in CY 2021. Additionally, Medicare Advantage supplemental benefits have increased while premiums have remained stable. Medicare payments for private health coverage under Part C are expected to total $433 billion in FY 2022.

D. The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (Pub. L. 108-173) was implemented by Sec. 1927 of Title XIX of the Social Security Act under 42USC§1396r-8. In order for payment to be available for covered outpatient drugs the manufacturer must have entered into a rebate agreement regarding a single source drug or innovator multiple source drug unless the State has made a determination that the availability of the drug is essential to the health of beneficiaries, such drug has been given a rating of 1-A by the Food and Drug Administration; and the physician has obtained approval for use of the drug in advance of its dispensing. The State shall provide for the collection and submission of such utilization data and coding (such as J-codes and

National Drug Code numbers). Determining a rebate is the difference between the manufacturer's average and best price for a drug during the period, not to exceed 100%.

1. Medicare Part D offers a standard prescription drug benefit with a CY 2021 deductible of $445 and base beneficiary premium of approximately $33.06 per month. Enhanced and alternative benefits are also available with varying deductibles and premiums. Participating beneficiaries pay a portion of the cost of their prescription drugs, which varies based on the phase of coverage and the amount the beneficiary has already spent on medications that year. Low-income beneficiaries have varying degrees of cost-sharing, with co-payments ranging from $0 to $9.20 in 2021 and low or no monthly premiums. For CY 2022, CMS expects Medicare Part D enrollment to increase 2.9 percent to 51 million, including 13.5 million beneficiaries who receive the low-income subsidy. CMS estimates Part D gross fee-for-service spending will total $127.5 billion in FY 2022. In CY 2021, of beneficiaries that have Part D coverage, approximately 48 percent are enrolled in a standalone Part D Prescription Drug Plan, 50 percent are enrolled in a Medicare Advantage Prescription Drug Plan, and 2 percent are enrolled in an employer plan. Of Medicare beneficiaries overall, approximately 77 percent receive prescription drug coverage through Medicare Part D or employer sponsored retiree health plans, and a significant number of the remaining beneficiaries through other creditable coverage, such as the Federal Employees Health Benefits Program. For most Part D enrollees (those without the low- income subsidy), the Part D defined standard benefit covers 75 percent of drug spending above a deductible and all but five percent coinsurance once a beneficiary reaches an out-of-pocket threshold.

Operations of Medicare Part D Drug Plan Trust Fund 2014-2020

(billions)

Year	Premium income	General revenue	Transfer from States	Interest and other	Total income	Benefits payments	Administrative expenses	Total expenses	Net change	Balance at end of year
14	11.0	52.9	8.7	0.0	72.7	72.2	0.4	68.3	0.1	1.0
15	12.3	67.6	8.8	0.0	88.7	83.8	0.4	72.6	0.1	1.1
16	13.6	76.4	9.8	0.0	99.8	104.4	0.4	104.8	-5.0	0.6
17	15.1	78.7	11.1	0.1	104.9	105.2	-0.1	105.1	-0.2	0.4
18	15.8	72.4	11.7	0.1	99.9	92.6	0.5	93.1	6.8	7.2
19	15.8	67.9	12.2	0.1	96.2	95.3	0.5	95.8	0.5	7.7
20	15.8	71.7	12.5	0.2	100.1	99.8	0.7	100.5	-0.4	7.3
21	17.0	84.1	13.2	0.1	114.3	112.8	0.7	113.5	0.8	8.2
22	18.5	91.5	14.1	0.1	124.2	131.7	0.7	132.4	-8.2	0.0

23	20.1	94.4	15.2	0.1	129.8	129.1	0.7	129.8	0.0	0.0
24	21.7	99.4	16.5	0.1	137.6	126.7	0.7	127.4	10.2	10.2

Source: 2020 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund and Federal Supplemental Medical Insurance Trust Fund pg. 220

2. Under standard Part D coverage, there is an initial deductible. After meeting the deductible, the beneficiary pays 25 percent of the remaining costs up to the initial benefit limit. Beyond this limit, prior to 2011, the beneficiary paid all the drug costs until his or her total out- of-pocket expenditures reached the catastrophic threshold. In 2020, after reaching the catastrophic threshold, the beneficiary pays the greater of (i) 5 percent of the drug cost or (ii) $3.60 for generic or preferred multiple-source drugs or $8.95 for preferred single-source drugs. The latter copayment amounts from 2020 are indexed annually by per enrollee Part D average costs. Beneficiaries qualifying for the Part D low-income subsidy pay substantially reduced premium and cost-sharing amounts. ManyPart D plans offer alternative coverage that differs from the standard coverage described above. The majority of beneficiaries have not enrolled in the standard benefit design but rather in plans with low or no deductibles, flat copayments for covered drugs, and, in some cases, partial coverage of the coverage gap.

Part D Cost-Sharing, Standard and Income Adjusted Premiums 2014-2024
(dollars)

Year	Base Premium	Deductible	Initial benefit limit	Catastrophic threshold	35%	50%	65%	80%	85%
14	32.42	310	2,850	4,550	12.10	31.10	50.20	69.30	-
15	33.13	320	2,960	4,700	12.30	31.80	51.30	70.80	-
16	34.10	360	3,310	4,850	12.70	32.80	52.80	72.90	-
17	35.63	400	3,700	4,950	13.30	34.20	55.20	76.20	-
18	35.02	405	3,750	5,000	13.00	33.60	54.20	74.80	-
19	33.19	415	3,820	5,100	12.40	31.90	51.40	70.90	77.40
20	32.74	435	4,020	6,350	12.20	31.50	50.70	70.00	76.40
21	33.91	445	4,130	6,550	12.60	32.60	52.50	72.50	79.10
22	35.32	465	4,330	6,850	13.20	33.90	54.70	75.50	82.40
23	36.73	490	4,570	7,200	13.70	35.30	56.90	78.50	85.70
24	38.24	515	4,820	7,600	14.20	36.70	59.20	81.70	89.20

Source: 2020 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund and Supplemental Medical Insurance Trust Fund. July 2017. pgs. 192 & 196

3. Part D average premiums are the estimated base beneficiary premiums. Starting in 2009, the national average plan bid is based on the enrollment-weighted average. The actual premium that a beneficiary pays varies according to the plan in which the beneficiary enrolls. The average paid premium has always been lower than the base beneficiary premium; the average paid premium was about $32.16 in 2019 and is projected to decrease to $30.22 in 2020 primarily due to a significant increase in the projected rebates in the 2020 plan bids and in the total out-of-pocket threshold for beneficiaries. Since beneficiaries may switch plans each year once the premium rates become known, the Trustees assume that the estimated average premium rate paid by beneficiaries will continue to be slightly less than the base beneficiary premium in future years. there are two provisions that affect the premium rate for certain Part D beneficiaries. First, there is a Part D late enrollment penalty for those beneficiaries enrolling after their initial enrollment period. Second, starting in 2011, individuals whose modified adjusted gross income exceeds the same thresholds applicable to the Part B premium pay an income-related premium in addition to the premium charged by the plan in which the individual enrolled. The amount of the income-related premium adjustment is dependent on the individual's income level, and the extra premium amount is the difference between 35, 50, 65, 80, or 85 percent and 25.5 percent, applied to the National Average Monthly Bid Amount adjusted for reinsurance. In December 2019, approximately 3.4 million beneficiaries paid a Part D income- related premium.

4. Prior to the Affordable Care Act, beneficiaries were responsible for 100 percent of drug costs in the coverage gap. The coverage gap, which was set to close in 2020 under the Affordable Care Act, closed one year early for brand drugs and biologics in 2019 as a result of the Bipartisan Budget Act of 2018, and in 2020 for generic drugs. This means that for 2020 and beyond, non-low-income subsidy beneficiaries who reach this phase of Medicare Part D coverage continue to pay no more than 25 percent of costs for all covered Part D drugs. Low- income subsidy beneficiaries are statutorily excluded from the coverage gap discount program, and Medicare pays the majority of their cost sharing. Beneficiaries stay in this phase until they reach the threshold for qualified out-of-pocket spending ($6,550 in out-of-pocket costs CY 2021), at which point they enter the so-called catastrophic phase and are then generally responsible for five percent of their drug costs.

E. CMS contracts with Quality Improvement Organizations (QIOs) - experts in quality improvement - to ensure Medicare beneficiaries and their families receive high quality care and support. The current five-year contract cycle, or 12th Scope of Work, began FY 2019 and lasts through FY 2023. Spending under this Scope of Work totals $617 million in FY 2022 and $3.6 billion over five years. There are two types of QIOs that work with providers and beneficiaries: Quality Innovation Network contractors and Beneficiary and Family Centered Care contractors. Beneficiary and Family Centered Care organizations perform the program's statutory case review work, including beneficiary complaints, concerns related to early discharge from health care settings, and patient and family engagement. Quality innovation Network QIOs also play an essential role in the Department's response to COVID-19 by providing targeted response and technical assistance to nursing homes experiencing infection outbreaks. To date, the Quality Innovation Network QIOs have trained frontline staff and managers in over 10,000

nursing homes on first-of-its-kind COVID-19 infection control techniques. The particulars of this training are as unclear as exactly how beneficial COVID-19 vaccines at reducing nursing home fatalities from the pandemic and how much hygiene and therapeutics. It is assumed that the core principle of this training was the use of FDA approved Lysol for cleaning and fabric washing. The full lesson is: Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis and eucalyptus, or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus, lavender or peppermint soap in showers, baths and public restrooms, with instruction to "wash your nose". Intensive care units, waiting rooms and public airspaces may be sterilized with eucalyptus scented humidifiers (diffusers).

§334b Medicaid

A. Medicaid was enacted in 1965 as a companion to Medicare in Title XIX of the Social Security Act. The Medicaid Program provides medical benefits to groups of low-income people, some who may have no medical insurance or inadequate medical insurance. Medicaid is the largest source of funding for medical and health-related services for America's low-income population. Sums shall be made available to the State on the basis of the Secretary's approval of Medical assistance on behalf of families with dependent children and of aged, blind, or disabled individuals, whose income and resources are insufficient to meet the costs of necessary medical services, and rehabilitation and other services to help such families and individuals attain or retain capability for independence or self-care under Sec. 1902 of the Social Security Act under 42USC§1396a. In addition Medicaid pays for the Vaccines for Children program. Although the Federal government establishes general guidelines for the program, the Medicaid program requirements are actually established by each State. Whether or not a person is eligible for Medicaid depends upon the State where he or she lives. Medicaid payments are made directly by states to health care providers or health plans for services rendered to beneficiaries. Providers must accept the state's payment as full reimbursement. By law, Medicaid is generally the payer of last resort. If other parties, including Medicare, are legally liable for services provided to a Medicaid beneficiary, that party generally must first meet its financial obligation before Medicaid payment is made. The provision of medical relief to beneficiaries (a) will be provided economically and only when, and to the extent, medically necessary; (b) will be of a quality which meets professionally recognized standards of health care; and (c) will be supported by evidence of medical necessity at Sec. 1156 of the Social Security Act under 42USC§1320c-5.

1. Medicaid pays more than 1 in 5 health care dollars and 1 in 2 nursing home dollars. Medicaid provides medical assistance to millions of low-income and disabled Americans. In FY 2021, nearly 77 million people on average in any given month are estimated to receive health care coverage through Medicaid. In FY 21 an estimated 76.9 million people - 6.4 million aged, 10.3 million disabled, 28.8 million adults, 30.0 million children and 1.4 million person years in territories - were enrolled in Medicaid, a 0.4% increase

from the previous year. a state's Medicaid program must offer medical assistance for certain basic services to most categorically needy populations. These services generally include the following: Inpatient hospital services; Outpatient hospital services; Pregnancy-related services, including prenatal care and 60 days postpartum pregnancy-related services; Vaccines for children; Physician services; Nursing facility services for persons aged 21 or older; Family planning services and supplies; Rural health clinic services; Home health care for persons eligible for skilled nursing services; Laboratory and x-ray services; Pediatric and family nurse practitioner services; Nurse-midwife services; and Federally qualified health-center (FQHC) services, and ambulatory services of an FQHC that would be available in other settings; Early and periodic screening, diagnostic, and treatment (EPSDT) services for children under age 21. States may also receive federal matching funds to provide certain optional services. Following are some of the most common, currently approved optional Medicaid services: Diagnostic services; Clinic services; Intermediate care facility services. Prescribed drugs and prosthetic devices; Optometrist services and eyeglasses; Nursing facility services for children under age 21; Rehabilitation and physical therapy services; Hospice care; Home and community-based care to certain persons with chronic impairments; and Targeted case management services.

B. States design, implement, and administer their own Medicaid programs based on federal guidelines. The federal government matches state expenditures using the Federal Medical Assistance Percentage (FMAP), which is based on state per capita income compared to the national average and can be no lower than 50 percent. In FY 2020, the federal share of Medicaid outlays was approximately $458 billion. CMS FY 2021 mandatory appropriation request for the Grants to States for Medicaid account is $453.8 billion, an increase of $31.6 million relative to the FY 2020 request level of $422.2 billion. This appropriation is composed of $139.9 billion in an authorized advance appropriation for FY 2021 and a remaining appropriation of $313.9 billion for FY 2021. Resources will help fund $493.3 billion in anticipated FY 2021 Medicaid obligations. CMS also anticipates carryover balances and recoveries in the amount of $38.2 billion as well as budget authority from offsetting collections from the Supplementary Medical Insurance trust fund and Medicare Part D account in the amount of $1.3 billion to fund the remaining anticipated obligations. These estimated obligations include: $465.1 billion in Medicaid medical assistance payments (MAP); $23.2 billion for Medicaid state and local administrative functions including funding for Medicaid state survey and certification and the state Medicaid fraud control units; and $5.0 billion for the Centers for Disease Control and Prevention's Vaccines for Children (VFC) program. CMS' Medical Assistance Payments (MAP) budget estimate is $425.7 billion, a $30.3 billion increase above the FY 2020 estimated level. The FY 2021 estimate of $40.2 billion represents the entire liability for Medicaid medical services incurred but not paid from October 1, 2020 to September 30, 2021. An estimated $1.3 billion FY 21 is transferred from the Supplementary Medical Insurance Trust Fund to the Grants to States for Medicaid account to account for the Medicare programs costs attributable to state coverage of Medicare cost-sharing for certain low-income Medicare beneficiaries pursuant to Title XIX Section 1933(f) of the Social Security Act under 42USC§1396u-3.

Medicaid FY 17 – FY 24
(millions)

Accounts	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Annual Appropriations for Grants to States for Medicaid	262,004	284,798	276,236	284,244	313,904	323,321	333,-21	343,011
Advanced Appropriation	115,583	125,220	134,848	137,932	139,903	144,100	148,423	152,876
Total Federal Outlays	377,587	410,018	411,084	422,176	453,807	467,421	481,444	495,887
State Medicaid Spending	57,030	61,475	64,098	66,021	68,002	70,042	72,143	74,308
Total Program Level	434,617	471,493	475,182	488,197	521,809	537,464	553,587	570,195

Source: CMS Agency Justifications of Estimates for Appropriations Committees FY 19 & FY 21. Advance appropriations, treated as undistributed offsetting receipts to reduce the deficit, are added to annual appropriations to equal annual appropriations. State Medicaid Spending National Association of State Budget Officers. State Expenditure Report. Washington DC. 2019. pg. 54 FY17-FY19 3% inflation FY 20-FY22.

1. CMS' State Administration estimate is $23.2 billion; an $829.0 million dollar increase over the FY 2020 estimated level. This estimate is composed of $297.0 million for Medicaid state survey and certification, $299 million for state Medicaid Fraud Control Units, $1.3 billion for the Health Information Technology Meaningful Use Incentive Program, and $21.3 billion for other Medicaid state and local administration. The estimate is reduced by the novel $5 million estimated expenditure transfer authority from the Medicare Part D account for state low income determinations pursuant to Sec. 1860D-16(b)(2) of the Social Security Act under 42USC§1395w-116. State and Local

Administration funding includes Medicaid management information systems (MMIS) design, development, and operation, immigration status verification systems; non-MMIS automated data processing activities; skilled professional medical personnel (SPMP); salaries, fringe benefits, and training; and other state and local administrative costs. In order to secure quality care for the nation's most vulnerable populations, CMS requires that certain facilities seeking participation in Medicaid undergo an inspection when they initially enter the program and on a regular basis thereafter. To conduct these inspection surveys, CMS contracts with state survey agencies in each of the 50 states, the District of Columbia, Puerto Rico, and two other territories. Utilizing more than 7,500 surveyors across the country, state survey agencies inspect providers and determine their compliance with specific federal health, safety, and quality standards. Medicaid Fraud Control Units (MFCUs) investigate and prosecute Medicaid provider fraud as well as neglect or abuse of patients in health care facilities and board and care facilities. The MFCUs are typically a part of the state Attorney General's office or have arrangements with the Attorney General or another office with statewide prosecutorial authority. In FY 2018, MFCUs were responsible for 1,503 convictions, 810 civil settlements, and expected monetary recoveries for both civil and criminal cases of $859 million. MFCU cases in FY 2018 were also responsible for the exclusion of 974 individuals and entities from participation in Medicaid and other federally funded health care programs. The American Recovery and Reinvestment Act of 2009 (ARRA) authorizes Medicaid to provide incentive payments to doctors, hospitals, and other providers for the implementation and meaningful use of certified EHRs. The provision allows for enhanced federal financial participation (FFP) of 100 percent for incentive payments to providers for the purchase, maintenance, and meaningful use of certified EHRs, and 90 percent FFP for state and local administrative expenses associated with administering the incentive payments.

Medicaid Mandatory State/Formula Grants FY 17 – FY 21
(millions)

State/Territory	FY 17	FY 18	FY 19	FY 20	FY 21
Alabama	4,068	4,391	4,375	4,798	5,064
Alaska	1,437	1,661	1,628	1,775	1,858
Arizona	9,169	9,937	10,319	10,728	11,535
Arkansas	3,995	5,537	5,503	5,617	5,837
California	60,223	67,139	56,720	63,729	62,481
Colorado	5,243	5,481	5,522	5,797	5,810
Connecticut	4,581	5,143	5,058	5,296	5,260
Delaware	1,401	1,498	1,528	1,641	1,711
Dist. of Columbia	2,176	2,335	2,274	2,325	2,481

Florida	14,629	16,082	15,302	16,800	17,487
Georgia	7,252	7,984	7,726	7,961	8,119
Hawaii	1,610	1,591	1,467	1,426	1,367
Idaho	1,373	1,546	1,604	2,011	2,103
Illinois	9,950	12,651	11,498	12,152	12,186
Indiana	8,371	9,639	9,241	11,368	10,651
Iowa	2,674	2,972	3,542	4,064	3,916
Kansas	1,956	2,038	2,190	2,541	3,276
Kentucky	7,585	7,910	8,176	9,570	9,992
Louisiana	7,940	8,985	8,698	9,608	9,992
Maine	1,778	1,811	1,989	2,403	2,421
Maryland	7,065	7,281	7,408	7,392	7,479
Massachusetts	9,979	10,942	10,386	11,586	11,634
Michigan	12,568	13,313	13,476	14,206	14,731
Minnesota	6,930	7,956	7,702	8,683	8,842
Mississippi	4,228	4,403	4,331	4,535	4,756
Missouri	6,678	7,767	7,189	7,460	7,595
Montana	1,483	1,569	1,506	1,571	1,637
Nebraska	1,146	1,264	1,217	1,382	1,799
Nevada	2,869	2,909	3,084	3,202	3,095
New Hampshire	1,297	1,323	1,199	1,285	1,316
New Jersey	9,399	9,999	9,953	10,325	10,681
New Mexico	3,859	4,314	4,304	5,235	5,411
New York	38,532	45,164	42,373	47,759	48,586
North Carolina	9,412	9,801	9,699	10,511	10,506
North Dakota	941	942	780	850	874
Ohio	16,479	16,764	16,630	18,138	19,163
Oklahoma	2,984	3,014	3,196	3,563	3,853
Oregon	6,514	7,682	7,245	8,011	8,343
Pennsylvania	17,742	19,499	19,267	21,163	21,221

Rhode Island	1,665	1,808	1,679	1,502	1,556
South Carolina	4,467	4,595	4,747	4,814	4,753
South Dakota	532	583	582	650	682
Tennessee	6,298	7,028	7,169	8,312	8,776
Texas	21,079	22,679	24,254	26,384	27,538
Utah	1,810	1,863	2,022	2,246	2,282
Vermont	1,040	1,121	1,079	1,109	1,075
Virginia	4,812	5,379	2,777	9,554	10,296
Washington	7,997	8,170	6,517	9,069	9,069
West Virginia	3,277	3,408	3,225	3,377	3,552
Wisconsin	5,034	5,296	5,702	5,940	6,078
Wyoming	343	362	365	390	397
Subtotal	375,865	414,529	395,419	441,815	450,965
American Samoa	19	19	38	84	84
Guam	54	54	111	127	127
North Mariana Islands	17	20	50	60	60
Puerto Rico	1,632	824	2,646	2,623	2,719
Virgin Islands	47	109	124	126	126
Subtotal	1,769	1,026	2,968	3,020	3,116
Total State and Territories	377,634	415,555	398,387	444,835	454,081
Survey & Certification	268	297	278	287	297
Fraud Control Units	254	270	271	290	299
Vaccines for Children	4,427	4,401	4,161	4,418	4,951
Medicare Part B	941	1,000	0	0	0

Incurred but Not Reported	0	36,674	0	0	0
Undistributed	38,521	-26,244	55,117	25,314	30,008
Total Resources	422,045	431,953	458,213	475,143	489,636

Source: Seema, Verma. Centers for Medicare & Medicaid Services (CMS). Justification of Estimates for Appropriations Committees. Department of Heath and Human Services (DHHS). Fiscal Year 2019 and 2021 pg. 92 & 105 respectively.

C. The ACA, the Patient Protection and Affordable Care Act P.L. 111-148 124 Stat. 119 as amended under 42USC§18001 *et seq* required state programs to provide Medicaid coverage by 2014 to adults with incomes up to 133 percent of the federal poverty level, expanding eligibility for Medicaid in 2014 from children, parents, the aged, and persons with disabilities to include working age adults without children. The federal government agreed to pay 100% of Medicaid payments for new enrollees under 2014-2016, 95% in 2017, 94% in 2018, 93% in 2019; and 90% in 2020 and each year thereafter, under Sec. 1905 of the Social Security Act under 42USC§1396d (b,y) by comparison, federal contributions toward the care of beneficiaries eligible pre-ACA range from 50% to 83%, and averaged 57% between 2005 and 2008. 2014-2020 state Medicaid spending is estimated to be 37%-39% and federal spending 63%-61%. The ACA is estimated to have only increased federal spending and decreased state spending by 4%. The Kaiser Family Foundation estimates that overall state spending on Medicaid increased by only about 1% in FY 2014, and expansion states had a median growth rate that was almost one-third that of non-expansion states. Among expansion states, aggregate state spending decreased by 1.8%, and the median change in state spending was an increase of 1.6%.

1. Across the 29 expansion states in FY 2015, enrollment increased on average by 18.0% and total spending increased by 17.7%; both enrollment and spending growth were driven by increases in enrollment among adults qualifying under the new expansion group. Across the 22 states not implementing the Medicaid expansion in FY 2015, enrollment and total spending growth was 5.1% and 6.1% (respectively), much slower growth compared to the expansion states. In the Medicaid expansion between FY 14 and FY 15 the average monthly number of adult Medicaid enrollees are reported to have increased 33% by 9-10 million from 31.0 million to 40.5 million adult enrollees, plus another 28 million children. The 9.1 million expansion adults caused Medicaid enrollment to grow 17% FY 13-14 and it is believed to have stabilized at a rate of about 3.5% FY 14-15. 11.2 million expansion adults comprised 15.8% of 70.9 million Medicaid enrollees in 2016. Child Medicaid enrollment stabilized at 28 million FY 14 and 15 and with CHIP rolls increasing from 5.9 million to 6.5 million for the same FY 14-15 period. Ironically, there was a 6% - 15% reduction in healthcare workforce in FY 14, a regular occurrence in its steady decline from a high of 14.4 million in 2005 to 10 million in 2015. The total number of hospitals has gone down from 6,522 in 1990, to 5,985 in 2000, up to 6,169 in 2010 to 6,140 in 2015. The number of hospital beds steadily decreased from 1,105,000 in 1990 to 991,000 in 2000 to 928,00 in 2010 before increasing to 932,000 in 2015.

D. States are required to include certain types of individuals or eligibility groups under their Medicaid plans and they may include others. 1. Families who meet states' Aid to Families with Dependent Children (AFDC) eligibility requirements in effect on July 16, 1996. 2. Pregnant women and children under age 6 whose family income is at or below 133 % of the Federal poverty level. 3. Children ages 6 to 19 with family income up to 100% of the Federal poverty level. 4. Caretakers (relatives or legal guardians who take care of children under age 18 (or 19 if still in high school)). 5. Supplemental Security Income (SSI) recipients (or, in certain states, aged, blind, and disabled people who meet requirements that are more restrictive than those of the SSI program). 6. Medicaid pays Medicare premiums, deductibles and coinsurance for Qualified Medicare Beneficiaries (QMB)—individuals whose income is at or below 100% of the Federal poverty level and whose resources are at or below twice the standard allowed under SSI. 7. All states provide community Long Term Care services for individuals who are Medicaid eligible and qualify for institutional care.

1. Medicaid eligibility groups classified as categorically needy are entitled to the following services. These service entitlements do not apply to the CHIP programs. 1. Inpatient hospital and outpatient (excluding inpatient services in institutions for mental disease). 2. Other laboratory and x-ray. 3. Physicians' services. Early and periodic screening, diagnosis, and treatment (EPSDT) for children under age 21. 4. Family planning services and supplies. 5. Medical and surgical services of a dentist. 6. Home health services for beneficiaries who are entitled to nursing facility services under the state's Medicaid plan. 7. Home health aides. Medical supplies and appliances for use in the home. 8. Nurse mid-wife services. Pregnancy related services and service for other conditions that might complicate pregnancy and 60 days postpartum pregnancy related services. 9. Each State shall establish a pediatric vaccine distribution program (which may be administered by the State department of health), under which each vaccine-eligible child receives an immunization with a qualified pediatric vaccine from a program-registered provider without charge for the cost of such vaccine under Sec. 1928 of Title XIX of the Social Security under 42USC§1396s; the registered provider will be shipped an appropriate amount of vaccines free of charge to meet the needs of Medicaid eligible children or be reimbursed for the cost of administering such vaccines.

2. The Vaccines for Children (VFC) program is 100 percent federally funded by the Medicaid appropriation and operated by the Centers for Disease Control and Prevention. This program allows vulnerable children access to lifesaving vaccines as a part of routine preventive care, focusing on children without insurance, those eligible for Medicaid, and American Indian/Alaska Native children. Children with commercial insurance that lack an immunization benefit are also entitled to VFC vaccine, but only at Federally Qualified Health Centers (FQHCs) or Rural Health Clinics (RHCs). To reach eligible children under the VFC program, federally purchased vaccines are distributed to public health clinics and enrolled private providers. Through VFC, the Centers for Disease Control and Prevention provides funding to 61 state and local public health immunization programs that include all 50 states, six city/urban areas, and five U.S. territories and protectorates. The nation's childhood immunization coverage rates are at high levels for most vaccines and vaccination series measures. As childhood immunization coverage rates increase, cases of vaccine-preventable diseases (VPDs) decline significantly. Vaccination against

diphtheria, haemophilus influenza type b, hepatitis A, hepatitis B, measles, mumps, pneumococcal, pertussis, polio, rotavirus, rubella, tetanus, and varicella is recommended. In addition to the health benefits of immunization, vaccines also provide significant economic value. Millions of children have benefited from vaccination since the Vaccines for Children Program began in 1994. Among children born during 1994–2016, vaccination will prevent an estimated 388.0 million illnesses, 24.5 million hospitalizations, and 855,000 early deaths over the course of their lifetimes.

3. A skilled nursing facility must maintain a quality assessment and assurance committee, under Sec. 1819(B) of the Social Security Act under 42USC§1395i-3 (B) consisting of the director of nursing services, a physician designated by the facility, and at least 3 other members of the facility's staff, which meets at least quarterly to identify issues with respect to which quality assessment and assurance activities are necessary and develops and implements appropriate plans of action to correct identified quality deficiencies. *Shalala Secretary of Health and Human Services v. Illinois Long Term Care Inc*. No. 98-1109 (2000) determined that payment to hospitals and long term care nursing facilities could be terminated only if they immediately jeopardize the health or safety of residents, in which case the Secretary must terminate the home's provider agreement or appoint new, temporary management. Where deficiencies are less serious, the Secretary may impose lesser remedies, such as civil penalties, transfer of residents, denial of some or all payment, state monitoring, and the like. Where a nursing home, though deficient in some respects, is in "[s]ubstantial compliance," *i.e.*, where its deficiencies do no more than create a "potential for causing minimal harm," the Secretary will impose no sanction or remedy at all.

3. A nursing facility must care for its residents in such a manner and in such an environment as will promote maintenance or enhancement of the quality of life of each resident. A nursing facility must provide (or arrange for the provision of) 1. nursing and related services and specialized rehabilitative services to attain or maintain the highest practicable physical, mental, and psychosocial well-being of each resident; 2. medically-related social services to attain or maintain the highest practicable physical, mental, and psychosocial well-being of each resident; 3. pharmaceutical services (including procedures that assure the accurate acquiring, receiving, dispensing, and administering of all drugs and biologicals) to meet the needs of each resident; 4. dietary services that assure that the meals meet the daily nutritional and special dietary needs of each resident; 5. an on-going program, directed by a qualified professional, of activities designed to meet the interests and the physical, mental, and psychosocial well-being of each resident; 6. routine dental services (to the extent covered under the State plan) and emergency dental services to meet the needs of each resident; and 7. treatment and services required by mentally ill and mentally retarded residents not otherwise provided or arranged for (or required to be provided or arranged for) by the State at Sec. 1919 of the Social Security Act under 42USC§1396r.

4. On January 21, 2021, the President signed Executive Order (EO) 13995, which directed a government-wide effort to address equity. To apologize for not prescribing hydrocortisone, eucalyptus, lavender or peppermint he established the COVID-19 Health

Equity Task Force to provide specific recommendations to the President for mitigating inequities caused or exacerbated by the COVID-19 pandemic and for preventing such inequities in the future. On January 28, 2021, the President signed EO 14009, which takes critical steps to strengthen Medicaid and the ACA to continue to provide access to life-saving care for millions of Americans. On March 11, 2021, the President signed the American Rescue Plan Act (P.L. 117-2) into law. The Act provides additional relief to address the continued impact of COVID-19. President Biden's American Jobs Plan proposes $53 billion in new funding, but needs to stop obstructing regular wage increases for low income workers with outrageous demands, for home care but fails to earn this money,with savings from reduced nursing home and hospital spending or responding to the actual demand for benefits for unpaid family caregivers. Medicaid needs to prescribe: Hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus allergic rhinitis and eucalyptus, or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus, lavender or peppermint soap in showers, baths and public restrooms, with instruction to "wash your nose".

§334c Children's Health Insurance Program

A. The Balanced Budget Act of 1997 authorized the Children's Health Insurance Program (CHIP) under title XXI of the Social Security Act. CHIP is a federal-state matching, capped grant program providing health insurance to targeted low-income children in families with incomes above Medicaid eligibility levels. This program has improved access to health care and the quality of life for millions of vulnerable children under 19 years of age. CHIP provides health assistance to uninsured, low-income children in an effective and efficient manner that is coordinated with other sources of health benefits coverage for children in Sec. 2102 of the Social Security Act under 42USC§1397bb. Under title XXI, states have the option to expand Medicaid (Title XIX) coverage, create separate CHIP programs, or have a combination of the two. Since September 1999, all states, territories, commonwealths, and the District of Columbia have had approved CHIP plans. CMS continues to review states' CHIP plan amendments as they respond to the challenges of operating this program and take advantage of program flexibilities to make innovative changes. The Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) (P.L. 111-3) reauthorized CHIP from April 2009 through September 30, 2013 and increased funding by $68.9 billion through FY 2013 to maintain state programs and to cover more uninsured children. The Patient Protection and Affordable Care Act (P.L 111-148) extended funding for CHIP through FY 2015, providing an additional $40.2 billion in budget authority over the baseline. The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) (P.L. 114-10) provided an additional $39.7 billion in budget authority for FY 2016 and FY 2017. On January 22, 2018, the HEALTHY KIDS Act (P.L. 115-120) appropriated funding to CHIP for six years from FY 2018 through FY 2023. On February 9, 2018, the Bipartisan Budget Act (BBA) (P.L. 115-123) further extended CHIP funding through FY 2027.

Children's Health Insurance Program FY 20 – FY 24

(millions)

	FY 20	FY 21	FY 22	FY 23	FY 24
Children's Health Insurance Program	16,880	17,220	17,142	17,656	18,.186
Contingency Fund	2	294	0	0	0
Total Outlays	16,882	17,514	17,142	17,656	18,.186

Source: HHS Budget-in Brief FY 22 pg. 89

1, In Fiscal Year (FY) 2020, the CMS Office of the Actuary estimated that 9.1 million individuals received health insurance funded through CHIP. CHIP enrollment averaged approximately 7.1 million individuals per month in 2020. Decreases in total annual child enrollment between FY 2019 and FY 2020 is likely due to children moving from CHIP to Medicaid during the Public Health Emergency. CHIP funding is included in CMS Appropriations for States. Child spending estimates should not go down because inflation exceeds any imaginary declines in population and birth rate and the economy is recovering. Accounting for CHIP is extremely complicated due to micro-management under separate laws and the estimates by the HHS budget-in-brief and CMS Justification of Estimates are wildly different. Congress appropriated $25.9 billion in federal funding for CHIP for FY 2022 in the HEALTHY KIDS Act.

CHIP Justification of Estimates FY 19 – FY 21

(millions)

	FY 19	FY 20	FY 21
State Allotments (Healthy Kids Act P.L. 115-120)	22,600	23,700	24,800
CHIP Performance Bonus Payments (P.L. 111-3. P.L. 113-235)	0	4,037	11,006
Child Health Quality Improvement (P.L. 111-3, 114-10, 115-120)	0	0	0
Redistribution Payments	0	0	0
Performance Bonus	0	0	0

Payments Rescission (P.L. 115-141)			
Rescission of Unobligated Balance (P.L `16-94)	(2,061)	(3,170)	0
Total Budgetary Resources	20,539	24,567	35,806
CHIP State Allotments Outlays	17,652	17,632	15,745
Performance Bonus Payments Outlays	(50)	0	0
Child Health Quality Improvement Outlays	6	22	33
Redistribution Payments	81	0	0
Total Outlays	17,689	17,654	15,778

Source: FY 21 CMS Justification of Estimates for Appropriations Committees pg. 151

2. CHIP funding is complicated by the Child Enrollment Contingency Fund and State matching Federal Medical Assistance Percentage. CHIP spending is also not a significant measure of federal outlays accounted for in the CMS total. Nonetheless, it is important to pass the test in order to ensure snot nosed children are well treated with hydrocortisone, eucalyptus, lavender or peppermint when they return to school. The Child Enrollment Contingency Fund is used to provide supplemental funding to states that exceed their allotment due to higher-than-expected child enrollment in CHIP. A Child Enrollment Contingency Fund was established for States that predict a funding shortfall based on higher than expected enrollment. The Contingency Fund received an initial appropriation of $2.1 billion in FY 09 and is invested in interest bearing securities of the United States. Payments from the fund are currently authorized through FY 17.The HEALTHY KIDS Act (P.L. 115-120) extended the Contingency Fund through FY 2023 and the BBA authorized the Contingency Fund through FY 2027. The Contingency Fund receives an appropriation equal to 20 percent of the CHIP national allotment appropriation made pursuant to Section 2104(a) the Social Security Act under 42USC§1397dd(a). Any amounts in excess of the aggregate cap were transferred to the CHIP Performance Bonus Fund, however, the authority for Performance Bonus payments expired at the end of FY 2013. Nonetheless, there are no payments to shortfall states and plans to reauthorize bonus payments FY 20 and FY 21.

Child Enrollment Contingency Fund FY 19 – FY 21
(millions)

	FY 19	FY 20	FY 21
Contingency Fund Budget Authority	9,990	14,872	15,966
Temporarily Unavailable (P.L. 115-31)	(5,609)	(6,093)	0
Transfer to Performance Bonus Fund	0	(4,037)	(11,006)
Payments to Shortfall States	0	0	0
Total Budgetary Resources at end of year	4,635	4,915	5,128
Total Outlays	3	310	0

Source: FY 21 CMS Justification of Estimates for Appropriations Committees pg. 152

2. CHIP is a federal-state matching, program. State spending on CHIP is matched at an enhanced matching rate, the federal medical assistance percentage (FMAP) which ranges from 65 percent, for states with a 50 percent Medicaid matching rate, to 85 percent, but is very confusing, many states pay nothing, and others pay more. Spending in states and territories for FY 2017 totaled $17.5 billion ($16.3 billion federal, $1.2 billion state). The ACA increased this enhanced matching rate by 23 percentage points (not to exceed 100%) for most CHIP expenditures from FY 2016 through FY 2019. As enacted, the legislation would maintain the current law's 23 percentage point increase for two years (FY 2018 and FY 2019), to cover between 88 and 100% of total costs for child health care services and program administration, drawn from a capped allotment, transition to an 11.5 percentage point increase in FY 2020, and then eliminate the increase entirely after that. The Federal Medical Assistance Percentage (FMAP) is the lower of 70 percent of the regular FMAP determined under section 1905(b) of the Act, plus 30 percentage points; or 85 percent under 42CFR§457.622(b). The Federal medical assistance percentage shall in no case be less than 50 per centum or more than 83 per centum, the Federal medical assistance percentage for Puerto Rico, the Virgin Islands, Guam, the Northern Mariana Islands, and American Samoa shall be 55 percent, for the District of Columbia shall be 70 percent, and for Indian Health Service 100 percent and the percentage shall be increased by 1 percentage point for vaccines and tobacco cessation counseling for pregnant women under Sec. 1905(b) of the Social Security Act under 42USC§1396d. States can use their share of appropriated CHIP funds (typically referred to as a state's "allotment") for up to two years, and, depending on circumstances, may also have access to additional federal dollars from a contingency fund or from other states that did not use their full allotments. Federal appropriation has been more than sufficient to fund federal CHIP expenditures since FY 09. In fact, from FY 11 - FY 17, multiple appropriations laws have rescinded a total of $42.8 billion in funding from CHIP. The

most recent federal and state statistics from MACPAC FY 19 are not exactly the same as CMS Justification of Estimates of federal spending, but the state spending estimates are transcribed to provide a rough estimate of the FMAP settlement.

CHIP Mandatory State Formula Grants FY 19 – FY 21
(millions)

State/Territory	FY 19 Federal	FY 19 State	FY 20 Federal	FY 21 Federal
Alabama	396	0	435	450
Alaska	30	4	32	38
Arizona	252	0	266	259
Arkansas	168	0	177	205
California	3,038	438	3,209	3,284
Colorado	298	43	315	322
Connecticut	101	-52	107	84
Delaware	38	3	40	39
District of Columbia	49	0	53	83
Florida	793	37	843	855
Georgia	444	0	469	429
Hawaii	63	5	67	51
Idaho	78	0	83	100
Illinois	393	51	415	358
Indiana	262	2	276	243
Iowa	130	7	146	147
Kansas	119	11	126	151
Kentucky	218	0.1	230	233
Louisiana	373	6	394	426
Maine	37	1	39	33
Maryland	317	46	334	335
Massachusetts	723	94	765	709
Michigan	274	269	289	296
Minnesota	130	1	137	126
Mississippi	257	98	272	262

Missouri	279	145	295	292
Montana	91	30	97	109
Nebraska	87	81	92	81
Nevada	78	23	83	74
New Hampshire	45	34	47	53
New Jersey	520	264	549	543
New Mexico	101	0.1	107	102
New York	1,473	199	1,556	1,497
North Carolina	501	0	529	640
North Dakota	27	4	29	27
Ohio	521	498	550	483
Oklahoma	234	265	247	244
Oregon	370	14	511	475
Pennsylvania	668	80	706	676
Rhode Island	93	12	98	84
South Carolina	185	0	336	196
South Dakota	31	2	33	30
Tennessee	235	2	248	202
Texas	1,510	97	1,602	1,397
Utah	135	0	143	114
Vermont	28	-14	30	26
Virginia	378	52	410	376
Washington	236	-54	251	310
West Virginia	77	0	82	80
Wisconsin	273	-19	288	232
Wyoming	13	2	14	12
Subtotal	17,174	1,068	18,453	17,868
Commonwealth and Territories				
American Samoa	5	0	5	5
Guam	32	3	34	36
Northern	11	0.3	12	13

Mariana Islands				
Puerto Rico	183	7	193	93
Virgin Islands	11	1	12	16
Subtotal	242	12	255	163
Total Resources	17,416	1,080	18,708	18,030

Source: FY 21 CMS Justification of Estimates for Appropriations Committees pgs. 158-159; MACStrats Exhibit 33 CHIP Spending by State, FY 2019 (millions)

B. Programs are designed to immunize the populace, and give health assessments to low income children and pregnant mothers under Sec. 502 of Title V of the Social Security Act under 42USC§702. Insurers are prohibited from denying enrollment of a child under the health coverage of the child's parent on the ground that – the child was born out of wedlock, the child is not claimed as a dependent on the parent's federal income tax return, or the child does not reside with the parent or in the insurer's service area in Sec. 1908A of Title XIX of the Social Security Act under 42USC§1396g-1. Normal full coverage benefits to low income children include; 1. Inpatient hospital services. 2. Outpatient hospital services. 3. Physician services. 4. Surgical services. 5. Clinic services (including health center services) and other ambulatory health care services. 6. Prescription drugs and biologicals including vaccinations. 7. Over-the-counter medications. 8. Laboratory and radiological services. 9. Prenatal care and pre-pregnancy family planning services and supplies. 10. Inpatient mental health services or other 24-hour therapeutically planned structured services. 11. Outpatient mental health services, including community-based services. 12. Durable medical equipment and other medically-related or remedial devices (such as prosthetic devices, implants, eyeglasses, hearing aids, dental devices, and adaptive devices). 13. Disposable medical supplies. 14. Home and community-based health care services and related supportive services. 15. Nursing care services (such as nurse practitioner services, nurse midwife services, advanced practice nurse services, private duty nursing care, pediatric nurse services, and respiratory care services) in a home, school, or other setting. 16. Abortion only if necessary to save the life of the mother or if the pregnancy is the result of an act of rape or incest. 17. Dental services. 18. Inpatient substance abuse treatment services and residential substance abuse treatment services. 19. Outpatient substance abuse treatment services. 20. Case management services. 21. Care coordination services. 22. Physical therapy, occupational therapy, and services for individuals with speech, hearing, and language disorders. 23. Hospice care. 24. Any other medical, diagnostic, screening, preventive, restorative, remedial, therapeutic, or rehabilitative service prescribed by or furnished by a physician or other licensed or registered practitioner.

1. In 1999 of the 71.1 million children 61.4 million were covered by health insurance, 86.2%, 47 million, 66.1% were privately insured, 16.5 million, 23.2% were publicly insured and 9.8 million, 13.8% were completely uninsured. In FY 16, the Centers for Medicare & Medicaid Services (CMS) Office of the Actuary estimated that 9.2 million individuals received health insurance funded through CHIP allotments at some point during the year. In November 2020, of an estimated 74.2 million children under the age

of 18 in the United States, (51%) 37,581,693 individuals were enrolled in CHIP or were children enrolled in the Medicaid program, representing 48.8% of total Medicaid and CHIP program enrollment. In 2018 only an estimated 4.3 million children did not have any health insurance coverage, an increase of 425,000, or 0.6% from the previous year, due a decline in public coverage. In the most recent FY 19 report CHIP enrollment was reported as more than 9.6 million. Approximately 6.3 million individuals were enrolled in CHIP on average throughout the year. Among children with a usual source of medical care, 76% visited a doctor's office, 21% received care in a clinic, 2% used a hospital.

2. Of roughly 4 million births that occur in the 18 states use CHIP funding to cover pregnant women, approximately 370,000 pregnant women received care through CHIP. Medicaid paid for 43 percent of all births in 2018, while private coverage paid for just under half (49.1 percent). Fewer births were uninsured (4.1 percent) or paid by another payer (3.8 percent). Childbirth is the leading cause of hospital admission and is not only extremely expensive but varies extraordinarily from hospital to hospital and they unlawfully tend to penalize people for being uninsured. Medicaid helps to avoid the deductible and private insurance companies negotiate for lower rates, that unfortunatebly cost more than Medicaid pays. Although an estimated 82%, 61 million, children enjoy good health, 11% are diagnosed with asthma, 20% suffer from allergies, 8% had a learning disability and 6% suffered from Attention Deficit Disorder. There has been a dramatic increase in allergies and asthma in the past few decades that can be reversed by solving the coronavirus pandemic with hydrocortisone, eucalyptus, lavender or peppermint. Learning disabilities and attention deficit disorder may the another expression of how toxic and psychiatric the health care system. An estimated 3.2 million children had unmet dental needs that their family could not afford. To prevent tooth decay it is important to teach children to brush their teeth within 10 minutes of eating sugar, although traditionally people only brush in the morning and night.

3. The American Rescue Plan (ARP) Act (P.L. 117-2), signed by the President on March 11, 2021, made COVID-19 vaccines, their administration, testing, treatment, and associated costs for these services a time-limited mandatory benefit under CHIP without cost sharing. Vaccines are however not approved for children under age 16, that might be lowered to children under the age of 12, and it unlikely and/or unwise to give to younger children because there is such a high risk of developmental defects due to vaccine injury. There have already been reports of serious complications with COVID-19 vaccinations of teenagers and there have been serious cover-ups regarding the cause of death of young people allowed to return to school. The ARP also requires states that elect to provide 12 months postpartum coverage in their Medicaid programs to also provide 12 months postpartum care in CHIP. This option is limited to a five-year period beginning April 1, 2022. The Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities (SUPPORT) Act (P.L. 115-271) made mental health services, including behavioral health and substance use disorder, mandatory under CHIP.

4. The mass return of “snot nosed children” to school in fall of 2021 in conclusion of the COVID-19 pandemic is the highest priority for child public health. Children under the

age of 16 are currently not eligible for COVID-19 vaccines. Although COVID-19 vaccines can be effective at curing allergic rhinitis and preventing death and serious infection by coronavirus, COVID-19 vaccines are only an estimated 30 percent effective at preventing the contagious state of coronavirus allergic rhinitis, masks are only masking. It is highly important that schools and students learn the lesson, that COVID-19 and influenza vaccine propaganda has denied the public, on how to treat their "Pinocchio nose", allergic rhinitis from coronavirus, and make resources available – Hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus; eucalyptus and lavender also cure influenza. Mentholyptus cough drops are the frontline treatment for both influenza and coronavirus, with a little nose washing. Instructing people to wash their face and "Pinocchio" nose (allergic rhinitis) with eucalyptus, lavender or peppermint scented soap, provided in public restrooms, may be the most effective way to end the COVID-19 pandemic. Public airspaces in classrooms and especially designated intensive care units (ICUs) should be purified with eucalyptus scented humidifiers (diffusers).

§334d Affordable Care Act

A. The Patient Protection and Affordable Care Act of 2010, Pub. L. No. 111-148, 124 Stat. 119 (2010), known as the Affordable Care Act (ACA) was signed into law by President Barack Obama on March 23, 2010. The ACA is codified under 42USC§18001 *et seq*. thoroughly amended the Public Health Service Act requirements relating to health insurance under 42USC§300gg *et seq*. and created the Internal Revenue Code premium tax credit and cost sharing subsidy under 26USC§36B. When the ACA was written, it was expected that everyone living in poverty would be eligible for Medicaid. But two years after the law was enacted, the Supreme Court ruled that states couldn't be forced to expand Medicaid, and some states still haven't expanded coverage. This results in a coverage gap for people with income below the poverty level in those states. However people eligible for Medicaid, or Medicare, or CHIP are not eligible for ACA subsidies. Adults with children who are eligible for CHIP or Medicaid are not eligible for subsidies for their children and must purchase ACA plans for adults only. The Kaiser Family Foundation reported that, following the ACA, the number of uninsured non-elderly Americans declined by 20 million, to an historic low in 2016, from 17% in 2010 to 10% in 2016. However, beginning in 2017, the number of uninsured non-elderly Americans increased for three straight years, growing by 2.2 million from 26.7 million in 2016 to 28.9 million in 2019, and the uninsured rate increased to 10.9% in 2019.

1. During the open enrollment period for 2020 coverage, 11.4 million people enrolled in plans through the exchanges nationwide. Of those, 9.6 million – or 84 percent – received premium subsidies. For those enrollees, premium subsidies cover the bulk of their premiums: The subsidy will make up the difference between the amount an individual is expected to contribute (based on income) and the actual cost of the area's second-lowest-cost Silver plan. Approximately 12.0 million consumers selected or were automatically re- enrolled in a Marketplace plan during the 2021 OEP in the 50 states plus the District of Columbia (DC). This is approximately a 5 percent increase from 11.4 million consumers in the 2020. 21 percent of consumers during 2021 were new to the

Marketplaces through which they enrolled, compared to 25 percent during the 2020. Eighty-eight percent of consumers in Marketplace states received a tax credit in the 2021, a one-percentage point increase from eighty- seven percent in 2020. Among consumers receiving the tax credit, the average credit covered 85 percent of the total premium in both the 2020 and 2021. The American Rescue Plan Act signed on March 11, substantially increased and expanded the ACA's premium subsidies for the next two years, but has dropped the individual mandate. To reduce wildly inappropriate interpretations of the bounty on individual health, that is hypothetically driving up the under age 65 death rate since 2010, it is advised to transfer responsibility for the refundable premium and tax credit subsidy from the Treasury to add to Centers for Medicare & Medicaid Services (CMS) outlays.

Affordable Care Act Subsidies FY 17 - FY 22
(millions)

	FY 17	FY 18	FY 19	FY 20	FY 21	FY 22
Refundable Premium Tax Credit and Cost Sharing Reductions	45,629	39,909	59,178	47,600	40,400	60,897

Source: Mnuchin, Steven T. FY 2019 – FY 21 Department of Treasury. Budget-in-brief; HHS FY 22 Budget-in-Brief pg. 97

2. The average full-price plan across the 38 states that used HealthCare.gov in 2020 was $595/month, but the average after-subsidy premium was just $145/month. Nobody purchasing coverage through the marketplace has to pay more than 8.5% of their household income (an ACA-specific calculation) for the benchmark plan. And people with lower incomes are expected to pay a smaller-than-normal percentage of their income for the benchmark plan – as low as $0 for people with income that doesn't exceed 150% of the poverty level. 2% for 200% of FPL, 4%-6% for 250% - 300% of FPL and 6%-8.5% for 300% - 350% of FPL. The overall average deductible of plans was $2,825, consistent with the $2,835 average for the 2020. Deductibles for consumers enrolled in the two most generous silver plan CSR variants, the 87 percent actuarial value (AV) plan and the 94 percent actuarial value plan, increased by 3 percent and declined by 35 percent, respectively, from 2020.

ACA Average Individual Deductibles 2017 - 2021
(dollars)

	Bronze	Silver	73% AV CSR	87% AV CSR	94% AV CSR	Gold	Platinum	Overall
2017	6,327	3,491	2,863	661	189	1,003	184	2,405

2018	6,153	3,970	2,945	710	231	1,243	146	2,685
2019	6,376	4,056	2,913	567	131	1,225	120	2,719
2020	6,446	4,181	3,128	517	105	1,319	101	2,835
2021	6,094	4,500	3,115	530	69	1,458	68	2,825

Source: ACA Health Insurance Exchange 2021 Open Enrollment Report. The 87% AV silver plan variant is available to APTC-eligible consumers with a household income greater than 150% FPL and less than or equal to 200% FPL, and the 94% AV silver plan variant is available to APTC-eligible enrollees with a household income greater than or equal to 100% FPL and less than or equal to 150% FPL.

B. The Trump Administration launched numerous lawsuits attempting to repeal the ACA law, while Obama and Biden Administrations have sought to force it through. In *National Federation of Independent Business* v. *Sebelius*, 567 U.S. 519 (2012), the Court upheld 26USC§5000A, that offered individuals a choice between purchasing insurance and paying a tax, known as a "shared responsibility payment." In December 2017, the Tax Cuts and Jobs Act (TJCA) reducing the shared responsibility payment to zero. The United States House of Representative has petitioned for writ of certiorari in behalf of *State of Texas et al v. United States of America et al US 5th Cir.* No. 19-10011 (2019). In this case the court of appeals frivolously held that Section 5000A, as amended, exceeds Congress's constitutional authority and that the Act's thousands of other provisions may be invalid as a result. According to theNational Conference of State Legislatures, between 2010 and 2013, 18 states passed laws or constitutional amendments to prohibit agents of the state from implementing or enforcing mandates related to individual or employer health insurance. In August 2010, Missouri voters approved a ballot initiative, 71-29 percent, declaring the individual mandate to be null and void inside the state. Since its 2014 implementation, the mandate had been real. That year, 8.1 million households, or 5.4 percent of the U.S. population, paid the $395 penalty, while 13.3 million filed for an exemption. In 2017, 4.6 million paid the fully phased in penalty of $695, and 12.9 million claimed exemptions, for a total of $3.56 billion in penalties, according to IRS data, before the zero penalty provision of the TCJA.

1. The benefit of the individual mandate was worth less than the price of unending political and legal warfare. Individual mandate aside, the true reasons for repealing the ACA are hyperinflation in premiums, subsidies and working age death rate. The ACA is "one of the most consequential laws ever enacted by Congress." *Sissel v. U.S. Dep't of Health & Human Servs.*, 799 F.3d 1035, 1049 (D.C. Cir. 2015) (Kavanaugh, J., dissenting from denial of rehearing en banc). *United States v. Gainey*, 380 U.S. 63, 65 (1965) (recognizing need to review "the exercise of the grave power of annulling an Act of Congress"). Acknowledging the need for certainty as to the lawfulness of the ACA's central insurance and health-care reforms, the Court has twice before respected the role of the Legislature, and take care not to undo what it has done. The Court has not expressed any opinion on the wisdom of the ACA, whereas under the Constitution, that judgment is reserved to the people under *King* v. *Burwell*, 135 S. Ct. 2480 (2015) and *National Federation of Independent Business* v. *Sebelius*, 567 U.S. 519 (2012).

2. The United States has the highest level of health spending in the world, between 16-18% of GDP. The ACA cost more than the ignored American Health Insurance Program (AHIP) proposal, did not provide Medicare for All, nor Medicaid Prices for All. Hyperinflation in the unacceptably high cost of the Affordable Care Act is not affordable to either Treasury nor consumer. The major problem is, COVID-19 pandemic aside whose death toll has not yet been tallied, although over age 65 death rates have continued to steadily decline, health outcomes and death rate for people under the age of 65 have gotten worse since the passage of the ACA. The hyperinflation in premiums is unacceptable. The Treasury cannot afford irregularity and hyperinflation in the subsidies. The biggest problem however seems to be that the ACA has somehow increased the death rate of the under age 65 population it purports to help. The 2020 Annual Report of the Federal Old Age Survivor Insurance Trust Fund and Federal Disability Insurance Trust Fund at pg. 87 reports that the under age 65 death rate after steadily declined from 750 per 100,00 in 1940 to 248.5 per 100,000 in 2010 when the ACA was passed. Subsequently, although the sky-high over age 65 death rate continued to steadily decline to an estimated 4,432 per 100,000 in 2018, the under age 65 death rate began to increase. In 2011 the under age 65 death rate increased to 249.2 per 100,000. In 2012 it decreased to 248.8 per 100,000, still more than in 2010, before the ACA. Subsequently, the under age 65 death rate increased to 249.6 per 100,000 in 2013, 251.7 in 2014, 255.2 in 2015, 260.8 in 2016, 261.5 in 2017. In 2018, after the tax penalty was reduced to zero, the death rate declined to 255.8 and in 2019 to 255.3. The estimated reduction to 254.3 in 2020 is overruled pending release of COVID-19 fatalities. The under age 65 death rate of 255.3 per 100,000 in 2019 is 2.7 percent higher than 2010. This is an unacceptable outcome for the ACA. The increase in working age death rate under the ACA justifies the the exercise of the grave power of annulling an Act of Congress pursuant to *United States v. Gainey*, 380 U.S. 63, 65 (1965). One likely, deficit-neutral, solution is to transfer responsibility for the refundable premium and tax credit from the Treasury to CMS, increasing the CMS budget but decreasing Treasury spending,

Art. 5 Medical Organizations

§335 Veterans Medical Programs

A. Department of Veterans Affairs pension program pre-date the nation. The VA benefits system traces its roots back to 1636, when the Pilgrims of Plymouth Colony were at war with the Pequot Indians and the Pilgrims passed a law which stated that disabled soldiers would be supported by the colony. The establishment of the Veterans Administration came in 1930 when Congress authorized the President to "consolidate and coordinate Government activities affecting war veterans" to fulfill President Lincoln's promise – "To care for him who shall have borne the battle, and for his widow, and his orphan". VA operates the largest direct health care delivery system in America. The 10% annual growth in spending and 5% growth in employment are alarming. Normal spending growth is 3% and net new employment 1%. The discretionary budget fully funds operation of the largest integrated health care system in the United States, with over 9.2 million enrolled Veterans, and mandatory fund provides disability compensation benefits to nearly 6.0 million Veterans and their survivors and administers pension benefits for

over 357,000 Veterans and their survivors. VA anticipates supporting 425,428 Full-time Equivalent (FTE) staff in 2022, a 5% increase from 404,835 FY 21. The majority of the increase, 17,403 FTE, is in medical care, which will allow VA to meet continued growth for VA provided health care services, particularly due to COVID-19-related deferred care returning in 2022. Health care provider growth has increased in 2021 and will continue in 2022, despite a tight labor market for health care professionals, as VA expands telehealth services and enhances suicide prevention and substance use disorder initiatives.

2. On September 30, 2021, VA estimates there will be 19.2 million Veterans living in the United States (U.S.), its territories, and other locations. The 2022 request provides for: 7.1 million in-patients in VA hospitals an increase of 1.3% above 2021; 119 million outpatient visits, an increase of 3.7% above 2021; Modernization of VA's electronic health record system to improve quality of care; Strengthening VA's infrastructure through $1.6 billion in Major Construction and $553 million in Minor Construction for priority infrastructure projects; Education assistance programs serving nearly 871,000 trainees; Veteran Readiness and Employment (VR&E) benefits for over 135,000 Veterans; A home mortgage program with a portfolio of over 4.0 million active loans; and the largest and highest performing national cemetery system projected to inter an estimated 136,000 Veterans and eligible family members in 2022.

3. It would be painless to limit employment growth to 1% and consequential spending growth to 3% or 4% to accommodate retiring Baby Boomers. There is deep concern that neoplastic spending growth on the VA and new employment of Veterans in the VA system, that provides (trouble) free medical care for all Veterans and generous pensions for career officers and compensation for disability to those who saw hostile fire in declared conflicts or had their non-disclosure agreement (NDA) approved, is unsustainably detrimental to the federal budget and detracts from the genuine call to Americans who have served more than two to four year in the armed services and achieved a Bachelor degree in liberal arts – law enforcement. The United States has the highest rate and concentration of incarceration in the world and this is very, very bad to the Bar and a non-cowardly, physically fit, people Hippocrates inspired to fight to defend "freedom". Other than the habitually small brains of illiterate lawyers due to unwitting pseudo-ephedrine exposure by malicious prosecutors, corrupt law enforcement and intimate partner informants usually from the legal, housing and health sector, the prison slavery problem in the United States is hypothetically because law enforcement officers do not have the Bachelor degree they need to theoretically not recidivate. Recidivism is defined as being re-incarcerated for a felony within three years of being released from prison. Several state studies have shown that people who earned a post-conviction Bachelor degree were free of recidivism 100% of the time, Associates degrees 75%, Vocational certificates, such as police academy and some college 50%, and high school degree or less 33%. The Bachelor degree is interpreted to mean a law enforcement officer, whether mandatory, such as prisoner or jurist, or voluntary police officer, flawlessly executes a court order, does not engage in unwarranted investigations and conduct, does not intimidate or intoxicate their accusers, defendants, lawyers, judges, and friends of the court, abstains from and condemns partnership in crime under 24USC§419(a)(4) and doesn't enforce law and order copied but not believed [sic].

B. Funding for the VA has increased significantly since 2012, with total funding growing by $72.5 billion (+37%) from 2018, and by $143.2 billion, (+113%) since 2012. The total 2022 request for VA is $269.9 billion (with medical collections), a 10.0% increase above 2021. The discretionary budget request of $117.2 billion (with medical collections), a 9.0% increase above 2021. The 2022 mandatory funding request is $152.7 billion, an increase of $14.9 billion or 10.8% above 2021. This funding is in addition to the $17.8 billion provided to VA in the American Rescue Plan Act of 2021 (P.L. 117-2). With the Transformational Fund resources and medical collections, the total 2022 funding level is $270.7 billion, a 10.4% increase above 2021. The Consolidated Appropriations Act, 2016 (P.L. 114-113) created the Recurring Expenses Transformational Fund, which allows VA to transfer un-obligated balances of expiring discretionary funds in any of its accounts into the Transformational Fund for use as directed in the Act. The 2023 Medical Care Advance Appropriations request includes a discretionary funding request of $115.5 billion (with medical care collections). The 2023 mandatory AA request is $156.6 billion for Veterans benefits programs (Compensation and Pensions, Readjustment Benefits, and Veterans Insurance and Indemnities). Because these are merely conservative estimates of year's spending in two years and are not included in next year budget request total, VA AA are not emphasized for inclusion in the undistributed offsetting receipt table.

1. The request promises to provide the necessary resources to meet VA's obligation to provide timely, quality health care, services, and benefits to Veterans. However, the Trump Administration got into trouble with the number of the beast and persecuted the hospital closure movement far in excess of 42 months due to a malicious cut FY 20 to finance hyperinflation in medical community care FY 20 and medical support and compliance and medical services FY 21 and now facilities immediately need extra funding and medical services is in need of hyperinflation in excess of 3% annual growth to make the leap from $60 billion FY 23 to $70 billion FY at the expense of explosive growth in undereducated community care 21% FY 21 and 27% FY 22. The poisonous and economically depressing consequences of the malicious number of beast persecutions has been proven by the obese and probably shrunken brained statin drug consuming executives in the Social Security Administration 2009-2011 and United Nations Peacekeeping (2019-present). Department of Defense (2020) proved there is no harder and faster rule justification for hyperinflation in excess of 3% than getting over the number of the beast in less than 42 months (Revelation 13:10). Both VA and Military Health Service have a duty to abandon the long standing and pervasive hospital closure movement and compensate medical facilities and medical services by reigning in unfair competition by community care with a $417 million transfer from community care to medical facilities before the end of FY 21 and $265 million transfer FY 22. If the hyper-inflationary community care money was not laundered and actual cuts are not in order 3% medical community care spending growth and 1% employment growth FY 23 are needed to stabilize community care spending and sustain needed 5% annual medical spending growth FY 23-27. While it might be difficult to justify medical spending increases with hydrocortisone, eucalyptus, lavender or peppermint helping water curing coronavirus; eucalyptus or lavender curing influenza; and Epsom salt baths curing

methicillin resistant *Staphylococcus aureus* (MRSA); eucalyptus scented humidifiers (diffusers) would go a long way to sterilizing VA waiting rooms and intensive care units (ICUs) and making VA facility care competitive. The VA budget request does recognize they must establish the right balance of VA and Community Care. Medical Community Care funds non-VA provided medical claims and grants for state home nursing, domiciliary and adult day care services.

Veterans Administration FY 19- FY 24
(millions)

	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Total VA Outlays	197,541	216,781	238,734	265,776	274,645	282,876
Discretionary						
Medical Services	49,911	51,061	56,655	58,897	61,842	63,697
Medical Community Care	9,385	15,280	18,512 / 18,095	23,417 / 23,152	23,784	24,562
Medical Support & Compliance	7,028	7,328	8,199	8,403	8,655	8,914
Medical Facilities (Includes NRM)	6,807?	6,142	6,583 / 7,000	6,735 / 7,000	7,000	7,145
Subtotal Medical Care Appropriations	73,131	79,811	89,965	97,452	101,281	104,318
Medical Collections (MCCF)	3,915	3,912	4,528	4,500	4,500	4,500
Subtotal Medical Care with MCCF	77,047	83,723	94,493	101,952	105,781	108,818
Medical	779	750	795	882	909	935

Research						
Electronic Health Record Modernization	1,107	1,430	2,607	2,663	2,743	2,825
Information Technology	4,103	4,372	4,875	4,843	4,988	5,138
Veterans Benefits Administration	2,956	3,125	3,164	3,423	3,526	3,632
Board of Veterans Appeals	`175	174	196	228	235	242
National Cemetery Administration	316	329	352	394	406	418
General Administration	356	356	354	401	413	425
Construction-Major	2,177	1,235	1,316	1,611	1,659	1,709
Construction-Minor	800	399	354	553	570	587
Grants for State Extended Care Facilities	150	90	90	0	0	0
Grants for Veterans Cemeteries	45	45	45	45	45	45
Inspector General	192	210	228	239	246	254
Loan Administration Funds	202	202	206	231	238	245

DoD Transfers for Join Accounts	128	126	152	152	152	152
Choice Transfer to Community Care 2020	0	-615	0	0	0	0
Subtotal Discretionary without MCCF	86,617	92,038	104,584	113,122	117,411	120,925
Subtotal Discretionary Funding with MCCF	90,532	95,467	107,549	117,207	121,911	125,425
Transformational Fund	0	0	820	820	820	820
Total Discretionary (with MCCF and TF)	90,532	95,467	108,369	118,027	122,731	126,245
Mandatory Funding	110,924	124,731	137,730	152,654	157,234	161,951
Total VA (Disc & Mand) without MCCF of TF	197,541	216,781	238,734	265,776	274,645	282,876
Total VA (Disc & Mand) with MCCF	201,456	220,188	245,279	269,862	279,145	287,236
Total VA (Disc & Mand)	201,456	220,188	245,279	270,682	279,965	288,056

with MCCF & TF						
FTEs	375,813	388,871	406,338	425,428	429,682	433,979

Source: Wilke, Roberts. Department of Veterans Affairs Budget-in-brief FY 2018 - FY 2022

2. VA administers its comprehensive medical benefits package through a patient enrollment system. The enrollment system is based on priority groups to ensure health care benefits are readily available to all enrolled Veterans. VA is on track to fully execute the $19.6 billion in funding provided in the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) by Congress in March 2020, with over 75% obligated as of May 2021. The funding aided all levels of the VA COVID- 19 response, from procurement of test kits and specialized equipment, to the overtime and travel costs for our staff rotating into hot zones. VHA hired thousands of clinical and administrative staff across the health care system to ensure stability and continued delivery of care. VA added over 2,500 medical/surgical and Intensive Care Unit beds. The American Rescue Plan Act of 2021 provided VA with $17.1 billion in mandatory funding to sustain the VA COVID-19 response beyond the expiration of the CARES Act funding into 2022. ARP funding will also enable VA to reduce the backlog of Veteran benefit claims and appeals, improve supply chain management capabilities, and train Veterans unemployed due to COVID-19 in high demand occupations. Pursuant to the American Families Plan the VA has employed a child and family counselor and intends to improve women's health care. Women make up 16.5% of today's ActiveDuty military forces and 19% of National Guard and Reserves. More women are choosing VA for their health care than ever before, with women accounting for over 30% of the increase in Veterans enrolled over the past 5 years. The number of women Veterans using VA health care services has more than tripled since 2001, growing from 159,810 to more than 550,000 today. To address the growing number of women Veterans who are eligible for health care, VA is strategically enhancing services and access for women Veterans by investing $75 million in a hiring and equipment initiative in 2021, providing funding for a total of over 400 women's health personnel nationally--primary care providers, gynecologists, mental health providers and care coordinators.

3. The 2022 request for the Medical and Prosthetic Research appropriation is $882 million, an increase of $87 million, or 11%, from the 2021 enacted level (base only, excluding mandatory funding). This is the largest year-over-year increase in recent history for medical and prosthetic research. This historic investment will advance the Department's research mission, including critical studies to understand the impact of traumatic brain injury (TBI) and toxic exposure on long-term health outcomes. The Office of Research and Development (ORD) will also continue to prioritize research focused on the needs of disabled veterans including precision oncology, prosthetics, mental health, and suicide prevention as well as other disease areas. In 2022, grants from other federal organizations, such as the National Institutes of Health (NIH), DoD, and the Centers for Disease Control and Prevention (CDC), are estimated at $370 million.

Funding from other non-federal sources in 2022 is estimated at $170 million, with a total estimated amount of $540 million. The 2022 request includes $100 million, $29 million (+41%) above 2021, to support VHA's precision oncology initiative.

C. The VA MISSION Act of 2018 (P.L. 115-182) established an independent commission to be known as the "Asset and Infrastructure Review Commission" (the Commission). The Commission reviews VA's recommendations to modernize, or realign VHA facilities, including leased facilities, through a process of public hearings. VA operates the largest integrated health care, member benefits and cemetery system in the Nation, with more than 1,700 facilities, including 170 VA medical center hospitals, clinics, and other health care facilities and 155 national cemeteries. The total VA infrastructure portfolio consists of approximately 184 million owned and leased square feet—one of the largest in the Federal Government. VHA operates approximately 5,665 owned buildings on 16,390 acres of land, and 1,663 leases, encompassing 16.4 million square feet of space in its portfolio. The average age of U.S. private sector hospitals is 11 years; however, the median age of hospitals in VA's portfolio is 58 years, with 69% of VA hospitals over the age of 50. Many surgical, medical and diagnostic procedures that once required a hospital stay are now safely performed in the outpatient setting, and telehealth and tele- service delivery bring expertise to a patient's own home. This evolving landscape requires VA to rebalance and recapitalize its infrastructure to optimize the mix of traditional inpatient hospitals with outpatient hospitals, with fewer new multi-specialty Community Based Outpatient Clinics, single specialty Community Based Outpatient Clinics and more virtual care to minimize demand for non-VA providers and be more clever diversifying use of hospital space. Historic VA hospital facilities enjoy high levels of recognition and require maintenance, or they must be sold or abandoned, incurring great expense and shame when the buildings deteriorate, become uninhabitable and condemned to be demolished and environment restored e.g. free bath for the "indigent" 24USC§18, §20 and 16USC§361. It is important that if demand for VA in-patient hospitals truly declines, they are transformed to support wounded soldiers, provide inpatient care to non-veterans and indigent, or most likely into VA outpatient hospitals, residential nursing homes, adult care for recovering alcoholics, addicts, severely mentally ill, and/or homeless, or office space or conclusively transferred to Housing and Urban Development Public and Indian Housing.

1. The number of Veterans experiencing homelessness in the United States has declined by nearly half since 2010. On any given night in January 2020, an estimated 37,252 Veterans were experiencing homelessness. Since 2010, over 850,000 Veterans and their family members have been permanently housed or prevented from becoming homeless. In 2018, the total number of Veterans experiencing homelessness decreased 5.4 percent, and in 2019, that number dropped another 2.1 percent. Veterans Housing Program, Native American Veterans Housing Loan Program, Vocational Rehabilitation Loan, were terminated FY 19. VA remains committed to ending Veteran homelessness. VA requests $2.2 billion for Veteran homelessness programs, an increase of 8.4% over the 2021 enacted level (base funding only). In addition, VA will obligate $486 million in American Rescue Plan funding in 2022, for a total of $2.6 billion dedicated to reducing

homelessness in 2022. The 2022 request includes case management funding for the U.S. Department of Housing and Urban Development-VA Supportive Housing (HUD-VASH) program. HUD announced its 2020 allocation of 4,875 new vouchers in December 2020 and anticipates an additional voucher award of up to 5,000 vouchers will be made prior to the end of 2021. In 2020, Supportive Services for Low Income Veterans and Families (SSVF), in partnership with HUD and United States Interagency Council on Homelessness (USICH), implemented the Rapid Resolution Initiative. This Initiative reunifies imminently at-risk or homeless Veterans with family or friends as an alternative to entering the homeless system. This initiative seeks to reduce overall demand for traditional affordable housing resources while simultaneously reducing trauma for Veterans and their families who would otherwise become or remain homeless. In 2020, SSVF assisted 112,070 individuals of which 77,590 were Veterans and 19,919 were dependent children.

D. Suicide prevention is a VA top clinical priority, founded on a comprehensive public health approach to reach all Veterans. The budget includes $598 million, an increase of $287 million (+92%) above the 2021 enacted level, for suicide prevention outreach and related activities, including funding to increase the capacity of the Veterans Crisis Line. Funding for mental health in total grows to $13.5 billion in 2022, up from $12.0 billion in 2021. The budget also fully funds the Commander John Scott Hannon Veterans Mental Health Care Improvement Act of 2019 (P.L. 116-171) which authorized the new Staff Sergeant Parker Gordon Fox Suicide Prevention Grant Program to reduce Veteran suicide through a community-based grant program that provides or coordinates suicide prevention services. Additionally, the 2022 budget funds the projected costs of the provision of emergent suicide care authorized by the Veterans Comprehensive Prevention, Access to Care, and Treatment Act of 2020 (P.L. 116-214). Veteran demand for VHA mental health care continues to grow, with approximately 1.72 million Veterans (29% of all VHA users) receiving mental health services in a VHA specialty mental health setting in 2020. Programs provide proactive screening for symptoms of depression, Posttraumatic Stress Disorder (PTSD), problematic use of alcohol, experiences of military sexual trauma (MST), and suicide risk. VA employs a mental health workforce of more than 20,000 psychiatrists, psychologists, social workers, nurses, counselors, therapists and peer specialists. A major focus of this request is expanding the Veterans Crisis Line (VCL), which since its launch in 2007, has answered more than 3.5 million calls and initiated the dispatch of emergency services to callers in imminent crisis nearly 100,000 times. Demand for chat and text services have increased by over 59% during the COVID-19 pandemic.

1. The CDC reports that the primary risk factors for suicide are domestic violence, abuse, unemployment and addiction. There is deep concern that FBI/DEA informant intimate partner violence has increased during the COVID-19 pandemic. Pseudo-ephedrine abuse is rampant because it is probably the most effective oral treatment for viral and bacterial sinusitis, but the brain shrinkage from pseudo-ephedrine and statin exposure is a major reason that the US Supreme Court has been so unable to cope with the incessant computer hacking of the FBI/DEA, the Court has not published since June 20, 2019. Pseudo-ephedrine makes the intoxicated particularly illiterate, ill-tempered and unable to

overturn the simplest of false charges [sic]. Statin use and abuse almost certainly results in pneumococcal meningitis unless the patient is vaccinated with Pneumovax. Because pneumococcal meningitis is such an obvious cause of delusional, hallucinatory, nearly severe, mental illness, and mental dissatisfaction, and antibiotics are, at best, only temporarily effective, as the damaged brain is nearly certain to be re-infected before it is sufficiently healed, Pneumovax is highly recommended to cure and prevent suspected pneumococcal meningitis in all people diagnosed with mental illness. This makes Pneumovax the only medicine recommended for the treatment of mental illness. To prevent adulteration it should be administered only by regular health professionals. Pneumovax should be given equally to all under or over age 65, health professional or lay. Pneumovax is highly effective at preventing pneumococcal infection of heart, lung and brain damage to such an extent health professionals are barely aware of these contagions, a negligence they can only feign in regards to coronavirus whether or not they are vaccinated.

2. It has been suggested that many suicide deaths may be preventable by improving the training of healthcare providers in existing health systems. This may however be misinterpretation of the statistic that 80% of people who committed suicide paid an office visit to a doctor during their last year, but only 20% the hospital. It is hypothesized that the threat is that physicians are not only notoriously non-supportive, militant, suicidal and undereducated liberal artists when it comes to family, but their DEA registration without legitimate use or strength in numbers of hospital employees, unwittingly poisons their patients with dimethoxymethylamphetamine (DOM) that causes a three day panic attack and six month recovery from severe mental illness if not washed off with water. Merely making record of the domestic violence, abuse and addiction suicide risks might only makes patients more vulnerable. It is necessary that doctors without any legitimate use, join psychiatrists and online pharmacy in the boycott of DEA registration and fees under 21CFR§1300.11.

3. It is important that the VA shift from battlefield injury reliance on opioid propaganda to prescribe Epsom salt baths and swimming in chlorinated or saline pools or oceans and doxycycline to treat methicillin resistant *Staphylococcus aureus* (MRSA) and other more curative and less addictive alternative “pain management” strategies, especially cannabis derived CBD, in conjunction with severe pain sympathetic mandatory detox to deter prescription opioid addiction. President Trump’s 2018 Initiative to Stop Opioids Abuse and Reduce Drug Supply and Demand directly contributed to a 19 percent reduction in the number of patients receiving opioids. Overall, there was a 32 percent decline since 2017. This gain in prescribing willpower is however believed to have subsequently reversed with a relapse to opioid propaganda, especially the development of buprenorphine for use in addicted pregnant women without condemnation of the epidural, as overdoses during COVID-19 escalated to nearly 90,000 in 2020. The 2022 budget provides $621 million for VA's “Opioid” Prevention and Treatment programs, including programs in support of the Jason Simcakoski Memorial and Promise Act, referred to as “Jason’s Law.”

4. VA continues to pursue a comprehensive strategy to promote safe prescribing of opioids when indicated for effective pain management and to directly address treatment of opioid use disorder and prevention of opioid overdose. The increased funding in 2022 will help to staff the PMOP office and allow for more targeted funding of pain management and opioid safety programs primarily at the facility level with national support to ensure successful implementation. In addition, funding will be used to support continued growth and replenishment of VA's Opioid Overdose Education and Naloxone Distribution, which provides naloxone and education to VA patients at-risk for opioid overdose. To prevent opioid abuse, overdose and death from malicious distribution of fentanyl and other potentially lethal synthetic opioids, in bedspreads and to people prescribed opioids, or sleeping aids such as melanin to treat shrunken brained speed-ballers trying to sleep in ephedrine bedspreads, and reduce the number of physicians prescribing opioids to pain management specialists, it is very important that VA representatives protect against FBI / DEA infringement and torture of both the patients and pain management specialists and the majority of practitioners be advised to boycott DEA Registration identity theft completely because they they have no legitimate use to prescribe their patients any listed Controlled Substance under 21CFR§1300.11. Furthermore, to prevent home invasion and excruciatingly painful tortures, it is extremely important that the VA pharmacy minimally overrule the address requirement for all prescription labels and data entry, especially involving controlled substances, and maybe all personally identifying patient and physicians information reported to the DEA, if this could be done accountably by use of a VA opioid representative under 21CFR§1306.05 whereas a person cannot be used to render a territory immune from military intervention under Art. 28 of the Fourth Geneva Convention Relative to the Protection of Civilians in Times of War (1949).

E. VA uses three actuarial models to support formulation of most of the VA health care budget, to conduct strategic and capital planning, and to assess the impact of potential policy changes in a dynamic health care environment. The three actuarial models are the VA Enrollee Health Care Projection Model (EHCPM), the Civilian Health and Medical Program Veterans Affairs (CHAMPVA) Model, and the Program of Comprehensive Assistance for Family Caregivers (PCAFC) Stipend Projection Model. Historically, growth in expenditure requirements to provide care to enrolled Veterans has been primarily driven by health care trends, the most significant of which is medical inflation. The COVID-19 pandemic had a significant impact on VA health care in 2020 and is expected to impact the amount of care provided for the next few years. During the pandemic, nationwide health care utilization saw a reduced amount of care provided in 2020 and 2021 as individuals chose to defer certain care. It is anticipated that there will be a resulting surge in care in late 2021 continuing through 2022 to fulfill previously deferred services. Additionally, the stay-at-home orders and social distancing mandates have had an impact on the U.S. economy, which is expected to increase reliance on VA for health care. After the initial deaths and somewhat successful non-VA vaccination campaign, it is necessary to strike the right balance between skyrocketing costs for community grants to state veterans nursing homes and VA medical care on the basis of skill of the VA at cleaning up, treating and communicating about treating the allegedly untreatable, highly communicable, pandemic coronavirus and influenza – hydrocortisone,

eucalyptus, lavender or peppermint help water cure coronavirus; eucalyptus or lavender also cure influenza.

1. The experience of responding to the COVID-19 pandemic has brought critical lessons the VA must learn to reduce spending for community care and effectively respond to future coronavirus and influenza pandemics. While steps to avoid unnecessary in-person appointments during the pandemic, in 2020, VA completed more than 75 million Veteran visits, including over 45 million in-person, 27 million by telephone, and over 3.4 million by video visits to-the-home. It is debatable whether this was proactive or retroactive or merely a reflection that the VA does not necessarily know how to treat coronavirus using readily available overt-the-counter, herbal remedies and cleaning products. Whether Veterans cancel their own appointment or VA cancels the appointment for safety reasons, VA carefully reviews each cancellation to ensure Veterans who need care receive it. Uncertainty regarding the timing and location of the next surge or surges in cases across the country underscored the importance of portable capabilities (e.g., 24-bed Intensive Care Unit that can be transported) for VA health care's Fourth Mission role in future public health emergencies. To generate a definitive improvement in VA treatment of coronavirus and influenza, air quality, respiratory and nasal health, sufficient to convince state veterans nursing home residents to go to the VA when they need medical treatment, or call for a house call, it is highly recommended that VA hospitals be the first to officially adopt the recommendation of HA to use eucalyptus scented humidifiers (diffusers) in hospital intensive care units (ICUs), waiting rooms and public airspaces.

2. The VA and everyone, must learn the lesson that hydrocortisone, eucalyptus, lavender or peppermint help water cure coronavirus, and eucalyptus or lavender also cure influenza, to end the COVID-19 pandemic, and greatly improve the response to future SARS and influenza pandemics, for which vaccine monopolization is notoriously unsatisfactory at eliminating: Coronavirus treatment is safe and cheap. Although vaccination may cure coronavirus in two doses and reduce the risk of further severe infection and death, COVID-19 vaccination does not alleviate the need to know how to treat the contagious "Pinocchio nose" nor truly end the pandemic. The lesson that must be learned, before the "snot nosed children" return to school, unvaccinated or with unreported vaccine related developmental defects [sic], for the human race, primates and weasel species to again enjoy herd immunity, is: Hydrocortisone, eucalyptus, lavender or peppermint help water cure allergic rhinitis from coronavirus. Eucalyptus or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus, lavender or peppermint soap in public restrooms, with instruction to "wash your face and nose". Lysol is an effective environmental cleanser. Intensive care units (ICUs), waiting rooms and public airspaces of all sorts may be sterilized of both influenza and coronavirus with eucalyptus scented humidifiers (diffusers).

§336 Military Health System

A. The Military Health System (MHS) is a comprehensive, integrated system responsible for the delivery of operational medicine to military forces and provides peacetime health care to active duty and retired U.S. military personnel and their families. The MHS supports more than 125 thousand military and civilian personnel to support delivery of services in 49 hospitals, 427 medical clinics, and 246 dental clinics around the globe to support 9.6 million beneficiaries. The MHS purchases more than 65 percent of the total care provided for beneficiaries through tailored contracts, such as Managed Care Support contracts responsible for the administration of the TRICARE benefit. Cost growth for the TRICARE Prime enrollees are kept at a level at or below the increases for the Civilian health care plans at the national level. The DoD Medicare Eligible Retiree Health Care Fund (MERHCF) is an accrual fund to pay for DoD's share of applicable Direct Care and Private Sector Care operation and maintenance health care costs for Medicare- eligible retirees, retiree family members and survivors.

1. In carrying out the responsibilities of the Office of the Assistant Secretary of Defense for Health Affairs (OASD/HA), the ASD/HA exercises authority, direction, and control over the medical personnel, facilities, programs, funding, and other resources within the DoD. These responsibilities include, but are not limited to: 1. Establishing policies, procedures and standards that govern DoD healthcare programs. 2. Serving as program manager for all DoD health and medical resources. 3. Directing DoD financial policies, programs, and activities including unified budget formulations, program analysis and evaluation. 4. Overseeing TRICARE the DoD health insurance program and the consistent, effective implementation of DoD policy throughout the Military Health System. 5. Maintaining strong communication with the line, beneficiary representatives and association, the media and the Congress. 6. Presenting and justifying the unified medical program and budget, estimated at $37 billion in 2006, throughout the planning, programming and budgeting system process, including representation before the Congress 7. Co-chairing with the director, Defense Research and Engineering, the Armed Services Biomedical Research Evaluation and Management Committee. 8. MHS provides a medically ready and protected force and medical protection for communities by continuously monitoring health status, identifying medical threats and finding ways to provide protection and improve health for individuals, communities and the Nation.

2. The purpose of MHS is to create a deployable medical capability that can go anywhere, anytime with flexibility, interoperability and agility. MHS provides globally accessible health information and rapidly develops and deploys innovative medical services, products and superbly trained medical professionals upon demand. MHS manages and delivers a superb health benefit by building partnerships with beneficiaries in an integrated health delivery system that encompasses military treatment facilities, private sector care and other federal health facilities including the Department of Veterans Affairs (VA). MHS may construct tent and permanent hospitals and small health care facilities in developing countries to combat mortality from disease or war amongst both the military personnel stationed in the area and the general populace. Funding for the health care venture in this section is justified by proving that, (a) there is a US military presence in the area (b) hospital beds and medical staff in that area of the developing nation are severely inadequate to serve the health care needs of the people and

(c) an adequate number of physicians, nurses, administrators and emergency medical technicians are available to staff the facility. Naval and Army hospitals uphold contemporary standards for hospitals and the various medical specialties that they house. For quality assurance military health facilities are certified by the Joint Commission on Accreditation of Health Care Organizations.

B. The President requested a total of $50.8 billion FY 20 to fund the Military Health System (MHS). The FY2021 MHS budget request is -1.2% ($0.6 billion) below the FY2020 appropriation. MHS anticipates a 0.2% (22,696) increase in eligible beneficiaries and -9.5% (-7,422) reduction in military medical end strength FY 20 – FY 21 pursuant to the National Defense Authorization act (NDAA) for Fiscal Years 2017 and 2019 that is overruled by Sec. 704 of the FY 21 National Defense Authorization Bill H.R. 6395 that provided Defense Health Authority (DHA). may not realign or reduce military medical end strength authorizations during the one-year period following the date of the enactment, and after such period, may not realign or reduce such authorizations. The Report on Gulf War Illness proved that any medical products used by the military health service must be approved for use in the general civilian population. MHS drastically cut research and development, the new information technology is lumped in with procurement. Due to incessant cuts the un-tabulated total Program Level for MHS has been between >$60 billion and <$70 billion for more than 42 months and will not be in the clear until FY 25 at normal 3% annual rates of growth. To end the military medicine number of the beast crisis, $7,660 million is needed FY 21 $5.7 billion more sustainable funding is needed FY 22. An increase in collections revenues might do the trick, perhaps if procurement billed military health facilities and bases for the diminishing costs of implementing coronavirus treatment, in the end of this section, including the eucalyptus scented humidifiers needed to convince staff and patients to return to military health system airspaces for care that was deferred due to the pandemic. The military health system discretionary budget request needs to start anticipating 3% inflation and 1% net employment growth.

Military Health System FY 18 – FY 24
(millions)

	FY 18	FY 19	FY 20	FY 21	FY 22	FY 23	FY 24
Defense Health Programs							
Operation and Maintenance	30,818	31,085	31,812	31,900	32,857	33,843	34,858
RDT&E	2,038	2,180	732	500	515	530	546
Procurement	652	873	454	700	721	743	766

Subtotal. Discretionary	33,509	34,138	32,999	33,000	34,093	35,116	36,170
Receipts	10,066	10,761	11,204	11,540 / 19,200	11,886 / 17,586	12,243 / 16,243	12,610 / 14,610
Defense Health Programs Level, subtotal	43,575	44,899	44,203	44,540	45,979	47,359	48,780
MILPERS	8,600	8,400	8,900	8,900	9,167	9,442	9,725
MILCON	900	400	300	500	515	531	546
MERHCF	8,100	7,500	7,800	8,400	8,652	8,912	9,179
Defense Health, Total Outlays	51,109	50,438	49,999	50,800	52,428	54,170	55,794
Defense Health Total Program Level	61,175	61,199	61,203	62,340 / 70,000	64,313 / 70,013	66,244 / 70,244	68,230 / 70,230

Sources: FY 2021 Budget Request for the Military Health System. Congressional Research Service. March 2, 2020; Defense Health Programs FY 2020 President's Budget

1. Congress traditionally appropriates mandatory and discretionary funding for the MHS in several accounts within the annual defense appropriations bill. These include the Defense Health Program (DHP), Military Personnel (MILPERS), Military Construction (MILCON) and Medicare Eligible Retiree Health Care Fund (MERHCF). The DHP funds numerous MHS functions, such as health care delivery in MTFs, TRICARE, certain medical readiness activities and expeditionary medical capabilities, education and training programs, medical research, management and headquarters activities, facilities sustainment, procurement, and civilian personnel. Medical MILPERS funds military personnel within the MHS. This includes various pay and allowances, such as basic, incentive, and special pays; subsistence for enlisted personnel; permanent change of station travel; and retirement contributions. Medical MILCON funds MHS construction projects. In general, DHA coordinates with the military services identify, prioritize, and fund certain medical MILCON projects. Medicare health care accrual contributions fund the MERHCF. In turn, the MERHCF funds health care expenses for Medicare-eligible military retirees and their families. Annually, each uniformed service contributes to the

MERHCF based on its "expected average force strength during that fiscal year" and investment amounts determined by the Secretary of Defense.

C. In peacetime the US military usually has a work-related fatality rate of 2.2 per 100,000. Less than the 3 per 100,000 average. President Obama won the Nobel Peace Prize and in peacetime under his administration there were years when there was not a single work-related fatality in the 2.8 million end strength of the US military reported by Occupational Health and Safety Administration (OSHA). Of the 1.5 million who served in the Global War on Terrorism, 0.2% - 1% of combat soldiers died at the estimated average age of 24 rather than the national age of 78. That constitutes a work-related fatality rate of 200 per 100,000, double the risk of logging, the most dangerous civilian career with fatalities exceeding 100 per 100,000. It can be estimated that the life expectancy of people fighting in these wars can be estimated at 70 due to sudden death although soldiers who survive the war theatre tend to live full and healthy lives. Global War on Terror returnees are using medical services and applying for disability at higher rates than in previous conflicts. For every service member killed in action as of October 21, 2013 (7,092) there are seven wounded in action (51,670). When including "noncombat" injuries (56,874), the ratio of injured to killed jumps to 16 to 1. One out of four veterans of the current conflicts has filed a disability claim at the VHA, and the VA has treated 30% of veterans of the two wars as of October 2011.

1. Generally it is said that, more soldiers die from disease than combat, even in times of war, however thanks to advances in medical science it is now better said that more soldiers are hospitalized as the result of disease than combat related injury. Furthermore, Veterans returning from foreign wars often suffer long term disability arising from exposure to unethical biological experimentation. After the Civil War veterans complained of an irritable heart, WWI Veterans were shell shocked with PTSD like symptoms, WWII and Korea War Veterans were well adjusted. Since Vietnam, as many as one third of soldiers have been suffering Post Traumatic Stress Disorder (PTSD). The Secretary of Defense should be informed of the latest drug abuse warnings to bypass the Democratic Speaker of the House FBI/DEA "hostAGe" intimate partner violence crisis under 18USC§175a and 42USC§242. The CDC reports that the primary risk factors for suicide are domestic violence, abuse, unemployment, addiction and gun ownership. Dimethoxymethylamphetamine (DOM) a topical water-soluble hallucinogen 50 times more powerful than DMT causes a three day panic attack, described as Christian hell, followed by six months recovery from severe mental illness, unless it is quickly washed off with water, is usually administered by criminal FBI/DEA informants. Pseudo-ephedrine abuse is rampant because it is probably the most effective oral treatment for viral and bacterial sinusitis, but the brain shrinkage from pseudo-ephedrine and statin exposure is a major reason that the US Supreme Court has been so unable to cope with the incessant computer hacking of the FBI/DEA, the Court has not published since June 20, 2019. Pseudo-ephedrine makes the intoxicated particularly illiterate, ill-tempered and unable to overturn the simplest of false charges or propaganda [sic]. Statin use and abuse almost certainly results in pneumococcal meningitis unless the patient is vaccinated with Pneumovax, the dementia cannot be conclusively treated with antibiotics because the brain takes too long to heal and becomes reinfected. In regards to the opioid overdose

propaganda for the masses, to prevent torture by the infringing FBI/DEA third party, it is advised that the majority of medical practitioners, other than “pain management specialists and their pharmacists”, who have not legitimate use for opioids, boycott DEA Registration identity theft completely because they they have no legitimate use to prescribe their patients any listed Controlled Substance under 21CFR§1300.11. Furthermore, to prevent home invasion and excruciatingly painful tortures, it is extremely important that the address requirement be overruled for all prescription labels and data entry, especially involving controlled substances, and maybe all personally identifying patient and physicians information reported to the DEA, if this could be done accountably under 21CFR§1306.05 whereas a person cannot be used to render a territory immune from military intervention under Art. 28 of the Fourth Geneva Convention Relative to the Protection of Civilians in Times of War (1949).

D. Sec. 701 of the FY 21 National Defense Authorization Bill H.R. 6395 emphasizes that health legislation must be scrutinized for monopolistic product liability defense of the production of defective national-defense material, national-defense premises, or national-defense utilities under 18USC§2156. For instance, other than the Democratic Speaker of the House FBI/DEA informant intimate partner violence “hostAGe” crisis, and life threatening pneumonia risk associated with “life saving” breathing apparatuses “required” to treat severe respiratory illnesses and distress that could be cured in the cases of coronavirus and influenza with over-the-counter or prescription drug treatment, the novel Protection of armed forces against infectious disease statute under 10USC§1073(e) should be repealed after paragraph (a) The Secretary of Defense shall ensure that the armed forces have the diagnostic equipment, testing capabilities, and personal protective equipment necessary to protect members of the armed forces from the threat of infectious diseases and to treat members who contract infectious diseases. (b) redundantly restates this for each Department and (c) goes on to encourage Defense to develop “vaccines” using test samples, although this is the international corruption whereby disease samples are leaked back into the populace to cause pandemics, and Gulf War Illness demonstrated that the military health system is not the place for biomedical experimentation, a war crime by definition, and misunderstands research to be something done in fact finding laboratories, rather than libraries. The way to get staff and patients to come back to low cost VA and MHS medical facilities is to end the COVID-19 pandemic and influenza pandemics and other infectious diseases, with treatment that is known to be safe and effective.

1. To end COVID-19 and prevent future SARS and influenza pandemics it is medically necessary that everyone learn their lesson. Coronavirus the treatment is safe and cheap. Although vaccination may cure coronavirus in two doses and reduce the risk of further severe infection and death, like the seasonal influenza vaccine, COVID-19 vaccination does not alleviate the need to know how to treat the contagious "Pinocchio nose" nor truly end the pandemic. The lesson everyone must learn to enjoy herd immunity is: Hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure allergic rhinitis from coronavirus. Eucalyptus or lavender also cure the wet cough of influenza. Prescription Oseltamivir (Tamiflu), Zanamivir (Relenza) and Amantadine (Symmetrel) also treat influenza. Mentholyptus cough drops are the front line treatment for both

influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus, lavender or peppermint soap in public restrooms, with instruction to "wash your face and nose". Lysol is approved for environmental cleaning. In hospital-like conditions it is important that both staff and patients are treated. Intensive care units (ICUs), waiting rooms and public airspaces of all sorts may be sterilized of both influenza and coronavirus with eucalyptus scented humidifiers (diffusers).

2. The topic of drug and antibiotic resistance is another venue for international development propaganda to monopolistically proliferate ineffective pharmaceutical remedies in medical practice. To treat tuberculosis, nine months of the combination of INH and rifampin chemotherapy will result in roughly 95% cure rates, therapy with INH, rifampin and ethambutol helps avoid the complication of drug resistance with "non-tubercular mycobacterial disease", the addition of pyrazinamide can reduce treatment time to six months, but is toxic. Topical hydrocortisone treats coronavirus, carcinogenic aspergillosis and many inflammatory conditions. Pneumovax 23 is recommended for working age adults, including soldiers, to prevent pneumococcal infection of heart, lung and brain damage, otherwise ampicillin is indicated for Azithromycin resistance. Co-occurring *Streptococcus* and *Staphylococcus* cause excruciating toxic shock syndrome. Epsom salt bath, saline or chlorine swim, doxycycline or clindamycin for pregnant women and children, treats methicillin resistant *Staphylococcus aureus* (MRSA). Hawthorn, the supreme herb for the heart, helps reduce cholesterol, regulate arrhythmia, and high or low blood pressure and may eliminate sterile *Staph* lesions on the heart. Onions, garlic and Gingko giloba help stimulate insulin production in pre-diabetics. Metronidazole, not for use during the first trimester of pregnancy, treats antibiotic resistant *Clostridium difficile* and *Helicobacter pylori*. Stonebreaker (Chanca Piedra) cures both urinary and gallstones.

§337 Red Cross

A. The International Committee of the Red Cross (ICRC) was established in 1863, the ICRC is the origin of both the International Red Cross and Red Crescent movement and of international humanitarian law, notably the Geneva Conventions and Statute of the ICRC of 24 June 1998. The ICRC is an independent, neutral organization ensuring humanitarian protection and assistance for victims of war and armed violence. The ICRC has a permanent mandate under international law to take impartial action for prisoners, the wounded and sick, and civilians affected by conflict. With its HQ in Geneva, Switzerland, the ICRC is based in around 80 countries and has a total of more than 12,000 staff. In situations of conflict the ICRC coordinates the response by national Red Cross and Red Crescent societies and their International Federation. The ICRC is at the origin of both the International Red Cross / Red Crescent Movement and of international humanitarian law, notably the Geneva Conventions.

1. The ICRC is governed by an Assembly (the supreme governing body), an Assembly Council (a subsidiary body of the Assembly, to which the latter delegates certain of its powers) and a Directorate (the executive body). The Assembly and the Assembly Council

are both chaired by ICRC President. In 2004, ICRC delegates visited 571,503 detainees held in 2,435 places of detention in more than 80 countries. ICRC water, sanitation and construction projects catered for the needs of around 20 million people. The ICRC supported hospitals and health-care facilities serving some 2.8 million people. It also provided essential household goods to more than 2.2 million people. ICRC provided food aid to 1.3 million people and ICRC provided assistance to another 1.1 million people in the form of sustainable food-production and micro-economic initiatives. Founded in 1919, the International Federation of Red Cross and Red Crescent Societies mission is to improve the lives of vulnerable people by mobilizing the power of humanity. Together, the National Societies have 97 million members and volunteers, and 300,000 employees, assisting some 233 million beneficiaries each year at a cost estimated between $250 and $350 billion. 8 May is World Red Cross Red Crescent Day in honor of the founder Jeane-Henry Dunant's birthday. Henry Dunant was one of two laureates for the first Nobel Peace Prize in 1901, that the ICRC has been awarded - in 1917, 1944 and, with the International Federation of Red Cross and Red Crescent Societies, in 1963.

B. The Four Original Geneva Conventions and Two Additional Protocols are the pre-eminent contemporary humanitarian laws of war. As the result of the general acceptance of these Conventions that are the constitutive documents for the International Committee on the Red Cross , the ICRC has been awarded the Nobel Peace Prize four times. To mark their personnel they must wear white armbands with a red cross or red crescent. The Four original Geneva Conventions of 12 August 1949 are;

1. Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field. Geneva, 12 August 1949. That provides no special agreement shall adversely affect the situation of wounded, sick and shipwrecked persons, of members of the medical personnel or of chaplains, nor restrict the rights which it confers upon them nor may they renounce in part or in entirety the rights secured to them. There shall be no obstacle to the provision of relief by the ICRC or other impartial organization or their vessels for whom protection shall be provided. Any attempts upon their lives, or violence to their persons, shall be strictly prohibited; in particular, they shall not be murdered or exterminated, subjected to torture or to biological experiments; they shall not willfully be left without medical assistance and care, nor shall conditions exposing them to contagion or infection be created. If wounded, sick or shipwrecked persons are taken on board a neutral warship or a neutral military aircraft, it shall be ensured, where so required by international law, that they can take no further part in operations of war.

2. Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea. Geneva, 12 August 1949. Whereby, Military hospital ships, with a view to assisting the wounded, sick and shipwrecked, to treating them and to transporting them, may in no circumstances be attacked or captured, but shal1 at all times be respected and protected, on condition that their names and descriptions have been notified to the Parties to the conflict ten days before those ships are employed. Hospital ships utilized by National Red Cross Societies, by officially recognized relief societies or by private persons shall have the same protection as military hospital ships and shall be exempt from capture. Should fighting occur on board a

warship, the sick-bays shall be respected and spared as far as possible. Merchant vessels which have been transformed into hospital ships cannot be put to any other use throughout the duration of hostilities.

3. Convention (III) relating to the Treatment of Prisoners of War Geneva Convention Geneva, 12 August 1949. In cases of disagreement regarding prisoners of war the parties shall invite the ICRC to meetings. Prisoners of war shall be humanely treated. Medical personnell and chaplains shall be authorized to periodically visit prisoners of war and ask questions regarding the treatment at the camp. Should supplies not arrive the ICRC may supply the camp. The wounded and sick shall be repatriated immediately. All prisoners of war shall be released and repatriated after the cessation of hostilities. Deaths certificates shall be provided. The ICRC shall be respected and have permission to visit and distribute relief supplies.

4. Convention (IV) for the Protection of Civilians, Geneva, 12 August 1949. In conflicts not of an international character the Protecting Powers and ICRC are invited to lend their good offices for the facilitation of hospitals and safety zones and localities so organized as to protect from the effects of war, wounded, sick and aged persons, children under fifteen, expectant mothers and mothers of children under seven. Parties to the conflict and humanitarian organizations may propose neutralized for the care of the sick and wounded and civilians not taking part in hostilities. Relief consignment and the support of the ICRC shall be permitted by the Occupying Power and immune from any tax or tariff. Internees shall be treated humanely with consideration for the educational, cultural and social well being. Hospital and safety zones shall be away from military objectives and shall not be defended by military means.

5. Common Art. 3 of the all four of the original Geneva Conventions, state, Persons taking no active part in the hostilities, including members of armed forces who have laid down their arms and those placed hors de combat by sickness, wounds, detention, or any other cause, shall in all circumstances be treated humanely, without any adverse distinction founded on race, color, religion or faith, sex, birth or wealth, or any other similar criteria. To this end, prohibiting; (a) Violence to life and person, in particular murder of all kinds, mutilation, cruel treatment and torture; (b) Taking of hostages; (c) Outrages upon personal dignity, in particular humiliating and degrading treatment; (d) The passing of sentences and the carrying out of executions without previous judgment pronounced by a regularly constituted court, affording all the judicial guarantees which are recognized as indispensable by civilized peoples.

6. The Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) of 8 June 1977; reinforced the basic principles. The protection to which civilian medical units are entitled shall not cease unless they are used to commit, outside their humanitarian function, acts harmful to the enemy. Protection may, however, cease only after a warning has been given. The occupying power has the responsibility to care for the medical needs of the civilian population. Civilian medical personnel and their vehicles and facilities shall be respected and protected. The wounded and sick, even of the enemy, shall be respected

and the ICRC may be called to collect them. Missing people may be reported to the ICRC. Non defended localities and the civilian population shall not be attacked and relief operations shall be permitted.

7. Art. 4 of the Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), Geneva, 8 June 1977. All the wounded, sick and shipwrecked, whether or not they have taken part in the armed conflict, shall be respected and protected. In all circumstances they shall be treated humanely and shall receive, to the fullest extent practicable and with the least possible delay, the medical care and attention required by their condition. There shall be no distinction among them founded on any grounds other than medical ones. Medical and religious personnel shall be respected and protected and shall be granted all available help for the performance of their duties. They shall not be compelled to carry out tasks which are not compatible with their humanitarian mission. Under no circumstances shall any person be punished for having carried out medical activities compatible with medical ethics, regardless of the person benefiting therefrom.

8. Protocol (III) Additional to the Geneva Conventions relating to the Adoption of a New Distinctive Emblem of 8 December 2005 is unnecessary and unjustified without making reference to the Geneva Protocol of 1925 for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases, and of Bacteriological Methods of Warfare, in Art. 6 of Protocol (III) pertaining to the Prevention and Repression of Misuse.

§338 American Medical Associations

A. The American Medical Association (AMA) was founded in 1847 upon the Code of Medical Ethics that is now updated by the Council on Ethical and Judicial Affairs. The policy of the AMA is to promote the science and art of medicine and the betterment of public health. Their primary method of disseminating health information is through the Journal of the American Medical Association (JAMA). Governance of the Organization is done by the House of Delegates (HoD) who codifies policy in the Constitution, Governance Policies, Health Policies and Directives. The House of Delegates elects all officers, Trustees and members of the four councils who are nominated by the Board of Trustees. Since 1966 the AMA has published the Current Procedural Terminology (CPT) Code that is used to report medical procedures for reimbursement. The licensing of physicians is regulated by the State Medical Licensing Boards who charge licensing fees and administrate Continuing Medical Education (CME). They and local medical organizations are considered constituent societies of the American Medical Association (AMA) in Articles III and IV of the Constitution of the AMA. An attending veterinarian means a person who has graduated from a veterinary school accredited by the American Veterinary Medical Association's Council on Education, and has received training and/or experience in the care and management of the species being attended in accordance with the Principles of Veterinary Medical Ethics of the American Veterinary Medical Association (AVMA) (Approved by the Executive Board July 1999; revised November 2003) in citation of the Golden Rule.

1. Founded in 1898, the mission of the American Hospital Association (AHA) is to advance the health of individuals and communities. The AHA leads, represents and serves hospitals, health systems and other related organizations that are accountable to the community and committed to health improvement. Founded in 1951 the Joint Commission on Accreditation of Healthcare Organizations (JACO) evaluates and accredits more than 15,000 health care organizations and programs in the United States. An independent, not-for-profit organization, the Joint Commission is the nation's predominant standards-setting and accrediting body in health care. Since 1951, the Joint Commission has maintained state-of-the-art standards that focus on improving the quality and safety of care provided by health care organizations. The Joint Commission's comprehensive accreditation process evaluates an organization's compliance with these standards and other accreditation requirements.

B. In the Senate there is a Committee on Health, Education, Labor and Pensions (HELP) that is led by a Committee on Labor and Human Resources for all proposed legislation, messages, petitions, memorials, and other matters relating to the following subjects: 1. Measures relating to education, labor, health, and public welfare. 2. Aging. 3. Agricultural colleges. 4. Arts and humanities. 5. Biomedical research and development. 6. Child labor. 7. Convict labor and the entry of goods made by convicts into interstate commerce. 8. Domestic activities of the American National Red Cross. 9. Equal employment opportunity. 10. Gallaudet College, Howard University, and Saint Elizabeths Hospital. 11. Handicapped individuals. 12. Labor standards and labor statistics. 13. Mediation and arbitration of labor disputes. 14. Occupational safety and health, including the welfare of miners. 15. Private pension plans. 16. Public health. 17. Railway labor and retirement. 18. Regulation of foreign laborers. 19. Student loans. 20 Wages and hours of labor.

1. In Congress there is a Subcommittee on Health in the House Committee on Energy and Commerce and in the Ways and Means Committee that is responsible for the social security related aspects of health. For 208 years, the Committee on Energy and Commerce, the oldest legislative standing committee in the U.S. House of Representatives, has served as the principal guide for the House in matters relating to the promotion of commerce and to the public’s health and marketplace interests. The Committee’s initial achievements involved overseeing the Federal health service for sick and disabled seaman developed, eventually, into the Public Health Service and National Institutes of Health. The Committee’s historic legislative jurisdiction over health, safety, and commerce as it pertains to contemporary health care generally can be traced to the Food, Drug and Cosmetic Act. The Health Subcommittee is responsible for: 1. Public health and quarantine; 2. hospital construction; 3. mental health; 4. biomedical programs and health protection in general, 5. Medicaid and national health insurance; 6. Food, drugs and drug abuse.

2. Since the first Earth Day on April 22, 1970 the Environmental Protection Agency (EPA) has been working for a cleaner, healthier environment for the American people. EPA employs 17,000 people across the country, including our headquarters offices in Washington, DC, 10 regional offices, and more than a dozen labs. The mission of the

EPA is to protect human health and the environment. The EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. EPA is responsible for researching and setting national standards for a variety of environmental programs.

C. The regulation of the medical profession is primarily conducted through the services of State Medical License Boards. To satisfy the public demand for protection from increasingly sophisticated fraudulent practitioners many states have expanded what is considered to be the practice of medicine to address new trends in the medical field that need to be regulated by medical boards. For example, a number of states have passed legislation in recent years that empower medical boards to have jurisdiction over the practice of medicine across state boundaries or treatment decisions made by medical directors of managed care organizations. Health professionals other than physicians (e.g. dentist, psychologist, optometrist, podiatrist, nurse, veterinarians etc) are referred to the appropriate professional association. Although licensure requirements for domestic and international medical graduates differ somewhat among states, all states will require proof of prior education and training and proof of the completion of a rigorous licensure examination approved by the board. Specifically, all physicians must submit proof of successful completion of all three steps of the United States Medical Licensing Examination (USMLE).

D. The Coroner is a democratically elected official in most counties in the USA and is regulated by the State. The County Coroner is the only health professional elected on the public ballot in the USA. 1. The coroner investigates the circumstances surrounding every unnatural death occurring in the county as a judicial officer. 2. Some natural deaths also come under the coroner's jurisdiction when requested to investigate by next of kin. The coroner examines the evidence related to the death to discover the cause, usually by conducting an autopsy of the body. 3. Bodies delivered to medical campuses and hospitals with marks of violence are to be reported to the Coroner. 4. The coroner or deputy coroner may issue subpoenas for such witnesses as are necessary, administer to such witnesses the usual oath, and proceed to inquire how the deceased came to his death, whether by violence to self or from any other persons, by whom, whether as principals or accessories before or after the fact, and all circumstances relating thereto. 5. Coroner’s offices conducts ballistic tests of firearms. 6. The Coroner’s office conducts the forensic laboratory work for the County relating to drugs, firearms, toxicology and histology.

1. The National Association of Medical Examiners (NAME) is the national professional organization of physician medical examiners, medical death investigators and death investigation system administrators who perform the official duties of the medicolegal investigation of deaths of public interest in the United States. NAME was founded in 1966 with the dual purposes of fostering the professional growth of physician death investigators and disseminating the professional and technical information vital to the continuing improvement of the medical investigation of violent, suspicious and unusual deaths. Growing from a small nucleus of concerned physicians, NAME has expanded its scope to include physician medical examiners and coroners, medical death investigators

and medico-legal system administrators from throughout the United States and other countries.

Art. 6 Health Sector

§339 Health Care

A. The Bureau of Labor Statistics reported that the health care industry is the largest industry in 2006, health care provided 14.4 million jobs—13.6 million jobs for wage and salary workers and about 438,000 jobs for the self-employed. However instead of job growth there has been a decline in the number of health professionals to 12.2 million in 2014. There has been a reduction in the number of health professionals from a high of 14.4 million in 2006 to 12.2 million in 2014. A 15.3% reduction in benefits was offset by a 15.9% growth in enrollment in 2014. Health, United States 2015 confirms a reduction in registered nurse wages, and in the total number of licensed and vocational nurses and nurse aides. There was also significant reductions in radiological technicians and technologists, psychiatric aids, and psychiatric technicians. The trend for the past decade is that the number of trained and licensed health care professionals steadily increases, except during 2014, while overall health sector employment, and number of hospitals, has been going down.

Health Care Professionals 2000-14 Wages 2013-14

	2000	2012	2013	2013 Hr. Wage	2014	2014 Hr. Wage
Doctors of Medicine	813,770	1,026,788	1,045,910			
Active Doctors of Medicine	692,368	826,001	854,698			
Active Dentists	166,383	193,300 (2011)	191,345			
Audiologists	11,530	12,060	11,550	$35.75	12,250	$36.92
Cardiovascular Technicians	40,080	50,530	51,010	$25.95	51,080	$26.54
Dental Hygienists	148,460	190,290	192,330	$34.39	196,520	$34.60
Diagnostic Medical Sonograph	31,760	57,700	58,250	$32.29	59,760	$32.88

ers						
Dietetic Technicians	28,010	24,660	26,420	$13.74	28,690	$13.75
Dietitians and Nutritionists	43,030	58,240	59,530	$27.07	59,490	$27.62
Emergency Medical Technicians and Paramedics	165,530	232,860	237,660	$16.53	235,760	$16.88
Licensed Practical and Vocational Nurses	679,470	718,800	705,200	$20.63	695,610	$20.87
Magnetic Resonance Imaging Technologists		29,560	32,000	$31.71	33,130	$32.36
Medical and Clinical Laboratory Technicians	144,530	157,920	157,080	$19.35	160,460	$19.59
Medical and Clinical Laboratory Technologists	143,870	182,370	180,760	$28.59	161,710	$29.12
Medical Records and Health Information Technologists	143,870	160,700	162,630	$17.68	184,740	$18.68

Nuclear Medicine Technologists	18,030	20,480	20,020	$34.60	20,320	$35.21
Nurse Anesthetists		34,180	35,430	$75.81	36,590	$76.40
Nurse Midwives		5,710	5,460	$44.34	5,110	$46.97
Nurse Practitioners		105,780	113,370	$45.71	122,050	$47.11
Occupational Therapists	77,080	105,540	108,410	$37.45	110,510	$38.46
Opticians	66,580	64,930	68,390	$17.17	73,110	$17.43
Pharmacists	212,260	281,560	287,420	$56.01	290,780	$56.96
Pharmacy Technicians	190,940	353,340	362,690	$14.83	368,760	$14.95
Physical Therapists	120,410	191,460	195,670	$39.51	200,670	$40.35
Physician Assistants	55,490	83,640	88,110	$45.36	91,670	$46.77
Psychiatric Technicians	53,350	67,760	66,760	$16.09	64,540	$16.91
Radiation Therapists	13,100	18,230	16,950	$39.30	16,380	$40.25
Radiologic Technologists	172,080	194,790	194,000	$27.29	193,400	$27.65
Recreational Therapists	26,940	19,180	18,640	$21.88	17,950	$22.14
Registered Nurses	2,189,670	2,633,980	2,661,890	$33.13	2,687,310	$32.56
Respiratory	82,670	116,930	118,640	$27.83	119,410	$28.12

Therapists						
Respiratory Therapy Technicians	28,230	13,460	12,070	$23.01	10,610	$23.46
Speech Language Pathologists	82,850	121,690	125,050	$35.56	126,500	$36.01
Healthcare Support Occupations						
Dental Assistants	250,870	300,160	309,540	$17.13	314,330	$17.43
Home Health Aids	561,120	839,930	806,710	$10.60	799.080	$10.77
Massage Therapists	24,620	71,040	79,040	$19.42	87,670	$20.09
Medical Assistants	330,830	553.140	571,690	$14.80	584,970	$15.01
Medical Equipment Preparers	32,760	50,230	51,300	$16.02	50,550	$16.28
Medical Transcriptionists	97,330	74,810	68,350	$16.95	61,210	$17.11
Nursing Assistants	1,273,460	1,420,020	1,427,830	$12.51	1,427,740	$12.62
Occupational Therapy Aids	8,890	7,950	8,710	$13.90	8,570	$13.96
Occupational Therapy Assistants	15,910	29,500	30,450	$26.56	32,230	$27.53
Pharmacy Aids	59,890	42,600	42,250	$11.78	41,240	$12.28
Physical Therapist	34,620	48,700	48,630	$12.50	48,730	$12.82

Aids						
Physical Therapist Assistants	44,120	69,810	72,640	$25.63	76,910	$26.12
Psychiatric Aides	57,680	77,880	75,340	$12.98	72,860	$13.67
Total	8,620,671	9,341,514	11,011,913		10,314,873	-6.3%

Source: Tables 93 , 95 & 96 2001-2013 Health United States, 2014; Tables 84, 86 & 87 2000-2014 Health, United States, 2015, Totals written by hand from Microsoft Word web layout sum function; BLS estimates -15.3% fewer FTEs '13-14

1. Physicians are one of the highest paid professions. They range in salary from $350,000 for cardiologists, $320,000 for anesthesiologists, $280,000 for general surgery. $247,000 for Obstetrics and Gynecology, $180,000 for psychiatry, $166,000 for internal medicine, $161,000 for pediatrics to $156,000 for family practice. Registered nurses constitute the largest health care occupation, with 2.5 million jobs. About 59% of jobs are in hospitals. In 2006 there were an estimated 633,000 physicians and surgeons. In 2012, there were 26.9 physicians in patient care per 10,000 population in the United States. The number of patient care physicians per 10,000 population ranged from 18.0 in Idaho and Mississippi to 41.3 in Massachusetts and 65.9 in the District of Columbia.

B. Between 1993 and 2003, the population of the United States grew by 12 percent and hospital admissions increased by 14 percent, yet emergency department visits rose by more than 25 percent during this same period of time, from 90,300,000 visits in 1993 to 113,900,000 visits in 2003. The demand for emergency care in the United States continues to grow at a rapid pace. In 2003, hospital emergency departments received nearly 114,000,000 visits, which is more than 1 visit for every 3 people in the United States. However, between 1993 and 2003, the number of emergency departments declined by 425. According to the American Hospital Association there were a total of 5,708 hospitals in the United States in 2007. 4,897 were community hospitals, 2,913 were nongovernment not for profit hospitals,873 were investor owned for profit hospitals, 1,111 were state or local government owned community hospitals, 213 were federal government hospitals, 444 were nonfederal psychiatric hospitals, 136 were nonfederal long term care hospitals, and there 18 hospitals units of institutions such as prison hospitals and college infirmaries. Of the community hospitals 1,997 were rural, 2,900 were urban, 2,730 were in a system and 1,472 were in a network. In 2007 there were a total of 945,199 hospital beds, of which 800,892 were staffed beds in community hospitals. There were a total of 37,120,387 hospital admissions, 35,345,986 to community hospitals and a total of 34,667,000 discharges. The average length of an inpatient stay has gone down from 7.2 days in 1987 to 5.5 days in 2007. The number of outpatient surgeries has increased from 9.1 million in 1987 to 17.2 million in 2007. The total expenses of all hospitals were $641 billion, $588 billion for community hospitals.

1. Hospitals can be found in nearly every community in the developed world. The construction of large hospitals was however not undertaken until university medical

programs had established a system for the accreditation and communalization of physicians beginning in the 1500's. Previously the sick were cared for in smaller hospices and by physicians who regularly made house calls. The university education facilitated the levy of the large sums of money from the government and wealthy patrons needed for construction and operation of hospitals and for the care of the poor. St. Bartholomew's Hospital in London reported that in 1723 4,163 patients were treated and 3,381 were discharged, cured. In the USA Hospital construction was federally funded under the 1946 Hill-Burton Hospital Survey and Construction Act, P.L. 79-725, and subsequently over $4 billion has been administrated. Health corporations are however primarily reliant upon private loans to pay for the construction of hospitals. The burden of proof is that there is an unmet demand for hospital care in the geographic region and that qualified staff can be employed. With 3.1 hospital beds per 1,000 people the United States has the fewest beds per 1,000 among the world's 30 largest economies, except for Mexico, where there are 1.7 beds per 1,000.

C. The U.S. spends more on health care as a share of the economy — nearly twice as much as the average OECD country — yet has the lowest life expectancy and highest suicide rates among the 11 nations. The U.S. has the highest chronic disease burden and an obesity rate that is two times higher than the OECD average. Americans had fewer physician visits than peers in most countries, which may be related to a low supply of physicians in the U.S. Americans use some expensive technologies, such as MRIs, and specialized procedures, such as hip replacements, more often than our peers. The U.S. outperforms its peers in terms of preventive measures — it has the one of the highest rates of breast cancer screening among women ages 50 to 69 and the second-highest rate (after the U.K.) of flu vaccinations among people age 65 and older. In summary, compared to other industrialized nations, the U.S. has among the highest number of hospitalizations from preventable causes and the highest rate of avoidable deaths.

1. In Sierra Leone, before the Ebola virus epidemic, 30%–50% of staff did not receive a government wage and instead relied on charging illegal fees or inflated drug prices and accepting in-kind contributions from the communities they served. By late December 2014, training had reached 98%. In addition to removing cost barriers and severe resource constraints, as part of the free health care initiative, the GoSL saw a need to strengthen incentives for frontline health care workers. Without incentives tied to service delivery, the government worried that nurses would miss work or continue to charge illegal fees or inflated drug prices—barriers to service provision that the free health care initiative intended to eliminate. Key performance indicators, kept secret to avoid dereliction of other important services, included measures of utilization for antenatal care, childbirth, and vaccinations, as well as users' experiences, including absenteeism, staff attitude, and charging fees for free services. The United States needs to study removing barriers to free health care.

§339a Medical Education

A. The Association of American Medical Colleges (AAMC) accredits university medical programs and organizes their political union. Medical Education has been prioritized by

many Congresses and there are a large number health scholarships and research grants listed in the Catalog of Federal Domestic Assistance. The American Board of Medical Specialties (ABMS) oversees board certification for medical doctors (MD). For more than 70 years, ABMS' mission has been to maintain and improve the quality of medical care by assisting its Member Boards in developing and implementing educational and professional standards to evaluate and certify physician specialists. ABMS is composed of 24 primary medical specialty boards. To be a licensed practical nurse at least 1 to 2 years of study in a community college are required. To be a registered nurse (RN) three to four years studying at a college of nursing are required. Nurse board certification exams are overseen by the American Nurses Credentialing Center and American Nurses Association (ANA). Nurses are encouraged to continue their eduction to earn higher wages as registered nurses and registered nurses, demoralized by the average wage decrease should study to be a nurse practitioner.

Health Academic Population 1980-2014

1st Year Enrollees	1980-81	1990-91	2000-01	2010-11	2011-12	2012-13	2013-14
Dentistry	6,030	4,001	4,327	5,170	5,493	5,697	5,904
Medicine (Allopathic)	17,186	18,876	18,699	19,082	19,947	20,279	20,803
Medicine (Osteopathic)	1,496	1,950	2,927	5,428	5,788	5,986	6,636
Nursing	80,000	84,000	88,000	91,895	98,000	103,000	114,376
Optometry	1,174	1,245	1,384	1,661	1,674	1,760	1,818
Pharmacy	7,377	8,267	8,382	13,077	13,464	14,011	14,008
Podiatry	695	561	475	671	672	687	671
Public Health	3,348	4,087	5,840	11,205	11,345	11,588	13,766
Total 1st Year Enrollees	117,306	122,987	130,034	148,189	156,383	163,008	177,982
Graduates							
Dentistry	5,256	5,550	3,995	4,996	5,042	5,199	5,491
Medicine (Allopathic)	15,632	15,427	15,796	17,363	17,341	18,157	18,078

Medicine (Osteopathic)	1,151	1,534	2,510	4,158	4,458	4,806	4,997
Nursing		144,460	290,224	212,190 (2008)	143,809	143,809	148,692
Optometry	1,092	1,224	1,310	1,308	1,383	1,545	1,541
Pharmacy	7,323	7,122	7,000	11,931	12,719	13,207	13,838
Podiatry	597	591	531	543	537	572	564
Public Health	3,168	3,995	5,747	9,717	9,959	10,477	11,932
Total Graduates	174,219	179,903	327,113	262,206	195,248	197,772	205,133
Schools							
Dentistry	60	56	55	58	61	62	65
Medicine (Allopathic)	125	125	124	135	138	141	141
Medicine (Osteopathic)	14	15	19	32	34	34	40
Nursing	1,377	1,412	1,434	1,660	1,812	1,850	1,869
Optometry	18	17	17	20	20	21	21
Pharmacy	72	74	82	123	129	130	133
Podiatry	5	7	7	9	9	9	9
Public Health	21	24	25	48	49	50	91
Total Accredited Schools and Public Health Programs	1,692	1,730	1,763	2,085	2,252	2,297	2,369

Source: Table 97 Health, United States, 2014, National League for Nursing 2000 $70 enrollment and graduation confirmation. American Nurses Association. Enrollment in Nursing School 1980-2000 and 2011-2013 are crudely estimated high graduation rates in

2000 and 2010 are unexplained. In apology for the fraudulently low public health estimate accredited public health "programs" were accounted for as schools for the first time in 2014.

1. In 2006 an estimated total of 51,380 masters and doctoral degrees were granted in the health professions and related clinical sciences. The US National Center for Health Statistics reports that in 1994, the last for which comprehensive statistics were provided, as of 2006, there were a total of 1,501 schools issuing health care degrees. 125 medical schools, 16 schools of osteopathy, more or less than 1,185 nursing schools offering various nursing degrees from baccalaureate to associate to diploma to licensed practical nursing, 54 schools of dentistry, 17 schools of optometry, and 75 schools of pharmacy. There were a total of 270,228 professional health students in 1994. There were 63,800 allopathic medical students, 17,121 in their first year, and 15,555 graduates with an MD. There were 7,822 students of natural remedy oriented osteopathy, 2,162 in their first year and 1,752 graduates with a DO. There were 110,693 nursing students studying for their baccalaureate, 42,953 in their first year and 94,870 graduates. There were 137,300 studying for an associates in nursing, 77,343 in their first year and 58,839 graduates. There were 22,235 nursing students studying for their diploma, 9,601 in their first year and 7,119 graduating. There were 61,007 nursing students studying to be a licensed practical nurse, 60,632 in their first year and 45,083 graduating. There were 16,250 dental students, 4,100 in their first year and 3,875 graduating. There were 5,201 optometry students, 1,351 in their first year and 1,125 graduating. There were 27,143 pharmacy students, 8,970 in their first year and 7,504 graduating.

B. Formal education and training requirements for physicians are among the most demanding of any occupation—4 years of undergraduate school, 4 years of medical school, and 3 to 8 years of internship and residency, depending on the specialty selected. Premedical students must complete undergraduate work in physics, biology, mathematics, English, and inorganic and organic chemistry. To be a board eligible Physician a medical doctor must pass the MCAT, graduate from medical school, choose a specialty for a three year residency and pass the medical board exam. Students spend most of the first 2 years of medical school in laboratories and classrooms, taking courses such as anatomy, biochemistry, physiology, pharmacology, psychology, microbiology, pathology, medical ethics, and laws governing medicine. They also learn to take medical histories, examine patients, and diagnose illnesses. During their last 2 years, students work with patients under the supervision of experienced physicians in hospitals and clinics, learning acute, chronic, preventive, and rehabilitative care. Through rotations in internal medicine, family practice, obstetrics and gynecology, pediatrics, psychiatry, and surgery, they gain experience in the diagnosis and treatment of illness. Following medical school, almost all M.D.s enter a residency—graduate medical education in a specialty that takes the form of paid on-the-job training, usually in a hospital. Doctors then continue the supervised study of medicine with Continuing Medical Education (CME) courses.

1. US medical schools came to be widely regarded as the finest in the world as early as the 1930s and have kept their enviable reputation with the help of generous NIH research

support. The average debt of graduating MDs is now over $150,000, as debt loads have increased, the percentage of medical students from the lowest income quintile has declined, although even in its best times, it never exceeded 5.5 percent. In contrast 55 percent of medical students in 2005 came from families with incomes in the highest quintile. The ranks of medical students have grown more slowly due to rising costs - $150,000 - only partially offset by National Institutes of Health (NIH) funding. In the 1950s and 60s almost the entire graduating class at leading schools consisted of white males. Today, up to half of all medical students are women, as are at least 40 percent of the students in law and more than one-third in business. Whereas only 2.4 percent of graduating medical students were African-American in 1971-72, 6.9 percent received MD degrees in 2007-8. Today some 140 medical schools in the United States award a total of about 15,000 MD degrees each year. Students applying to medical school shave long had to take an entrance exam, the Medical College Admissions Test (MCAT). They accept fewer than half the students who apply.

2. There are five major problems with medical education and training. The first are the extended hours residents are forced to work to the detriment of their and their patient's health, safety and happiness. In recent years, in most States, work requirements of medical residents have been reduced to less than 60 hours a week, averaged over the course of the month, however under the Trump administration this occupational safety rules were overturned. Studies show that working long and irregular hours greatly increases the risk of getting into a car accident on the way to and from work, greatly increases the risk of that the worker will become ill and unable to work at all, greatly increases the chance the medical resident will make a medical error or suffer an accident that will injure or inconvenience a patient and for the most part is detrimental to the pursuit of health and happiness for everyone concerned. The second is conflict of interest between academic medical professors and researchers and corporate and industrial clients. The third is that psychiatry needs to be abolished as a form of slavery whose dangerous drugs are evidence that they subvert the medical establishment. The fourth, is that academic research on medical campuses often leaks toxic chemicals, often poisons used in animal toxicology studies, on the public, and this is extraordinarily sickening and life-threatening to the local population and corrupting to the student, education system and (international) community, at large. The fifth is failure to instruct doctors in the use of the safest and most cost effective generic prescription drugs or medicinal herbs for common diseases.

§340 Medical Ethics

A. The Hippocratic Oath is the foundation of medical ethics; it is sworn by most medical students upon their graduation from medical school. The Hippocratic Oath states: 1. I swear by Apollo the Physician and by Asclepius and Hygienia and Panacea and all the gods as well as goddesses, making them my witnesses. a. I will fulfill according to my ability and judgment this oath and covenant. b. I will regard who has taught me this technique as equal to my parents. c. I will share, in partnership, my livelihood and give a share when there is need. d. I will regard the children of others as equal to my siblings and to teach them this art should they desire to learn it, without fee and written covenant.

e. I will give a share both of rules and of lectures, and of all the rest of learning, to my children and the children of my teacher and to the pupils who have both made a written contract and taken an oath according to the medical law, but no one else. 2. I will use remedies for the benefit of the ill in accordance with my ability and my judgment and keep them from harm and injustice. 3. I will not give a drug that is deadly to anyone if asked for it. a. Nor will I suggest the way to such a counsel. b. Likewise I will not give a woman an abortive remedy. c. And in a pure and holy way I will guard my life and teaching. 4. I will not use the knife, not even on sufferers from stone, but I will cede to those who are practitioners of this activity. 5. Whatever houses I may visit, I will go for the benefit of the ill, remaining free of all intentional injustice, mischief and sexual acts upon the free and the slaves. 6. Whatever I may see or hear in treatment, or even without treatment, in the life of human beings – shall not be used to harm a person -- I will keep to myself, holding such knowledge a secret. a. If I fulfill this oath and do not violate it, may it be granted to me to enjoy life and art, being honored with fame for all time. b. However if I transgress and perjure myself, may the opposite be my lot.

1. The International Code of Medical Ethics was adopted by the 3rd General Assembly of the World Medical Association, London, England, October 1949 and amended by the 22nd World Medical Assembly Sydney, Australia, August 1968 and the 35th World Medical Assembly Venice, Italy, October 1983 and the WMA General Assembly, Pilanesberg, South Africa, October 2006. It provides: 1. Duties of Physicians in General a. A physician shall always exercise his/her independent professional judgment and maintain the highest standards of professional conduct. b. A physician shall respect a patient's right to accept or refuse treatment. c. A physician shall not allow his/her judgment to be influenced by personal profit or unfair discrimination. d. A physician shall be dedicated to the providing the competent medical service in full professional and moral independence, with compassion and respect for human dignity. e. A physician shall deal honestly with patients and colleagues, and report to the appropriate authorities those physicians who practice unethically or incompetently or who engage in fraud or deception. f. A physician shall no receive any financial benefits or other incentives solely for referring patients or prescribing specific products. g. A physician shall respect the rights and preferences of patients, colleagues, and other health professionals. h. A physician shall recognize his/her important role in educating the public but should use due caution in divulging discoveries or new techniques or treatment through non-professional channels. i. A physician shall certify only that which he/she has personally verified. j. A physician shall strive to use health care resources in the best way to benefit patients and their community. k. A physician shall seek appropriate care and attention if he/she suffers from mental or physical illness. l. A physician shall respect the local and national codes of ethics. 2. Duties of Physician to Patients. a. A physician shall always bear in mind the obligation to respect human life. b. A physician shall act in the patient's best interest when providing medical care. c. A physician shall owe his/her patients complete loyalty and all the scientific resources available to him/her. Whenever an examination or treatment is beyond the physicians's capacity, he/she should consult with or refer to another physician who has the necessary ability. d. A physician shall respect a patient's right to confidentiality. It is ethical to disclose confidential information when the patient consents to it or when there is a real and imminent threat of harm to the patient

or to others and this threat can be only removed by a breech of confidentiality. e. A physician shall give emergency care as a humanitarian duty unless he/she is assured that others are willing and able to give such care. f. A physician shall in situations when he/she is acting for a third party, ensure that the patient has full knowledge of that situation. g. A physician shall not enter into a sexual relationship with his/her current patient or into any other abusive or exploitative relationship. 3. Duties of Physicians to Colleagues. a. A physician shall behave towards colleagues as he/she would have them behave towards him/her. b. A physician shall not undermine the patient-physician relationship of colleagues in order to attract patients. c. A physician shall when medically necessary, communicate with colleagues who are involved in the care of the same patient. This communication should respect patient confidentiality and be confined to necessary information.

2. The Declaration of Geneva was adopted by the 2nd General Assembly of the World Medical Association, Geneva, Switzerland, September 1948and amended by the 22nd World Medical Assembly, Sydney, Australia, August 1968 and the 35th World Medical Assembly, Venice, Italy, October 1983 and the 46th WMA General Assembly, Stockholm, Sweden, September 1994 and editorially revised at the 170th Council Session, Divonne-les-Bains, France, May 2005 and the 173rd Council Session, Divonne-les-Bains, France, May 2006. It states; At the time of being admitted as a member of the medical profession: a. I solemnly pledge to consecrate my life to the service of humanity; b. I will give to my teachers the respect and gratitude that is their due; c. I will practice my profession with conscience and dignity; d. The health of my patient will be my first consideration; e. I will respect the secrets that are confided in me, even after the patient has died; f. I will maintain by all means in my power, the honor and the noble traditions of the medical profession; g. My colleagues will be my sisters and borthers; h. I will not permit considerations of age, disease or disability, creed, ethnic origin, gender, nationality, political affiliation, race, sexual orientation, social standing or any other factor to intervene between my duty and my patient; i. I will maintain the utmost respect for human life. j. I will not use my medical knowledge to violate human rights and civil liberties, even under threat; k. I make these promises solemnly, freely, and upon my honor.

3. The AMA Code of Medical Ethics states: The medical profession has long subscribed to a body of ethical statements developed primarily for the benefit of the patient. As a member of this profession, a physician must recognize responsibility to patients first and foremost, as well as to society, to other health professionals, and to self. The following Principles adopted by the American Medical Association are not laws, but standards of conduct which define the essentials of honorable behavior for the physician. I. A physician shall be dedicated to providing competent medical care, with compassion and respect for human dignity and rights. II. A physician shall uphold the standards of professionalism, be honest in all professional interactions, and strive to report physicians deficient in character or competence, or engaging in fraud or deception, to appropriate entities. III. A physician shall respect the law and also recognize a responsibility to seek changes in those requirements which are contrary to the best interests of the patient. IV. A physician shall respect the rights of patients, colleagues, and other health professionals,

and shall safeguard patient confidences and privacy within the constraints of the law. V. A physician shall continue to study, apply, and advance scientific knowledge, maintain a commitment to medical education, make relevant information available to patients, colleagues, and the public, obtain consultation, and use the talents of other health professionals when indicated. VI. A physician shall, in the provision of appropriate patient care, except in emergencies, be free to choose whom to serve, with whom to associate, and the environment in which to provide medical care. VII. A physician shall recognize a responsibility to participate in activities contributing to the improvement of the community and the betterment of public health. VIII. A physician shall, while caring for a patient, regard responsibility to the patient as paramount. IX. A physician shall support access to medical care for all people.

B. The Patients' Bill of Rights and Responsibilities has three goals: (a) to strengthen consumer confidence that the health care system is fair and responsive to consumer needs; (b) to reaffirm the importance of a strong relationship between patients and their health care providers; and (c) to reaffirm the critical role consumers play in safeguarding their own health. The Commission articulated seven sentences of rights and three of responsibilities: 1. Right to Information. Patients have the right to receive accurate, easily understood information to assist them in making informed decisions about their health plans, facilities and professionals so that they can make informed decisions about their treatment and be assured the highest level of healthcare. 2. Right to Choose. Patients have the right to a choice of health care providers that is sufficient to assure access to appropriate high-quality health care including giving women access to qualified specialists such as obstetrician-gynecologists and giving patients with serious medical conditions and chronic illnesses access to specialists. 3. Right to Access Emergency Services. Patients have the right to access emergency health services when and where the need arises. Health plans should provide payment when a patient presents himself/herself to any emergency department with acute symptoms of sufficient severity "including severe pain" that a "prudent layperson" could reasonably expect the absence of medical attention to result in placing that consumer's health in serious jeopardy, serious impairment to bodily functions, or serious dysfunction of any bodily organ or part. 4. Right to Be a Full Partner in Health Care Decisions**.** Patients have the right to fully participate in all decisions related to their health care. Consumers who are unable to fully participate in treatment decisions have the right to be represented by parents, guardians, family members, or other conservators. Additionally, provider contracts should not contain any so-called "gag clauses" that restrict health professionals' ability to discuss and advise patients on medically necessary treatment options. 5. Right to Care Without Discrimination. Patients have the right to considerate, respectful care from all members of the health care industry at all times and under all circumstances; patients must not be discriminated against in the marketing or enrollment or in the provision of health care services, consistent with the benefits covered in their policy and/or as required by law, based on race, ethnicity, national origin, religion, sex, age, current or anticipated mental or physical disability, sexual orientation, genetic information, or source of payment. 6. Right to Privacy. Patients have the right to communicate with health care providers in confidence and to have the confidentiality of their individually-identifiable health care

information protected patients also have the right to review and copy their own medical records and request amendments to their records. 7. Right to Social Security. Patients have the right to a fair and efficient process for resolving differences with their health plans, health care providers, and the institutions that serve them through the administration of social security. 8. The Duty to Take on New Responsibilities. In a health care system that affords patients rights and protections, patients must also take greater responsibility for maintaining good health; the Patient must thoroughly research their health condition and co-operate with their social health insurance provider to pay for their medical treatment. Families and Physicians must ensure that their children are immunized. 9. The Responsibility to Provide for Annual Checkups. It is a shared responsibility of the physicians and the patients to ensure that everybody has an annual medical and dental check-up to uphold the highest standards of preventative medicine. 10. The Responsibility of the Taxpayer. Those patients living at or below the poverty line may be written off by the family physician or health care provider as a tax deductible contributions of their time and money if otherwise not reimbursed by Medicare or private insurance; co-pays are negotiable and health care providers should earn enough through co-pays of the gainfully employed to waive the fee for people living significantly below the poverty line; Health care providers may claim credit for free goods and services for the poor in their annual or quarterly tax returns under 26USC§501(c) and are expected to uphold the same standards of record keeping and care as paying patients. The term "free clinic" means a health care facility operated by a nonprofit private entity meeting the following requirements: (i) The entity does not, in providing health services through the facility, accept reimbursement from any third-party payor (including reimbursement under any insurance policy or health plan, or under any Federal or State health benefits program). (ii) The entity, in providing health services through the facility, either does not impose charges on the individuals to whom the services are provided, or imposes a charge according to the ability of the individual involved to pay the charge. (iii) The entity is licensed or certified in accordance with applicable law regarding the provision of health services.

a. Health agencies must protect and promote the rights of each individual under its care, including each of the following rights set forth in Sec. 1891 of Title XVIII 42USC§1395bbb. 1. The right to be fully informed in advance about the care and treatment to be provided by the agency, to be fully informed in advance of any changes in the care or treatment to be provided by the agency that may affect the individual's well-being, and to participate in planning care and treatment or changes in care or treatment. 2. The right to voice grievances with respect to treatment or care that is furnished without discrimination or reprisal for voicing grievances. 3. The right to confidentiality of the clinical records. 4. The right to have one's property treated with respect. 5. The right to be fully informed orally and in writing (in advance of coming under the care of the agency, and in regards to all treatments).

C. The Hippocratic Oath varies somewhat according to the particular translation, but in any translation the content is clear: "I will give no deadly medicine to anyone if asked, nor suggest any such counsel; and in like manner I will not give to a woman a pessary to

produce abortion," or "I will neither give a deadly drug to anybody if asked for it, nor will I make a suggestion to this effect. Similarly, I will not give to a woman an abortive remedy." Contemporary medical ethics has however arrived at divergent opinions regarding both right to life issues. For moral reasons, the religious right is adamantly opposed to both abortion and euthanasia. Euthanasia and physician assisted suicide and any counsel to such effect are condemned except when it involves the termination of life support for a person who can reasonably be determined to never regain consciousness and is absolutely without any moral support for their continuing life support. Abortion on the other hand is considered the pregnant woman's right and so long as she aborts the child before it has developed to the stage where it might live on its own in the third trimester when the woman must justify that the abortion would save her life, is acceptable. Resistance to both suicide and abortion is however widespread as anathema to the purpose of life and reproduction even in the face of adversity. Although abortion has been satisfactorily justified to be legal throughout the 50 state euthanasia remains a prohibited and condemned practice the counsel for which is considered mean, subversive and detrimental to the mental health of terminally ill patients who need positive moral and medical support and care to live out their natural life, in most states, with the exception of Oregon and few others who have passed Death with Dignity Acts. Refraining from euthanasia and abortion is encouraged in the Hippocratic Oath to protect the "pure and holy way I will guard my life and teaching".

1. The Principles of Medical Ethics of the AMA do not prohibit a physician from performing an abortion in accordance with good medical practice and under circumstances that do not violate the law Opinion E-2.01 of the AMA Code of Ethics. World Health Report of 2005 – Make every Mother and Child Count reports 68,000 women die every year from unsafe abortions and counsels for the legalization of abortion to ensure their safety. At the time of the Persian Empire abortifacients were known and that criminal abortions were severely punished. We are also told, however, that abortion was practiced in Greek times as well as in the Roman Era, and that "it was resorted to without scruple." The Ephesian, Soranos, often described as the greatest of the ancient gynecologists, appears to have been generally opposed to Rome's prevailing free-abortion practices. He found it necessary to think first of the life of the mother, and he resorted to abortion when, upon this standard, he felt the procedure advisable. The constitutional principles regarding the right to an abortion are articulated by the Supreme Court in *Roe v. Wade* 410 US 113 (1973), and in keeping with the science and values of medicine, the AMA recommends that abortions not be performed in the third trimester except in cases of serious fetal anomalies incompatible with life H-5.982 Health and Ethics Policies of the AMA House of Delegates. Subsequently it was found to be important to protect professional organizations involved in the training and licensing of physicians who don't advocate or educate their pupils in abortion from discrimination under 42USC§238n. *Roe v. Wade* 410 US 113 (1973) established criteria for legal abortion based upon the development of the fetus as follows: 1. For the stage prior to approximately the end of the first trimester, the abortion decision and its effectuation must be left to the medical judgment of the pregnant woman's attending physician. 2. For the stage subsequent to approximately the end of the first trimester, the State, in promoting its interest in the health of the mother, may, if it chooses, regulate the abortion procedure in ways that are

reasonably related to maternal health. 3. For the stage subsequent to viability the State, in promoting its interest in the potentiality of human life, may, if it chooses, regulate, and even proscribe, abortion except where necessary, in appropriate medical judgment, for the preservation of the life or health of the mother.

2. Euthanasia is the administration of a lethal agent by another person to a patient for the purpose of relieving the patient's intolerable and incurable suffering. It is understandable, though tragic, that some patients in extreme duress--such as those suffering from a terminal, painful, debilitating illness--may come to decide that death is preferable to life. However, permitting physicians to engage in euthanasia would ultimately cause more harm than good. Euthanasia is fundamentally incompatible with the physician's role as healer, would be difficult or impossible to control, and would pose serious societal risks. The involvement of physicians in euthanasia heightens the significance of its ethical prohibition. The physician who performs euthanasia assumes unique responsibility for the act of ending the patient's life. Euthanasia could also readily be extended to incompetent patients and other vulnerable populations. Instead of engaging in euthanasia, physicians must aggressively respond to the needs of patients at the end of life. Patients should not be abandoned once it is determined that cure is impossible. Patients near the end of life must continue to receive emotional support, comfort care, adequate pain control, respect for patient autonomy, and good communication Opinion E-2.21 of the AMA Code of Ethics. The federal government is prohibited under 42USC§1395 from any sort of interference with the medical profession, the enforcement of medical ethics by the government is limited to the termination of financing. The Assisted Suicide Funding Restriction Act of 1997 finds that assisted suicide, euthanasia, and mercy killing have been criminal offenses throughout the United States and, under current law, it would be unlawful to provide services in support of such illegal activities wherefore some areas might begin funding such activities Congress makes provisions to prohibit the furnishing of assistance for these practices 42USC§14401.

D. Privacy is extremely important in the conduct of health matters because of the confidentiality of personally identifiable health information and Prohibition of interference with the medical profession 42USC§1395. There is no way to know what could happen if personally identifying health information on a person's physical or mental vulnerability to disease was known and the consequences of such information falling in to the wrong hands could be as severe as death. Basic biographical information regarding a person's name, address, social security number, and genealogy must be protected against random and unwise secondary transmission. To avoid government secrecy in private matters the policy of confidentiality is used whereby all releases of information regarding a patient are the option of that patient, who must consent to any release of information regarding their condition or their persona. Confidentiality and informed consent are therefore the policy in regards to personal health care matters and medical records.

1. The primary law protecting patient privacy is the Health Insurance Portability and Accountability Act of August 21, 1996 P.L. 104-191. The Act amended the Internal Revenue Code of 1986 to improve portability and continuity of health insurance coverage

in the group and individual markets, to combat waste, fraud, and abuse in health insurance and health care delivery, to promote the use of medical savings accounts, to improve access to long-term care services and coverage, to simplify the administration of health insurance, and for other purposes. In Sec. 1177 it provides for penalties for a person who knowingly and in violation of this part-- (1) uses or causes to be used a unique health identifier; (2) obtains individually identifiable health information relating to an individual; or (3) discloses individually identifiable health information to another person, shall be punished (1) with a fine of not more than $50,000, imprisoned not more than 1 year, or both; (2) if the offense is committed under false pretenses, be fined not more than $100,000, imprisoned not more than 5 years, or both; and (3) if the offense is committed with intent to sell, transfer, or use individually identifiable health information for commercial advantage, personal gain, or malicious harm, be fined not more than $250,000, imprisoned not more than 10 years, or both. The HHS Office of Civil Rights enforces the compliance of this law and receives reports from consumers.

2. The Patient Safety and Quality Improvement Act of 2005 (PSQIA) was published on November 21, 2008, and became effective on January 19, 2009 and is codified at 42 CFR Part 3. The PSQIA establishes a voluntary reporting system to enhance the data available to assess and resolve patient safety and health care quality issues. To encourage the reporting and analysis of medical errors, PSQIA provides Federal privilege and confidentiality protections for patient safety information called patient safety work product. Patient safety work product includes information collected and created during the reporting and analysis of patient safety events. The confidentiality provisions will improve patient safety outcomes by creating an environment where providers may report and examine patient safety events without fear of increased liability risk. Greater reporting and analysis of patient safety events will yield increased data and better understanding of patient safety events. The President needs to approve statistical surveys of the number of beneficiaries and benefit amount to ensure non-discrimination against beneficiaries and employees of Federal Assistance Programs on the basis of race, national origin, age, sex or disability under Title VI and VII of the Civil Rights Act of 1964 P.L.88-352, as codified at 42USC(21)V§2000d-1.

§341 Malpractice Liability

A. Public Citizen's analysis of malpractice payments as reported in the National Practitioner Data Bank Public Use File for the years 1990 to 2005 of January 2007 reports that medical malpractice payments were at or near record lows in 2008. The decline almost certainly indicates that a lower percentage of injured patients received compensation, not that health safety has improved. Medical malpractice is so common, and litigation over it so rare, that between three and seven Americans die from proven medical errors for every one who receives a payment for any malpractice claim. Most victims of medical malpractice quietly find another doctor or lose faith in the health and justice system entirely; leaving mal-practicing doctors and defective procedures in place for decades. The medical malpractice liability and insurance system needs to be improved, to better protect witnesses against retaliation, to better protect society against the very real and present danger of medical malpractice and to increase the utilization of State Medical Disciplinary Boards and Federal Disability Insurance, rather than Courts.

1. For the third straight year, 2008 saw the lowest number of medical malpractice payments since the federal government's National Practitioner Data Bank began tracking such data in 1990. The 11,037 malpractice payments made in 2008 were 30.7 percent lower than the average number of payments recorded by the NPDB in all previous years. The number of malpractice payments declined 15.4 percent between 1991 and 2005. Adjusted for inflation, the average annual payment for verdicts declined 8 percent between 1991 and 2005. Payments for million-dollar verdicts were less than 3 percent of all payments in 2005. The number of payments per 100,000 people in the U.S. also fell since 2001 – from 5.82 to 4.73 – a decline of 18.6 percent. Since 1991, the number of payments per 100,000 people declined more than 10 percent. The average payment for a medical malpractice verdict in 1991 was $284,896. In 2005, the average was $461,524. Adjusting for inflation, however, shows that the average is actually declining. The 2005 average adjusted for inflation is only $260,890 — a decline of 8 percent since 1991.

2. The values of payments made to injured patients correspond appropriately to the degree of harm suffered by the victims. Victims with a "minor permanent injury" receive 55 percent less than those suffering a "significant permanent injury." The highest payments go to the families of victims who died as a result of medical malpractice and most of all to people who suffer quadriplegic paralysis or brain injury necessitating a life of care. In 1991, 9.7% of all payments were for obstetrics cases; in 2005, the figure decreased to 9.0%. Surgical cases accounted for 26.0% of payments in 1991, and 26.2% of payments last year. Several of the most common types of errors producing malpractice payments significantly increased over time as a proportion of all errors. Meanwhile progress has stalled in reducing the errors that are easiest to avoid. "Failure to diagnose" cases, for example, grew from 16% of payments in 1991 to 19% in 2005. "Improper Performance" cases grew from 10% to 15% of payments. "Delay in Diagnosis increased from 10% to 15%. "Improper Management" on the other hand declined from 10% to 6%. "Wrong Diagnosis" declined from 5% to 3%. The number of payments for easily avoidable errors, such as leaving a foreign object inside a patient, or operating on the wrong body part, fell from 874 in 1991 to 576 in 1997, and then remained relatively constant until 2004, when incidents increased dramatically. The most recent data reflect the highest number of such errors in 11 years.

3. The primary reason for this decline in malpractice settlements is that under President Bush the rhetoric of the AMA and Chamber of Commerce was that medical malpractice lawsuits send physicians' malpractice insurance premiums "skyrocketing." But reports reveal that medical malpractice insurers are making huge profits. In Florida, alone, the 15 largest medical malpractice insurers profited $803 million in 2005. Since 2001, when CMS was created, the AMA has reported a "crisis" in malpractice liability; however the real crisis seems to be regarding the patient's freedom of expression to file a grievance and sue for health reform. In a recent article in the New England Journal of Medicine, former Senators Hillary Clinton and Barack Obama wrote that "the [medical liability reform] discussion should center on a more fundamental issue: the need to improve patient safety." The cost of the medical malpractice liability system -- if measured broadly by adding all malpractice insurance premiums -- fell to less than 0.6 percent of the $2.1 trillion in total national health care

costs in 2006, the most recent year for which the necessary data to make such comparisons are available. The cost of actual malpractice payments fell to 0.18 percent -- one-fifth of 1 percent -- of all health care costs in 2006. Annual malpractice payments have subsequently fallen from $3.9 billion in 2006 to $3.6 billion in 2008.

B. Since the inception of the National Practitioner Data Base, only 18 percent of doctors have been responsible for even a single malpractice payment. A serious problem is the small percentage of doctors who paid multiple claims and who are responsible for much of the malpractice in America. By strengthening patient safety and training while disciplining repeat offenders, the amount of malpractice could be dramatically reduced. The vast majority of doctors – 82 percent – have never had a medical malpractice payment since the NPDB was created in 1990. Unfortunately, state medical boards and health care institutions do not do enough to rein in those doctors who repeatedly make medical errors and commit medical negligence. According to Public Citizen's analysis of NPDB data, disciplinary actions such as license suspension or revocation are infrequent for physicians whose negligence caused multiple malpractice payments. Only 8.61 percent of doctors who made two or more malpractice payments were disciplined by their state board. Only 11.71 percent of doctors who made three or more malpractice payments were disciplined by their state board. Only 14.75 percent of doctors who made four or more malpractice payments were disciplined by their state board. Only 33.26 percent of doctors who made 10 or more malpractice payments were disciplined by their state board – meaning two-thirds of doctors in this group of egregious repeat offenders were not disciplined at all.

Number and Amounts of Medical Malpractice Payments To Patients Paid on Behalf of Doctors, 1990-2005

Number of Payment Reports	Number of Doctors Who Made Payments	Total Number of Payments	Percent/ Total Doctors (777,859)*
All	140,008	223,617	18.00%
1	94,293	94,286**	12.12%
2 or more	45,715	129,331	5.88%
3 or more	17,596	73,325	2.26%
4 or more	8,144	45,106	1.05%
5 or more	4,091	28,989	0.53%
Number of Payment Reports	**Percent of Total Value of Payments**	**Percent of Total Number of Payments**	**Total Amount of Payments**
All	100%	100%	$50,807,346,000
1	41.27%	42.16%	$20,966,431,500
2 or more	58.73%	57.84%	$29,840,914,500
3 or more	33.09%	32.79%	$16,809,942,400
4 or more	20.18%	20.17%	$10,250,793,100

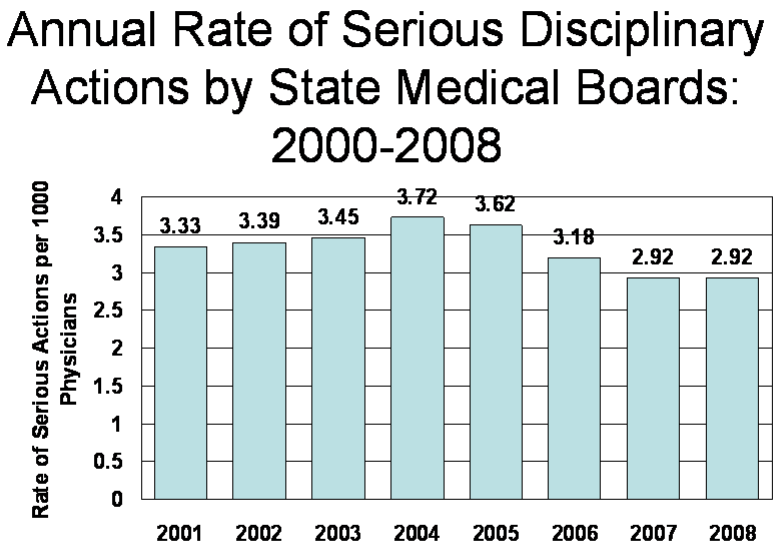
5 or more	12.93%	12.96%	$6,570,145,650

Source: Figure 12: Public Citizen's analysis of malpractice payments as reported in the National Practitioner Data Bank Public Use File for the years 1990 to 2005 of January 2007

1. The government as well as health care providers can and should take steps to reduce preventable errors, protecting patients and doctors alike. A "systems approach" to patient safety advocated by the Institute of Medicine (IOM) and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) is an important tool to protect the health and safety of patients. As noted earlier, in the 1980s, anesthesiologists showed that proactive measures to enhance patient safety are proven to save lives, reduce the number of lawsuits and cut costs. Twenty-five states currently have legislation or regulations establishing adverse event reporting systems. Of these, 24 are mandatory. Medication errors are among the most common preventable mistakes. In July 2006, the Institute of Medicine released a report concluding that there are at least 1.5 million preventable medication errors that cost the U.S. over $3.5 billion. One of the recommendations in the IOM report is to "invest in technologies that have been demonstrated to be effective, but are not yet widely implemented in most organizations, such as computer physician order entry (CPOE)". CPOE is an electronic prescribing system that intercepts errors where they most commonly occur – at the time medications are ordered. In 2003, the JCAHO published guidelines for preventing wrong site surgery that include:A pre-operative verification process to ensure that all parties are fully informed about the intended patient, procedure, and site; Visibly marking the operative site; and a "time out" period immediately preceding the procedure to conduct a final verification of the correct patient, procedure, and site. In 2003, the Accreditation Council for Graduate Medical Education issued duty hour standards for residents that limited residents to 80 hours on-duty per week, averaged over four weeks, that was later reduced to 60 hours per week. By limiting the number of consecutive work hours required of physicians, under labor laws, fatigue-induced error could be considerably reduced. In their 2000 report, *To Err is Human,* the Institute of Medicine noted that autopsies "are an excellent way to refine clinical judgment and identify misdiagnosis." A 2002 report published by the Department of Health and Human Service Agency for Healthcare Research and Quality (AHRQ) concluded that "the use of autopsy data to correct inaccuracies in epidemiological data would likely confer multiple benefits on the health care system as a whole. Despite these benefits, the rate of autopsy in the U.S. has declined significantly over the years. According to the AHRQ, "in 1994, the last year for which national U.S. data exist, the autopsy rate for all non-forensic deaths fell below 6 percent."

C. Too many state medical boards are unhelpfully dependent on professional medical societies. These links result in a lack of meaningful oversight on the part of state medical boards. To resolve this problem, medical boards (and separate disciplinary boards, where present) should be appointed by the governor, and the governor's choice of appointees should not be limited to a medical society's nominees. Furthermore, a minimum of 50 percent of the members of each state's medical board should be well-informed and well-

trained members of the public who have no ties to the health care industry, and, preferably, are experienced patient advocates. Needless to say, medical boards' top priority should always be protecting public health, not the careers of individual physicians. In order for state medical boards to properly function, they require improved funding and staffing. State legislatures should permit medical boards to spend all of the revenue from medical licensing fees, rather than forcing them to turn over a portion to the state treasury. Boards should hire adequate staff to investigate all complaints within 30 days, review all malpractice claims filed with the board, ensure compliance with reporting requirements, and monitor and regularly visit doctors who have been disciplined to ensure their compliance with imposed sanctions. State medical boards should also hire investigators to review pharmacy records, consult with medical examiners, and perform targeted office audits of doctors practicing alone and suspected of substandard performance. Using an analysis of data released by the Federation of State Medical Boards (FSMB) on all disciplinary actions taken against doctors in 2008, Public Citizen calculated the rate of serious disciplinary actions (revocations, surrenders, suspensions and probation/ restrictions) taken by state medical boards in 2008. This rate of serious actions per 1000 physicians continues to be significantly lower than the peak for the past nine years. (see Figure below) . The rate in 2008—2.92 serious actions per 1000 physicians—is 21.5% lower than the peak rate in 2004 of 3.72 serious actions per 1000 physicians.



Source: Wolfe, Sidney M; Resnevic, Kate. Public Citizen's Health Research Group Ranking of the Rate of State Medical Boards' Serious Disciplinary Actions, 2006-2008 (HRG Publication #1868) April 20, 2009

1.The most recent three-year average state disciplinary rates (2006-2008) ranged from 0.95 serious actions per 1,000 physicians (Minnesota) to 6.54 actions per 1,000 physicians (Alaska), a 6.9-fold difference between the best and worst state doctor disciplinary boards. About three out of every 1,000 doctors were the targets of serious disciplinary actions by state medical boards last year. An annual report out from the watchdog group Public Citizen says the nationwide rate of serious actions, such as license revocations and suspensions, was 2.92 per 1,000 doctors last year. That was unchanged from the prior year — but remains below a peak of 3.72 in 2004. States with the highest rates, averaged from 2006-2008: Rank State Serious actions per 1,000 doctors. 1 Alaska 6.54, 2 Kentucky 5.87, 3 Ohio 5.33, 4 Arizona 5.12, 5 Oklahoma 5.02. States with the lowest rates: Rank State Serious actions per 1,000 doctors, 1 Minnesota 0.95, 2 S. Carolina 1.23, 3 Wisconsin 1.64, 4 Mississippi 1.87, 5 Connecticut 1.97. In a report on doctors disciplined for criminal activity that we published recently, 67 percent of insurance fraud convictions and 36 percent of convictions related to controlled substances were associated with only non-severe discipline by the board.

D. The remedy against the United States for damage for personal injury, including death, resulting from the performance of medical, surgical, dental, or related functions, including the conduct of clinical studies or investigation, by any commissioned officer or employee of the Public Health Service while acting within the scope of his office or employment, whose act or omission gave rise to the tort claim under 42USC§233. In reviewing tort claims for damages the investigator shall verify if the practitioner: a. Has implemented appropriate policies and procedures to reduce the risk of malpractice and the risk of lawsuits arising out of any health or health-related functions performed by the entity; b. Has reviewed and verified the professional credentials, references, claims history, fitness, professional review organization findings, and license status of its physicians and other licensed or certified health care practitioners, and, where necessary, has obtained the permission from these individuals to gain access to this information; c. Has no history of claims having been filed against the United States. Upon a finding that a physician or medical practitioner presents a threat of malpractice government funding shall cease, for a period to be determined by the Secretary, to receive and to be eligible to receive any Federal funds under titles XVIII or XIX of the Social Security Act (42 U.S.C. 1395 et seq., 1396 et seq.). d. There is an option for non-profit hospitals to be represented by the United States government in determining malpractice liability.

§341 Product Liability

A. Health care professionals, consumers, society in general and the government, have a responsibility to ensure health care and food products are not harmful to the health, of good quality and not adulterated. In the mid 19th century, the first century that the pharmaceutical industry emerged as an important market sector, the pharmaceutical industry functioned as a part of the chemical industry. In the 20th pharmaceutical corporations gained a great deal of independence and advances in biopharmaceutical research have led to expansion of the industry and market. After a century of fake patent medicines, addictive products and defective remedies, in 1902, Congress passed the Biologics Control Act, the gave the Marine Hosptital and Public Health Service

regulatory authority over the production and sale of vaccines, serums, and other biological products that included the power to order a recall of unsafe products. The Bureau of Chemistry, the modern era of the FDA dates to 1906 with the passage of the Federal Food and Drugs Act. All biological products must be registered and can be recalled under 42USC§1262(d).

1. Pharmaceuticals, medical supplies and consumer products are big business. From 1997 to 2007, the number of prescriptions purchased increased 72% (from 2.2 billion to 3.8 billion), compared to a US population growth of 11%. Spending in the US for prescription drugs was $216.7 billion in 2006, more than 5 times the $40.3 billion spent in 1990. The Pharmaceutical Research and Manufacturing Association (PhRMA) reports that the biopharmaceutical sector in 2003 was responsible for $63.9 billion in direct output and employed over 406,000 people across the U.S. $23.6 billion in taxes are attributed to the pharmaceutical industry, $6.4 billion of which were corporate taxes. When the total impact of the market is calculated estimating every pharmaceutical job creates 5.7 jobs in the community the pharmaceutical industry is directly responsible for 2.7 million jobs, 2.1% of the national economy, with an output of $172 billion. The pharmaceutical industry is one of the most profitable sectors and the average employee makes $72,000 and produces $157,000. The industry has the highest rate of investment in research of any market sector at 15-20% of gross sales. Drug costs in the US are much higher than in other countries. The global market for pharmaceuticals was worth more than $693 billion in 2007. But Big Pharma is easily dwarfed by the global chemistry industry, which lives somewhere in the $3 trillion-a-year-neighborhood. Outpatient prescription drugs accounted for one tenth of overall health spending, 13% of premium costs, an average cost of $32.45 per month to every privately insured individual. The Medicare Drug Discount card released in 2004 saves consumers an average of 17.5% on regular outpatient prescription costs although prescription drug cost hikes have reduced savings to only an estimated 16.2%.

2.The FDA subjects new products to a pre-market approval process. In the Food, Drug and Cosmetic Act (FD&CA) under 21USC§360c(a) the sponsor of a new medical device need only demonstrate a "reasonable assurance of safety and effectiveness". Generally, in the production of a new medical device only one clinical trial is necessary to prove its safety and effectiveness. Before a new drug can be marketed, the sponsor must show "substantial evidence of safety and effectiveness", usually at least two clinical trials are required to prove its safety and effectiveness under 21USC§355(d) . Products must be safe and effective and their labeling must be accurate and not fraudulent in regards to its use, dosage, strength or other quality. A drug or device is deemed to be adulterated drugs or devices under 21USC§351 if it has (a) been prepared, packed, or held under insanitary conditions whereby it may have been contaminated with filth, or (b) it, or its container, is, in whole or in part, a poisonous or deleterious substance, whereby it may have been rendered injurious to health or (c) its strength, quality or purity differ from the compendium, or (d) it is not in conformity with performance standards. A drug or device is deemed to be misbranded under 21USC§352(j) if it is dangerous to health when used in the dosage or manner, or with the frequency or duration prescribed, recommended, or suggested in the labeling thereof. If a device presents substantial deception or an

unreasonable and substantial risk of illness or injury and such deception or health risk cannot be remedied in correspondence with the company, such device may be banned under 21USC§360f. Upon a determination that a batch, lot, or other quantity of a product licensed under 42USC§1262 presents an imminent or substantial hazard to the public health, the Secretary shall issue an order immediately ordering the recall of that product and up to $100,000 fine, with loopholes under 5USC§554(a,1-6) that may be overruled. Criteria for biological product risk evaluation and mitigation strategies elaborated under 21USC§355-1 are; a.The estimated size of the population likely to use the drug involved. b. The seriousness of the disease or condition that is to be treated with the drug. c. The expected benefit of the drug with respect to such disease or condition. d. The expected or actual duration of treatment with the drug. e. Whether the drug is a new molecular entity. f. The seriousness of any known or potential adverse events that may be related to the drug and the background incidence of such events in the population likely to use the drug. Probable cause for injunctions in Sec. 302 are found in Sec. 301 of the Food, Drug and Cosmetic Act (FD&CA) under 21USC§332 and §331.

3. The term "adverse drug experience" means any adverse event associated with the use of a drug in humans, whether or not considered drug related, including— i. an adverse event occurring in the course of the use of the drug in professional practice; ii. an adverse event occurring from an overdose of the drug, whether accidental or intentional; iii. an adverse event occurring from abuse of the drug; iv. an adverse event occurring from withdrawal of the drug; and v. any failure of expected pharmacological action of the drug. The term "serious adverse drug experience" is an adverse drug experience that results in— i. death; ii. an adverse drug experience that places the patient at immediate risk of death from the adverse drug experience as it occurred (not including an adverse drug experience that might have caused death had it occurred in a more severe form); ciii. inpatient hospitalization or prolongation of existing hospitalization; iv. a persistent or significant incapacity or substantial disruption of the ability to conduct normal life functions; or cv. a congenital anomaly or birth defect; or vi. based on appropriate medical judgment, may jeopardize the patient and may require a medical or surgical intervention to prevent an adverse outcome. Improved information, professional training and certification and other methods that render the product safe may be instituted, and if these countermeasure mitigate risk to health and life sufficiently, keep the product on the market. If the introduction, delivery or receipt for introduction into interstate commerce of any food, drug, device, or cosmetic that is adulterated or misbranded or otherwise noncompliant is prohibited by Sec. 301 of the FD&CA under 21USC§331 the product may be brought to the US District Court for an injunction proceedings under Sec. 302 of eh FD&CA under 21USC§332 and held liable for civil and criminal penalties by Sec. 303 of the FD&CA under 21USC§333.

B. Medical products, particularly pharmaceuticals and vaccines, and viruses, toxins and pathogens for laboratory research and biological product development are prone to conflict of interest. As noted in paragraph B of this section the Food, Drug and Cosmetic Act, does not, in its current form, provide for the recall of drugs, by any means other than voluntarily on the part of the corporation or by injunction of the US District Court. The FDA and Public Health Service are legally obstructed from effectively regulating

biological products after a product has been approved for market. Unduly empowered, pharmaceutical companies are reported to (a) engage in conflicts of interest with medical providers, bribing them with gifts and kickbacks to prescribe their medication, (b) contribute heavily to Congressional campaigns to sustain their unfair laws and arrange for subsidies and (c) conspire with the judiciary to conduct lucrative but illegal coerced clinical drug trials on prisoners, interfere with government decionmaking, intimidate and suppress people reporting adverse drug reactions.

1. Pharmaceutical companies invest an estimated $20 billion annually marketing directly to doctors. For more than 65 years, the American Medical Association has been selling pharmaceutical companies the Physician Masterfile, a database that contains information on the prescribing practices and other characteristics of 900,000 practitioners, most of whom are not AMA members, making $46 million in 2005 alone. Whoever directly or indirectly, corruptly gives, offers or promises anything of value to any public official to influence an official act, or commit or allow fraud or to omit an act that is the lawful duty is guilty of bribing a public official or witness under 18USC§201. Taking into consideration the state regulated license to practice medicine, the high salaries they command, the life or death decisions they must make and the need to make informed prescription decisions, as a professional doctors are for the intent of the law pertaining ot conflict of interest a public official, or a witness thereto, and it must therefore be prohibited for the pharmaceutical and medical supply industry to give doctors any gifts.

2. The drug industry has invested a meager portion of their enormous profits on lobbying government officials donating an estimated $800 million to state, federal and local political campaigns between 2000 and 2007. In 2003 alone, the industry spent nearly $116 million lobbying the government when the Medicare Modernization Act of 2003 was passed. In 2004, drug makers upped their reported expenditures on lobbyists to $123 million, a record amount for the industry. Of the 1,291 lobbyists who were listed that year as representing pharmaceutical corporations and their trade groups, some 52 percent were former federal officials. Between 1998 and 2004 the pharmaceutical industry disclosed lobbying on 1,600 bills. While not patently illegal, campaign finance laws highly limit the amount a corporation, particularly a for-profit corporation, can contribute. Furthermore the immense size and power of the pharmaceutical lobby distorts the truth and extra effort must be made to protect consumers, hear grievances and regulate the market.

C. Vaccine manufacturers need to eliminate from circulation the viruses that both cause the diseases the vaccines are intended to prevent and are stockpiled in their laboratories to produce the vaccines. Bio-medical research laboratories, particularly animal laboratories that do research on the pathogens that cause deadly disease must be separated from the interests of health care providers who would profit or gain political advantage from the leaking of such pathogens. The National Childhood Vaccine Injury Act of 1986 appropriates sufficient additional funds to pay for all of the retrospective claim awards anticipated for this and future fiscal years by the Division of Vaccine Injury Compensation (the potential shortfall for 2007 was estimated to be as high as $174 million) H-440.929 Health and Ethics Policies of the AMA House of Delegates.

§342 Bioterrorism

A. Terrorism is defined as involving violent acts or acts dangerous to human life that appear to be intended - to intimidate or coerce a civilian population; to influence the policy of a government by intimidation or coercion; or to affect the conduct of a government by mass destruction, assassination, or kidnapping under 18USC§2331. (1)the term "international terrorism" means activities that— (A) involve violent acts or acts dangerous to human life that are a violation of the criminal laws of the United States or of any State, or that would be a criminal violation if committed within the jurisdiction of the United States or of any State; (B)appear to be intended— (I) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and (C) occur primarily outside the territorial jurisdiction of the United States, or transcend national boundaries in terms of the means by which they are accomplished, the persons they appear intended to intimidate or coerce, or the locale in which their perpetrators operate or seek asylum; (2) the term "national of the United States" has the meaning given such term in section 101(a)(22) of the Immigration and Nationality Act; (3) the term "person" means any individual or entity capable of holding a legal or beneficial interest in property; (4)the term "act of war" means any act occurring in the course of— (A) declared war; (B) armed conflict, whether or not war has been declared, between two or more nations; or (C) armed conflict between military forces of any origin; and (5)the term "domestic terrorism" means activities that—(A) involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State; (B)appear to be intended— (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and (C) occur primarily within the territorial jurisdiction of the United States.

1. Bio-terrorism can be defined as "the use, or threatened use of biological agents to promote or spread fear or intimidation upon an individual, a specific group, or the population as a whole for religious, political, ideological, financial, or personal purposes". The Executive Board of the World Health Organization urges Member States to treat any deliberate use of biological and chemical agents or radio-nuclear material as a threat to global public health and to share expertise, supplies and resources in order rapidly to contain the event and mitigate its effects. To enhance control of dangerous biological agents and toxins the Secretary must publish a list of these biological agents and toxins that has the threat to pose a serious risk to society, and update this list biannually. The Secretary shall thereby regulate the activities of public health service laboratories and grantees as well as license and inspect all bio-medical research laboratories using, possessing or stockpiling dangerous toxic substances and laboratory supply companies distributing these toxins to laboratories and when a licensed biological product is determined to present an imminent hazard shall recall such batch, lot or other quantity up to all, from the market and ultimately from existence under 42USC§262(d).

2. The definition of biological weapons is: the term "biological agent" means any microorganism (including, but not limited to, bacteria, viruses, fungi, rickettsiae or

protozoa), or infectious substance, or any naturally occurring, bioengineered or synthesized component of any such microorganism or infectious substance, capable of causing - a. death, disease, or other biological malfunction in a human, an animal, a plant, or another living organism; b. deterioration of food, water, equipment, supplies, or material of any kind; or c. deleterious alteration of the environment; 2. the term "toxin" means the toxic material or product of plants, animals, microorganisms (including, but not limited to, bacteria, viruses, fungi, rickettsiae or protozoa), or infectious substances, or a recombinant or synthesized molecule, whatever their origin and method of production, and includes - a. any poisonous substance or biological product that may be engineered as a result of biotechnology produced by a living organism; or b. any poisonous isomer or biological product, homolog, or derivative of such a substance; 3. the term "delivery system" means - a. any apparatus, equipment, device, or means of delivery specifically designed to deliver or disseminate a biological agent, toxin, or vector; or b. any vector; c. the term "vector" means a living organism, or molecule, including a recombinant or synthesized molecule, capable of carrying a biological agent or toxin to a host under 18USC§178. Under 18USC Chapter 11B, just after Child Support (11A), §229 it shall be unlawful for any person knowingly— to develop, produce, otherwise acquire, transfer directly or indirectly, receive, stockpile, retain, own, possess, or use, or threaten to use, any chemical weapon; or to assist or induce, or conspire, in any way, with any person to commit such violation…Shall be fined under this title, or imprisoned for any term of years, or both and by whose action the death of another person is the result shall be punished by death or imprisoned for life and/or the Attorney General may impose a civil fine of $100,000 under 18USC§229A.

3. Prohibitions with respect to biological weapons, states; a. In General. - Whoever knowingly develops, produces, stockpiles, transfers, acquires, retains, or possesses any biological agent, toxin, or delivery system for use as a weapon, or knowingly assists a foreign state or any organization to do so, or attempts, threatens, or conspires to do the same, shall be fined under this title or imprisoned for life or any term of years, or both. There is extraterritorial Federal jurisdiction over an offense under this section committed by or against a national of the United States. b. Additional Offense. - Whoever knowingly possesses any biological agent, toxin, or delivery system of a type or in a quantity that, under the circumstances, is not reasonably justified by a prophylactic, protective, bona fide research, or other peaceful purpose, shall be fined under this title, imprisoned not more than 10 years, or both. In this subsection, the terms "biological agent" and "toxin" do not encompass any biological agent or toxin that is in its naturally occurring environment, if the biological agent or toxin has not been cultivated, collected, or otherwise extracted from its natural source. c. Definition. - For purposes of this section, the term "for use as a weapon" includes the development, production, transfer, acquisition, retention, or possession of any biological agent, toxin, or delivery system for other than prophylactic, protective, bona fide research, or other peaceful purposes under at 18USC§175. Civil resolution involves seizure, forfeiture, and destruction of biological agents and directs the Attorney General to consider as not *bona fide* any research that involves development, production, transfer, acquisition, retention, or possession of any biological agent, toxin, or delivery system for other than prophylactic, protective, *bona fide* research, or other peaceful purposes under 18USC§176.

4.The master tactician Solon used the purgative herb hellebore [skunk cabbage] to poison the water supply during his siege of Krissa in 600 BC. Armies in the ancient times, tainted water supplies of entire cities with herbs and fungi that induced fatal diarrhoea and hallucinations. According to the Bible a series of biological calamities were inflicted on the Egyptians to convince an obstinate pharaoh to liberae the ancient Hebrews. An assessment of the World Health Organization in 1970, concluded that a dissemination of 50 kg of Yersinia pestis over a city of five million might result in 150 000 cases of pneumonic plague and 36 000 deaths. Another estimate showed that 100 Kg of anthrax over a large city on a clear night could kill 1-3 million people. During the French and Indian War, Sir Jeffrey Amherst suggested deliberate infection with smallpox to reduce American Indian populations. On June 24, 1763, one of Amherst's subordinates gave blankets and a handkerchief from the smallpox hospital to the American Indians. An outbreak of smallpox spread throughout the tribes of American Indians. During World War I, biological warfare programs developed covert operations to infect livestock and livestock feed. During World War II, prisoners were infected with pathogens and treated to study investigational vaccine and drugs. Biological weapons research was also conducted on prisoners who were infected with pathogens such as *Bacillus anthracis* and *Yersinia pestis*. Many prisoners died as a result from the experimentation. Malicious attacks also included contamination of water and food supplies with *Bacillus anthracis*, *Salmonella*, *Shigella*, and *Yersinia pestis*. In the United States, an offensive biological program was developed in 1942, under the War Reserve Service, a civilian agency. Experiments were conducted using biological materials including *Bacillus anthracis* and *Brucella suis*. A program to develop countermeasures, including antisera, vaccines, and therapeutic agents was established in 1953 to protect troops against possible bio-terror attacks. Under the presidency of Richard Nixon, the United States biological weapons program was terminated in 1969. This mandated the termination of biological research for offensive attacks and destruction of the biological arsenal. In the 20th century almost 420 terrorist attacks occurred in which 135 were of biological nature. Most countries subscribe to international conventions banning biological and chemical weapons however, incidents such as anthrax-tainted letters being sent through the united states postal system in 2001 and the release of sarin (the sole purpose of which is as a nerve gas) on the Tokyo subway in 1995 remind us that although chemical and biological attacks are rare, there are individuals and groups who are ready to use this brand of terrorism.

B. The key principles for securing biological agents, in research laboratories and biomedical facilities, where loss, theft, release or intentional misuse of the agent, might have significant public health or economic consequences, are found in the following definitions. 1.Biosafety: Development and implementation of administrative policies, work practices, facility design, and safety equipment to prevent transmission of biologic agents to workers, other persons, and the environment. 2. Biosecurity: Protection of high-consequence microbial agents and toxins, or critical relevant information, against theft or diversion by those who intend to pursue intentional misuse. 3. Biologic Terrorism: Use of biologic agents or toxins (e.g., pathogenic organisms that affect humans, animals, or plants) for terrorist purposes. 4. Bioterrorism Leads to the Need for Increased Biosecurity: Intentional or threatened use of viruses, bacteria, fungi, or toxins from living organisms to produce death or disease in humans, animals, or plants. 5.

Responsible official: A facility official who has been designated the responsibility and authority to ensure that the requirements of Title 42, CFR, Part 73, are met. 6. Risk: A measure of the potential loss of a specific biologic agent of concern, on the basis of the probability of occurrence of an adversary event, effectiveness of protection, and consequence of loss. 7. Select agent: Specifically regulated pathogens and toxins as defined in Title 42, CFR, Part 73, including pathogens and toxins regulated by both DHHS and USDA (i.e., overlapping agents or toxins). 8. Threat: The capability of an adversary, coupled with intentions, to undertake malevolent actions. 9. Threat assessment: A judgment, based on available information, of the actual or potential threat of malevolent action.

1. In recent years, concern has increased regarding use of biologic materials as agents of terrorism, but these same agents are often necessary tools in clinical and research microbiology laboratories. Traditional biosafety guidelines for laboratories have emphasized use of optimal work practices, appropriate containment equipment, well-designed facilities, and administrative controls to minimize risk of worker injury and to ensure safeguards against laboratory contamination. Risk assessments should include systematic, site-specific reviews of 1) physical security; 2) security of data and electronic technology systems; 3) employee security; 4) access controls to laboratory and animal areas; 5) procedures for agent inventory and accountability; 6) shipping/transfer and receiving of select agents; 7) unintentional incident and injury policies; 8) emergency response plans; and 9) policies that address breaches in security.

2. The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188; June 12, 2002) requires that the United States improve its ability to prevent, prepare for, and respond to acts of bioterrorism and other public health emergencies that could threaten either public health and safety or American Agriculture. It necessitates that individuals possessing, using, or transferring agents or toxins deemed a severe threat to public, animal or plant health, or to animal or plant products notify either the Secretary of the Department of Health and Human Services (HHS) or the Secretary of the Department of Agriculture (USDA). In accordance with the Act, implementing regulations detailing the requirements for possession, use, and transfer for select agents and toxins were published by HHS (42 CFR part 73) and by USDA (9 CFR part 121 and 7 CFR part 331) . The list of select toxins and agents is woefully inadequate to inform the vast majority of afflicted people of the cause of their chronic health condition, despite public information requirements for agency rules, opinion, orders, records and proceedings under 5USC§552.

3. In determining whether to include an agent or toxin on the list of select agents and toxins the Secretary and USDA shall consider. a. the effect of exposure to the agent or toxin on animal or plant health, and on the production and marketability of animal or plant products; b. the pathogenicity of the agent or the toxicity of the toxin and the methods by which the agent or toxin is transferred to animals or plants; c. the availability and effectiveness of pharmacotherapies and prophylaxis to treat and prevent any illness caused by the agent or toxin; and d. any other criteria that the Secretary considers appropriate to protect animal or plant health, or animal or plant products; and e. consult

with appropriate Federal departments and agencies and with scientific experts to effectively represent appropriate academic and professional groups. 3. A database is being developed to prevent unauthorized access to listed agents and toxins that will register possession and transfer of listed agents and toxins. The database shall not disclose the identity of a specific registered person or discloses the identity or location of a specific registered person.

4. Registration of an entity requires that an "Application for Laboratory Registration for Possession, Use, and Transfer of Select Agents and Toxins" (APHIS/CDC Form 1) should be completed and submitted to either HHS Centers for Disease Control (CDC) or to USDA Animal Plant Health Inspection Service (APHIS). Registration also requires that the U.S. Department of Justice (DOJ) complete a security risk assessment (SRA) for the facility, its owners, and the designated responsible official. Before registration is granted, the facility must also meet biosafety requirements that are commensurate with the risk that the select agent or toxin poses and must establish security measures that provide graded protection in accordance with the threat that the agent or toxin poses. An entity that needs to register in order to possess, use, or transfer a select agent or toxin must submit its registration information to either APHIS or CDC, but is not required to submit the application to both APHIS and CDC.

5. The Secretary shall by regulation provide for the establishment and enforcement of safety procedures for the transfer of listed agents and toxins, including measures to ensure: a. proper training and appropriate skills to handle such agents and toxins; and b. proper laboratory facilities to contain and dispose of such agents and toxins; c. the establishment and enforcement of safeguard and security measures to prevent access to such agents and toxins for use in domestic or international terrorism or for any other criminal purpose; d. the establishment of procedures to protect animal and plant health, and animal and plant products, in the event of a transfer or potential transfer of such an agent or toxin in violation of the safety procedures established under paragraph e. appropriate availability of biological agents and toxins for research, education, and other legitimate purposes. f. the recall and removal from the market and existence of certain pathogens that pose a serious risk to human health and safety.

6. The registered person will be briefed on bio-security enhancements for their facility that may include, but shall not be limited to the following: a. the purchase and installation of equipment for detection of intruders; b. the purchase and installation of fencing, gating, lighting, or security cameras; c. the tamper-proofing of manhole covers, fire hydrants, and valve boxes; d. the rekeying of doors and locks; e. improvements to electronic, computer, or other automated systems and remote security systems; f. participation in training programs, and the purchase of training manuals and guidance materials, relating to security against terrorist attacks; g. improvements in the use, storage, or handling of various chemicals; and h. security screening of employees or contractor support services. In the event a listed agent or toxin leaks outside of the bio-containment area of a facility the registered person will notify the Secretary of Health and Human Services. If the Secretary finds that the release poses a threat to public health or

safety, the Secretary, shall take appropriate action to notify relevant State and local public health, other relevant Federal authorities and, if necessary, the public.

C. The patent system is hypothetically the most scientific method to control toxic substances, like Influenza A-C subtypes, HIV and the secret pathogens and carcinogens used to cause heart disease and cancer, that promises to eliminate human error while communicating the non-communicable results of bio-chemical-medical research to forensic science before the pathogens are officially destroyed. In general, every patent shall contain a short title of the invention and a grant to the patentee of the right to exclude others from making, using, offering for sale, or selling the invention,,,and, if the invention is a process, of the right to exclude others from using, offering for sale or selling… importing…or exporting…products made by that process, referring to the specification for the particulars thereof the Content and Term of Patent, Provisional Right under 35USC§154(a)(1). In regards to the patent of toxic substances it is in the public interest that the patentee themself be excluded from use of the invention, without proper authorization by the appropriate government agency.

1. There is no law in either the US Code nor the Patent Co-operation Treaty referring directly to the control of toxic chemical substances. In *Apotex Inc. v. Sanofi-Synthelabo Canada Inc*., 2008 SCC 61 on November 6, 2008, the Canadian Supreme Court held that, "In the field of chemical patents, originating or genus patents are based on the discovery of a new invention, namely, a reaction or compound, while selection patents are for compounds chosen from the compounds described in the originating patent. Selection patents do not differ in nature from any other patent, but in order to be valid, the selected compound must be novel and possess a substantial advantage to be secured or disadvantage to be avoided". It is in particular the disadvantages of toxic substances, viruses and genes that is in the public interest to protect society against by totally eliminating, prohibiting, the entire existence of such malevolent substances, noxious and deadly to human and animal life.

2. Both US Trademark and Patent Office and Patent Co-operation Treaty (PCT) should incorporate a special classification for toxic chemical substances that cause disease into their system of patent classification in order to control and eliminate these disease vectors. The irony is that the Strasbourg Agreement Concerning International Patent Classification of March 24, 1971 was ratified in the same town where the Strasbourg Agreement of 1675 between France and the Holy Roman Empire was the first treaty to ban the use of chemical weapons. The Strasbourg Agreement of 1971, and the Patent Cooperation Treaty for that matter, totally omits mention of the special category of toxic substances. WHO drafted a Working Paper on Patent Issues related to Influenza Viruses and their Genes and Annex on November 17, 2007, revealing that in their attempts to patent Influenza HA and NA genes and gene products that specifically claim or may encompass H5N1 sequences they were forced to choose from 6 patent families, vectors or cells containing influenza genes and vaccines containing influenza products 18 patent families and siRNA and antisense directed to H5N1, also oligonucelotides having H5N1 sequence 12 patent families. These families of medically useful knowledge and control of toxic substances are located in neither Section A(61) Human Necessities: Medical or

Veterinary Science; Hygiene nor Section C(07-08) Chemistry; Metallurgy: Organic Compounds. The Strasbourg Agreements to do not agree. The PCT is advised to adopt a special classification for toxic substances used or prepared in laboratories, including toxins, viruses, genes that cause disease in humans and animals. It is okay to list these substances as Section A Human Necessities whereas their eradication is, but they should be comprehensively listed so that toxicology agencies such as the Office for the Prohibition of Chemical Weapons could cooperate.

D. The 20th century system of social control by secret and unethical biological experiments is best explained in and regulated by the Nuremburg Code as reprinted from *Trials of War Criminals before the Nuremberg Military Tribunals under Control Council Law No. 10, Vol. 2, pp. 181-182.*. Washington, D.C.: U.S. Government Printing Office, 1949. It provides: 1.The voluntary consent of the human subject is absolutely essential. This means that the person involved should have legal capacity to give consent; should be so situated as to be able to exercise free power of choice, without the intervention of any element of force, fraud, deceit, duress, over-reaching, or other ulterior form of constraint or coercion; and should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision. This latter element requires that before the acceptance of an affirmative decision by the experimental subject there should be made known to him the nature, duration, and purpose of the experiment; the method and means by which it is to be conducted; all inconveniences and hazards reasonable to be expected; and the effects upon his health or person which may possibly come from his participation in the experiment. 2. The duty and responsibility for ascertaining the quality of the consent rests upon each individual who initiates, directs or engages in the experiment. It is a personal duty and responsibility which may not be delegated to another with impunity. 3.The experiment should be such as to yield fruitful results for the good of society, unprocurable by other methods or means of study, and not random and unnecessary in nature. 4.The experiment should be so designed and based on the results of animal experimentation and a knowledge of the natural history of the disease or other problem under study that the anticipated results will justify the performance of the experiment. 5. The experiment should be so conducted as to avoid all unnecessary physical and mental suffering and injury. 6.No experiment should be conducted where there is an a priori reason to believe that death or disabling injury will occur; except, perhaps, in those experiments where the experimental physicians also serve as subjects. 7.The degree of risk to be taken should never exceed that determined by the humanitarian importance of the problem to be solved by the experiment. 8.Proper preparations should be made and adequate facilities provided to protect the experimental subject against even remote possibilities of injury, disability, or death. 9.The experiment should be conducted only by scientifically qualified persons. The highest degree of skill and care should be required through all stages of the experiment of those who conduct or engage in the experiment. 10.During the course of the experiment the human subject should be at liberty to bring the experiment to an end if he has reached the physical or mental state where continuation of the experiment seems to him to be impossible. 11.During the course of the experiment the scientist in charge must be prepared to terminate the experiment at any stage, if he has probable cause to believe, in the exercise of the good faith, superior skill

and careful judgment required of him that a continuation of the experiment is likely to result in injury, disability, or death to the experimental subject.

1. The Doctors' Trial (officially *United States of America v. Karl Brandt, et al.*) was the first of 12 trials for war crimes that the United States authorities held in their occupation zone in Nuremberg, Germany after the end of World War II. These trials were held before U.S. military courts, not before the International Military Tribunal, but took place in the same rooms at the Palace of Justice. The trials are collectively known as the "Subsequent Nuremberg Trials", formally the "Trials of War Criminals before the Nuremberg Military Tribunals" (NMT). 20 of the 23 defendants were medical doctors (Brack, Rudolf Brandt, and Sievers being Nazi officials) and all were accused of having been involved in Nazi human experimentation. Josef Mengele, one of the leading Nazi doctors, had evaded capture. The primary charges against the accused were war crimes: performing medical experiments, without the subjects' consent, on prisoners of war and civilians of occupied countries, in the course of which experiments the defendants committed murders, brutalities, cruelties, tortures, atrocities, and other inhuman acts. Also planning and performing the mass murder of prisoners of war and civilians of occupied countries, stigmatized as aged, insane, incurably ill, deformed, and so on, by gas, lethal injections, and diverse other means in nursing homes, hospitals, and asylums during the Euthanasia Program and participating in the mass murder of concentration camp inmates. 7 were sentenced to death, 6 were acquitted, 5 were sentenced to life in prison and released early after 15-20, 4 were sentenced to 15 to 20 years and released after 10.

2. As the International Military Tribunal said in 1946, “crimes against international law are committed by men, not by abstract entities, and only by punishing individuals who commit such crimes can the provisions of international law be enforced”. The Rome Statute of the International Criminal Court likewise establishes jurisdiction over the “most serious crimes of concern to the international community as a whole” (preamble), but limits this jurisdiction to “natural persons” (art. 25, para. 1). The same article specifies that no provision of the Statute “relating to individual criminal responsibility shall affect the responsibility of States under international law” (para. 4). Orders and prescriptions of law to commit genocide or crimes against humanity are manifestly unlawful (art. 33). The manufacture and delivery of toxic substances is patently genocide, (a) Killing members of the group; (b) Causing serious bodily or mental harm to members of the group; (c) Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part; (d) Imposing measures intended to prevent births within the group; (e) Forcibly transferring children of the group to another group. A war crime of Torture or inhuman treatment, including biological experiments and employing poison and poison weapons (art. 8 (2)(a)(ii) & (b)(xvii)).

E. The Office for Human Research Protection (OHRP) provides leadership in the protection of the rights, welfare, and wellbeing of subjects involved in research conducted or supported by the U.S. Department of Health and Human Services (HHS). OHRP helps ensure this by providing clarification and guidance, developing educational programs and materials, maintaining regulatory oversight, and providing advice on

ethical and regulatory issues in biomedical and behavioral research. Biomedical research in the life sciences is a major problem for academia and society in general. The National Research Act of July 12, 1974. Title II, Public Law 93-348 provided for the Protection of Human Research Subjects in all research using human subjects, conducted, supported or regulated by the federal government must uphold 45 CFR 46. Under the National Research Act; a. Research means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. b. Research subject to regulation, and similar terms are intended to encompass those research activities for which a federal department or agency has specific responsibility for regulating as a research activity, (for example, Investigational New Drug requirements administered by the Food and Drug Administration). It does not include research activities which are incidentally regulated by a federal department or agency solely as part of the department's or agency's broader responsibility to regulate certain types of activities whether research or non-research in nature (for example, Wage and Hour requirements administered by the Department of Labor). c.Human Subject means a living individual about whom an investigator (professional or student) conducting research obtains (1) date through intervention or interaction with the individual and (2) identifiable private information. d. IRB approval means the determination of the IRB that the research has been reviewed and may be conducted at an institution within the constraints set forth by the IRB and by other institutional and federal requirements.

1. In order to approve research covered by this policy the IRB shall determine (1) Risks to subjects are minimized: (i) By using procedures which are consistent with sound research design and which do not unnecessarily expose subjects to risk, and (ii) whenever appropriate, by using procedures already being performed on the subjects for diagnostic or treatment purposes. In evaluating risks and benefits, the IRB should consider only those risks and benefits that may result from the research (as distinguished from risks and benefits of therapies subjects would receive even if not participating in the research). Selection of subjects must equitable. In making this assessment the IRB should take into account the purposes of the research and the setting in which the research will be conducted and should be particularly cognizant of the special problems of research involving vulnerable populations, such as children, prisoners, pregnant women, mentally disabled persons, or economically or educationally disadvantaged persons.Informed consent will be sought from each prospective subject or the subject's legally authorized representative, in accordance with, and to the extent required by §46.116. Informed consent will be appropriately documented, in accordance with, and to the extent required by §46.117. When appropriate, the research plan makes adequate provision for monitoring the data collected to ensure the safety and privacy of subjects and to maintain the confidentiality of data. Research covered by this policy that has been approved by an IRB may be subject to further appropriate review and approval or disapproval by officials of the institution. However, those officials may not approve the research if it has not been approved by an IRB. An IRB shall have authority to suspend or terminate approval of research that is not being conducted in accordance with the IRB's requirements or that has been associated with unexpected serious harm to subjects. Any suspension or termination of approval shall include a statement of the reasons for the IRB's action and

shall be reported promptly to the investigator, appropriate institutional officials, and the department or agency head.

2. Basic elements of informed consent shall be provided to each subject: (a) A statement that the study involves research, an explanation of the purposes of the research and the expected duration of the subject's participation, a description of the procedures to be followed, and identification of any procedures which are experimental; (b) A description of any reasonably foreseeable risks or discomforts to the subject; (c) A description of any benefits to the subject or to others which may reasonably be expected from the research; (d) A disclosure of appropriate alternative procedures or courses of treatment, if any, that might be advantageous to the subject; (e) A statement describing the extent, if any, to which confidentiality of records identifying the subject will be maintained; (f) For research involving more than minimal risk, an explanation as to whether any compensation and an explanation as to whether any medical treatments are available if injury occurs and, if so, what they consist of, or where further information may be obtained; (g) An explanation of whom to contact for answers to pertinent questions about the research and research subjects' rights, and whom to contact in the event of a research-related injury to the subject; and (h) A statement that participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which the subject is otherwise entitled, and the subject may discontinue participation at any time without penalty or loss of benefits to which the subject is otherwise entitled.

3. The World Medical Association Helsinki Declaration of June 1964, that was amended for an eighth time on October 2008, provides, “It is the mission of the physician to safeguard the health of the people…The purpose of biomedical research involving human subjects must be to improve diagnostic, therapeutic and prophylactic procedures, and the understanding of the aetiology and pathogenesis of disease. In current medical practice, most diagnostic, therapeutic or prophylactic procedures involve hazards. This applies especially to biomedical research”. According to the American Medical Association explains, in the Ethical Considerations in International Research adopted by the AMA June 2001. The Council for International Organizations of Medical Sciences (CIOMS) in collaboration with the World Health Organization International Ethical Guidelines for Biomedical research Involving Human Subjects of 1993 drew up comprehensive ethical guidelines in response to the need to produce drugs to treat the AIDS epidemic and swiftly produced the first anti-retroviral drugs. Its general principles are that all research involving human subjects should be conducted in accordance with three basic ethical principles, namely respect for persons, beneficence and justice. Human test subjects should be compensated, especially if they are harmed.

Art. 7 Epidemics

§344 Public Health

A. Public health is the study of the impact of illness, mortality and healthcare upon society. Public health ensures: 1. sufficient vaccines for the population, 2. supply of technological treatments, 3. networking of national laboratories, 4. financing and

recognition of important research, 5. education in regards to hygiene, exercise, nutrition and the dangers of health risks, 6. health insurance, 7. national health surveys, 8. the management of epidemics 9. identification of barriers to the achievement of health goals and development of programs to overcome them. Public health is different than the practice of medicine or a person's private health because private health issues are confidential whereas the objective of public health is keep accurate statistical surveillance of epidemics and come up with solutions to common public health issues.

1. The moral and material interest of public health is therefore to: 1. improve understanding of public health, including the distinction between publicly funded medical care and public health; 2. determine the roles and responsibilities of private physicians in public health, particularly in the delivery of personal medical care to underserved populations; 3. advocate for essential public health programs and services; 4. monitor legislative proposals that affect the nation's public health system; 5. monitor the influence of managed care organizations and other third party payers and assess the roles and responsibilities of these organizations for providing preventive services in communities; 6. monitor trends in education and certification requirements. 7. effectively communicate with practicing physicians and the general public about important public health issues H-440.912 Health Policy of the AMA House of Delegates.

2. Public Health Initiative H-440.911 of the Health and Ethics Policies of the AMA House of Delegates recommends that to be effective a public health organization or professional should:. 1. Engage the community. Seek to change existing thinking within academic health centers, health-oriented community organizations, health care delivery systems and providers, and among health care purchasers to focus on improving the health of the community. 2. Create joint research efforts. Develop a common research agenda for public health and medicine using a three-fold approach: a. First, educate clinical and public health researchers about the advantages of joining and applying their knowledge in the formulation, design, and execution of research projects. b. Second, focus these projects on remedying significant health issues. c. Third, review the public and private funding of public health and medicine. 3. Jointly Develop Health Care Assessment Measures. Synthesize the knowledge of medicine and public health to improve the quality, effectiveness, and outcome measures of health care. Specific implementation strategies might include: a. Developing better measurement, monitoring, and accountability indices for the use of practitioners, health care provider institutions, and policy-makers. b. Developing better methods and criteria to establish databases, sufficiently standardized so that they can be readily shared by investigators without endangering medical record confidentiality through such program as hospital and community burden of illness, treatment and mortality statistics.

3. A distinction needs to be made between public and global health for statistical and diplomatic reasons, therefore the term global health is used to refer to specialization in the international study of epidemiology, response to outbreaks of disease and comparative studies of national systems of health. UN General Assembly Resolution enhancing capacity building in public health of 8 February 2006 seeks to enhance the achievement of health related development goals, noting with concern the deleterious

impact on humankind of HIV/AIDS, tuberculosis, malaria and other major infectious diseases and epidemics, and the heavy disease burden borne by poor people, especially in developing countries, including the least developed countries, as well as countries with economies in transition, and in this regard noting with appreciation the work of the Joint United Nations Programme on HIV/AIDS, its co-sponsoring agencies and the Global Fund to Fight AIDS, Tuberculosis and Malaria. New and re-emerging diseases, such as the severe acute respiratory syndrome and a human influenza pandemic arising from avian and swine influenza are also of concern. The serious damage and loss of life caused by natural disasters and their negative impact on public health and health systems is also noted.

4. States have primary responsibility for strengthening their capacity-building in public health to detect and respond rapidly to outbreaks of major infectious diseases, through the establishment and improvement of effective public health mechanisms, while recognizing that the magnitude of the necessary response may be beyond the capabilities of many countries, in particular developing countries, as well as countries with economies in transition. Strengthening public health systems is critical to the development of all nations and economic and social development are enhanced through measures that strengthen capacity-building in public health, primarily through the establishment of competent systems of epidemiological surveillance in the national government, including strategies for training, recruitment and retention of sufficient public health personnel, systems of prevention of and of immunization against infectious diseases, provision of adequate medical supply and measures to eliminate discrimination in access to public health information and education for all people, especially for the most underserved and vulnerable groups.

B. Epidemiology is the study of factors affecting the health and illness of populations, and serves as the foundation, logic and control of interventions made in the interest of public health and preventive medicine. Epidemiology is considered a cornerstone methodology of public health research. In the study of communicable and non-communicable diseases, the work of epidemiologists ranges from outbreak investigation to study design, data collection and analysis including the development of statistical models to test hypotheses and the documentation of results for submission to peer-reviewed journals. In the first half of the 20th century, mostly with the help of penicillin, medical science achieved great success against infectious diseases, but non-infectious diseases remain unchecked. Infectious organisms belong to a wide range of classes and vary in size from the 2-nm poliovirus to 10-m tapeworms. Chemical pollutants and radioactivity also cause disease.

1. As a public health discipline, epidemiologic evidence is often used to advocate both personal measures like diet change and corporate measures like removal of junk food advertising, warnings about environmental health hazards such as water or soil contamination, termination of dangerous biological experiments and laboratory leaks, with study findings disseminated to the general public in order to help people to make informed decisions about their health. Population-based health management encompasses the ability to; a. Assess the health states and health needs of a target

population; b. Implement and evaluate interventions that are designed to improve the health of that population; c. efficiently and effectively provide care for members of that population and d. discipline the medical and scientific community to minimize the public health risk posed by pathogens and misconduct.

2. The historical development of the study of epidemiology is mostly attributed to the Greek physician Hippocrates is sometimes said to be the father of epidemiology. He is the first person known to have examined the relationships between the occurrence of disease and environmental influences. He coined the terms endemic (for diseases usually found in some places but not in others) and epidemic (for disease that are seen at some times but not others. One of the earliest theories on the origin of disease was that it was primarily the fault of human luxury. This was expressed by philosophers such as Rousseau who pointed out that although one could rant and rave about quackery societies with developed medical systems tended to live longer and be healthier.

3. In the medieval Islamic world, physicians discovered the contagious nature of infectious disease. In particular, the Persian physician Avicenna, considered a "father of modern medicine," in *The Canon of Medicine* (1020s), discovered the contagious nature of tuberculosis and sexually transmitted disease, and the distribution of disease through water and soil. He introduced the method of quarantine as a means of limiting the spread of contagious disease. He also used the method of risk factor analysis, and proposed the idea of a syndrome in the diagnosis of specific diseases. In the middle of the 16th century, a famous Italian doctor from Verona named Girolamo Fracastoro was the first to propose a theory that these very small, unseeable, particles that cause disease were alive. They were considered to be able to spread by air, multiply by themselves and to be destroyable by fire. Germ theory was a concept that took many years to congeal. The whole idea of little germs that were too small to see causing disease was hard for people to swallow. Germ theory was actually born in the 1670's when the Dutch researcher Antoni van Leeuwenhoek built a simple microscope and discovered a whole world of microorganisms, in addition to red blood cells and spermatozoa. He observed germs from canal water, from ginger, from the dirt between his toes -- from almost everywhere he looked. Yet, his discovery was disregarded until the 1830's when other scientists finally began to catch on that the microscope was a legitimate tool.

4. In 1707, a French scientist demonstrated that microorganisms did not develop in a water/manure mixture that had been boiled and then sealed. There were versions of this experiment repeated for over 150 years, and by the 1830's, the principles of antiseptic surgery should have been in place. Resistance to germ theory however marched on. In 1846, a young Austrian-Hungarian doctor named Igaz Semmelweis investigated a notorious maternity ward in which nearly all of the inpatients contracted a fatal case of "childbed fever". What he noticed was that women who came into the ward after giving birth were not likely to become ill. When a professor cut his finger in the middle of an autopsy in that same hospital died of identical symptoms, Semmelweis began making his students disinfect their hands before delivering babies, and the number of childbed fever cases dropped. Of course, no good deed goes unpunished. Semmelweis was labeled "insane" by his colleagues for having the audacity to suggest that they should wash their

hands between deliveries, and they fired him. He tried to continue his research but was ostracized by the medical community. His own mental health eventually deteriorated, leading to his death in an insane asylum. In 1860 a famed doctor was scheduled to speak at a conference to thoroughly denounce Semmelweis's ideas. Before the speech began, he was interrupted by a man who proceeded to tell the audience that he had discovered the bacterium responsible for childbed fever. That man was Louis Pasteur, and the rest is history. Lack of proper hand washing continues to be the primary reason why MRSA and other superbugs are spread in hospitals today. In 1865, a Glasgow surgeon named Joseph Lister used antiseptic for the first time in surgery. The results were dramatic: his post-amputation death rate fell from 45 to 15 percent. For the first time, there were surgical procedures from which patients had a moderate chance of recovery. Germ theory took a few more steps forward in 1872 when a growth of penicillium mold killed off bacteria in one of Lister's liquid cultures. In 1884, he treated a patient with penicillium and cured him of an infected wound. However, Lister "lacked the energy or the resources to promote penicillium, partly because he was still struggling to win acceptance of antiseptic surgery". Penicillin was not introduced until 1941.

5. To date, few universities offer epidemiology as a course of study at the undergraduate level. Many epidemiologists are physicians, or hold other postgraduate degrees including a Master of Public Health (MPH), Master of Science or Epidemiology (MSc.). Doctorates include the Doctor of Public Health (DrPH). Epidemiological studies are aimed, where possible, at revealing unbiased relationships between exposures such as alcohol or smoking, biological agents, stress, or chemicals to mortality or morbidity. "Correlation does not imply causation" is a common theme for much of the epidemiological literature. For epidemiologists, the key is in the term inference. Epidemiologists use gathered data and a broad range of biomedical and psychosocial theories in an iterative way to generate or expand theory, to test hypotheses, and to make educated, informed assertions about which relationships are causal, and about exactly how they are causal. Epidemiologists Rothman and Greenland emphasize that the "one cause - one effect" understanding is a simplistic mis-belief. Most outcomes whether disease or death, are caused by a chain or web, consisting of many component causes. Types of study are,

a. Cases series: qualitative study of the experience of a single patient, or small group of patients with a similar diagnosis, or to a statistical technique comparing periods during which patients are exposed to some factor with the potential to produce illness with periods when they are unexposed. It is important for epidemiologists to know how to counsel and treat the victims of outbreaks of disease and is how to do the theoretical science of epidemiology justice. Confidentiality is important.

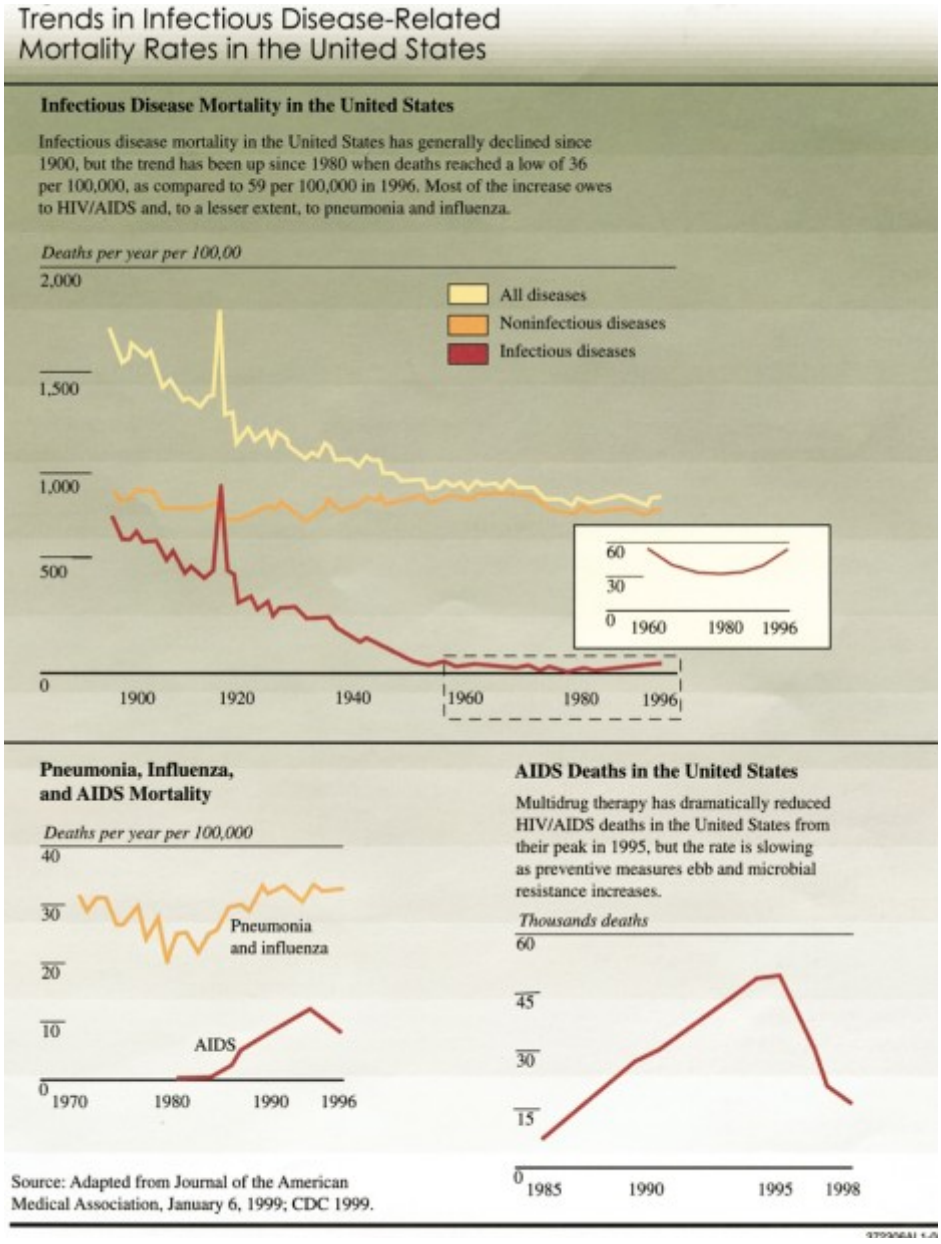
b. Case control: studies select subjects based on their disease status. A group of individuals that are disease positive (the "case" group) is compared with a group of disease negative individuals (the "control" group). The control group should ideally come from the same population that gave rise to the cases. The case control study looks back through time at potential exposures that both groups (cases and controls) may have encountered. A 2x2 table is constructed, displaying exposed cases (A), exposed controls (B), unexposed cases (C) and unexposed controls (D). The statistic generated to measure

association is the odds ratio (OR), which is the ratio of the odds of exposure in the cases (A/C) to the odds of exposure in the controls (B/D), i.e. OR = (A/C) / (B/D). Because these studies look backward to determine why some people get a disease and others do not, they are not very dangerous.

c. Cohort studies: Selects subjects based on their exposure status. The study subjects should be at risk of the outcome under investigation at the beginning of the cohort study; this usually means that they should be disease free when the cohort study starts. The cohort is followed through time to assess their later outcome status. An example of a cohort study would be the investigation of a cohort of smokers and non-smokers over time to estimate the incidence of lung cancer. The same 2x2 table is constructed as with the case control study. However, the point estimate generated is the Relative Risk (RR), which is the probability of disease for a person in the exposed group, P_e=A/(A+B) over the probability of disease for a person in the unexposed group, P_u=C/(C+D), i.e. RR=P_e/P. These studies are extremely dangerous because subjects run the risk of being exposed to the biological agents that cause the diseases the researchers want to prove their study or achieve a secret political agenda or become seized by the laboratory leak it turns out they are studying. Cohort studies are important to determine the general safety of lists such as health and welfare rolls, and alumni associations and the affects of discriminatory actions that identify a percentage of the group.

6. Cutting edge research into epidemiology mostly involves the detection and recall of pathogenic substances such as trans-fats. In United States law, epidemiology alone cannot prove that a causal association does not exist in general. Conversely, it can be taken by US courts, in an individual case, to justify an inference that a causal association does exist, based upon a balance of probability. Epidemiology is concerned with the incidence of disease in populations and does not address the question of the cause of an individual's disease. This question, sometimes referred to as specific causation, is beyond the domain of the science of epidemiology. Epidemiology has its limits at the point where an inference is made that the relationship between an agent and a disease is causal (general causation) and where the magnitude of excess risk attributed to the agent has been determined; that is, epidemiology addresses whether an agent can cause a disease, not whether an agent did cause a specific plaintiff's disease.

C. The general trend over the 20th century was one of great success against infectious diseases, mostly due to universal access to scientifically safe drinking water, sanitation and environmental strategies that eliminate mosquito infested standing water, greatly reduced mortality from diarrheal diseases such as cholera and dysentery, and isolated malaria. Furthermore, the development of effective antibiotics has helped to reduce the lethality of infection and vaccines have eradicated polio and many other troublesome diseases. As a result life expectancy has increased from 50 to nearly 80 years industrialized nations. Death from non-infectious diseases such as cancer and heart disease, have however remained the same or increased in frequency, so that what killed 16% of the population in 1900 now kills 66%. The intervention of HIV/AIDS into the world scene caused an increase in mortalities due to infectious diseases that went down after anti-retroviral treatment was developed.



Source: National Intelligence Estimate. The Global Infectious Disease Threat and Its Implications for the United States. NIE-99-17D January 2000

1. Infectious disease mortality declined during the first 8 decades of the 20th century from 797 deaths per 100 000 in 1900 to 36 deaths per 100 000 in 1980. From 1981 to 1995, the mortality rate increased to a peak of 63 deaths per 100 000 in 1995 and declined to 59 deaths per 100 000 in 1996. The decline was interrupted only by a sharp spike in mortality caused by the 1918 influenza epidemic. From 1938 to 1952, the decline was particularly rapid, with mortality decreasing 8.2% per year. Pneumonia and influenza were responsible for the largest number of infectious disease deaths throughout the century. Tuberculosis caused almost as many deaths as pneumonia and influenza early in

the century, but tuberculosis mortality dropped off sharply after 1945. Infectious disease mortality increased in the 1980s and early 1990s in persons aged 25 years and older and was mainly due to the emergence of the acquired immunodeficiency syndrome (AIDS) in 25- to 64-year-olds and, to a lesser degree, to increases in pneumonia and influenza deaths among persons aged 65 years and older.

2. Between 1900 and 2000, life expectancy at birth in the United States increased from 47 to 77 years. Although overall death rates have gone down considerably and life expectancy increased dramatically since 1900 heart disease and cancer are more prevalent than ever. In 1900, one third of all deaths in the United States were attributed to three major categories of infectious disease: pneumonia and influenza, tuberculosis, and diarrheal diseases and enteritis. Many additional deaths were caused by typhoid, meningococcal meningitis, scarlet fever, whooping cough, diphtheria, dysentery, and measles. Altogether, common infectious diseases accounted for 40% of all deaths in 1900 but they accounted for only 4% of all deaths in 2000. Cardiovascular disease (CVD; heart disease and stroke) accounted for 14% of all deaths in 1900 and for 37% in 2000. Cancer accounted for only 4% of all deaths in 1900 but for 23% in 2000.

D. Over the past forty years progress in infectious diseases has declined in regards to a dramatic increase in idiopathic allergies and asthma, and proliferation of ineffective treatments therefore, such as epinephrine and salbuterol. To treat asthma all that is wanted is eucalyptus or lavender to treat coronavirus and influenza, a dab of hydrocortisone crème, to reduce the cost of corticosteroid inhalers to treat aspergillosis, coronavirus and inflammation and Pneumovax to eliminate the need for ampicillin to treat Azithromycin resistant pneumonia, meningitis and sinusitis. Allergies respond well to hydrocortisone. Food allergies are often the result of intestinal MRSA or aspergillosis, from spoiled food, or contaminated drinking water. The COVID-19 pandemic has reinforced the need to eliminate discrimination in access to public health information and education for all people to benefit from the provision of adequate medical supply, especially the most underserved and vulnerable groups pursuant to UN General Assembly Resolution enhancing capacity building in public health of 8 February 2006. Everyone needs the “precision medicine” left uncodified by the 21st Century Cures Act.

1. Systems of prevention of and of immunization against infectious diseases, cannot be monopolized by vaccine development, e.g. seasonal influenza and COVID-vaccines, or drug resistance propaganda that omits reference to existing treatments for certain infectious diseases e.g. ampicillin, doxycycline and metronidazole. New development must be checked by library and market “research” discovering the cheap, safe and effective remedies that are readily available. Scientific discovery usually turns out to be something everyone knows and only needs to be reminded of. The seasonal influenza vaccine is notoriously placebo, in some pandemics is reported to be only 5% effective, but is probably more like there is absolutely no health benefit to be gained from the annual seasonal influenza vaccine that outsells effective pneumovax and childhood vaccines combined. When there is an outbreak of influenza, the news media and government must solicit for the vaccine development, nor publicize the leaky

arrangements to ship the live virus from testing centers to vaccine development laboratories, that is the true cause of these massive pandemics.

2. When there is an outbreak of influenza, the media must immediately inform the public that mentholyptus cough drops are the frontline treatment for influenza, and that prescription Oseltamivir (Tamiflu), Zanamivir (Relenza) and Amantadine (Symmetrel) are all quite safe and effective.

§345 Respiratory Infection

A. All lung diseases put together are the third leading killer in the United States and is the cause of one in six deaths. The motto of the American Lung Association is if you can't breath nothing else matters. Every year an estimated 400,000 people die from diseases of the lung; an age adjusted death rate of 135 per 100,000. More than 35 million people have chronic lung diseases. Respiratory infections are all contagious because they infect the airways and are transmitted by microscopic water droplets with every cough, sneeze and breath. Health professionals should wear respirators when examining patients and when there is a pandemic the public are advised that masks are 95% effective at preventing transmission. An estimated 12.1 million people have chronic obstructive pulmonary disorder (COPD), also known as emphysema or chronic bronchitis, due to lung damage, that is not necessarily contagious, although it is extremely vulnerable to all sorts of infection. Lung disease may refer to the most frequent of cold viruses and many chronic conditions such as asthma, allergies, to deadly, but largely treatable diseases like chronic obstructive pulmonary disease, pneumonia and tuberculosis, to the two year prognosis of lung cancer. In general, a wet cough is the flu, cured with mentholyptus cough drop, or prescription Oseltamivir (Tamiflu), Zanamivir (Relenza) and Amantadine (Symmetrel), a dry cough is pneumonia, treated with Ampicillin (Principen) for Azithromycin (Z-pack) resistance, hospital ventilation may be necessary if breathing becomes too difficult. Hard lung nodules and coughing from pulmonary aspergillosis, that elaborates a carcinogenic aflatoxin, is cured with a dab of hydrocortisone crème to chest. A runny nose indicates a viral cold, limited to one week, a very runny nose, the first week of pertussis while six weeks of whooping cough can be avoided by taking antibiotics, or if the runny or itchy nose lasts longer than a week it is allergic rhinitis, caused by environmental aspergillus or contagious coronavirus, usually cured with a dab of hydrocortisone crème to the nose, there is no need to wait to try it.

1. Coronavirus is virtually the only cold circulating during the COVID-19 pandemic, there is no need to wait for a week to treat it. Hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure coronavirus. Eucalyptus or lavender also cure influenza. Official descriptions of COVID-19 symptoms, fail to touch on the nose, and actually describe flu-like symptoms, rather than end stage fluid filled lungs, and influenza does sometimes circulate. COVID-19 vaccines can cure chronic coronavirus in two doses, but does not prevent the contagious allergic rhinitis, and cannot truly end the pandemic. It is essential that the public learn the lesson: Hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure allergic rhinitis from coronavirus. Eucalyptus or lavender also cure the wet cough of influenza. Mentholyptus cough drops

are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus, lavender or peppermint soap in public restrooms, with instruction to "wash your face and nose". Lysol is approved for environmental cleaning. In hospital-like conditions it is important that both staff and patients are treated. Intensive care units (ICUs), waiting rooms and public airspaces of all sorts may be sterilized of both influenza and coronavirus with eucalyptus scented humidifiers (diffusers).

2. Coronaviruses are one of the viruses behind the common cold. Named for their crown of club-shaped thorns, which can be seen with an electron microscopes, they cause colds especially during the winter and spring. Coronaviruses need only about three days to descend from the nose and multiply in the respiratory tract before their victim starts feeling miserable. On average the cold lasts for a week, a few days shorter than a typical rhinovirus cold, but with more nasal congestion. Coronaviruses are remarkably good at re-infecting their hosts, which is one reason why vaccines remain elusive. Public health authorities like to inform the public there is normally no treatment for coronaviruses other than a caution to wash hand and keep clean. For Severe Acute Respiratory Syndrome (SARS), a coronavirus, the treatment with no fatalities was to ventilate the patient and medicate with the antibiotic levofloxacin (Levaquin), and corticosteroids Methylprednisolone IV and then Prednisone. This interprets to hydrocortisone crème.

3. Although social distancing, masks, travel restrictions and other deprivations of rights have kept the deaths to mid-20th-century levels of major pandemics, as many people have died from COVID-19, in the US, as from the Spanish flu of 1918, the untold truth regarding the cure is same – eucalyptus. It is due to felony monopolization of the news media and government by vaccine propaganda, that millions died, waiting for vaccine development and continue to get reinfected, spread the disease to others and die due to its ineffectiveness and relative unavailability in comparison to other cheap and effective over-the-counter remedies that can be bought at the corner store. Coronavirus colds are unique for three reasons, it can be lethal, it lasts more than a week, and it is curable. Coronavirus instantly begins with allergic rhinitis of the nose, indicating that the person is contagious, and is in the presence of the contagion of another person or environmental reservoir. There is no such thing as an asymptomatic patient, only contagious [sic] health care professionals who don't know either their own "Pinocchio nose" or readily available curative oral, topical and environmental treatment that could make their care non-infectious. If coronavirus descends down the airways from the nose, the lungs can fill up with fluid, and this can cause death. In sterile hospitals situations, without treatment, coronavirus lasted three weeks, but due to reinfection, many people suffered from chronic coronavirus, lasting months to more than the official minimum duration of six months, before being cured by two shots of the COVID-19 vaccine.

B. Colds are by far the most widespread of all infections in this country affecting more than 150 million people in the United States each year. Although some people claim they were never infected, they either recovered without help, or go around in a contagious state without being severely ill; during the COVID-19 pandemic virtually everyone was infected, got allergic rhinitis, spread the disease to others and was reinfected hundreds of

times a year, from several to dozens of times a day depending on their levels of exposure at work. Many people, especially children, have two or more colds annually. In the average year, colds are responsible for a loss of 440 million workdays and 62 million school days. Including time lost from work, doctors' fees and medications purchased, the annual cost of colds has been estimated well in excess of eight billion dollars annually.

1. Colds are infections of the lining of the nose. The common cold is caused by a virus, not just a single virus but any one of more than 125. These include rhinovirus, adenovirus, coronavirus, and respiratory syncytial virus. Because so many viral types cause colds, it has been difficult to develop a vaccine that would make you immune to the common cold, since vaccines are targeted at a specific culprit. It also explains why a person who has recovered from one cold is still susceptible to infection by a different virus and thus can catch other colds. Viruses and bacteria are two different things. Sinus infections, are caused by bacteria (bacteria respond to antibiotics) while a cold is secondary to a virus (which does not respond to antibiotics). Pertusiss (*Bordetella pertussis*), must be treated with any broad-spectrum antibiotic, within the first week, while it is an extremely runny nose, to avoid a full six weeks of whooping cough. If a runny or irritated nose lasts more than week it is probably environmental aspergillus mold or contagious coronavirus - allergic rhinitis – and should be cured with a dab of hydrocortisone crème to the nose. Aspergillosis or coronavirus of the lungs is also cured with a dab of hydrocortisone to the chest.

2. The rhinovirus genus is the most common cause of the common cold. Rhinoviruses come in hundreds of types, so a universal cure is hopeless. Rhinoviruses thrive at the average temperature of our nasal mucous membranes, about 93ºF. They are cousins of the poliovirus, in the Picornavirus family, possessing about half the same genes, and strike in late summer and fall, in the Northern hemisphere. A rhino cold lasts on average about a week, with peak misery on the second and third days. There is shaky evidence that heavy doses of vitamin C may reduce the length of colds, but not the frequency of catching them. Washing your hands is a lot is better. Concentrated rhinoviruses in snot survive for hours on skin, plastic, wood, Formica, steel and many fabrics. Stuff a cold and starve a fever. A number of Over-the-Counter remedies are known to be effective with rhinoviruses ie. diphenhydramine (Benylin, Benadryl), chlorpheniramine (Telachlor, Chlo-Amine, Chlor-Trimeton, Aller-Chlor), brompheniramine (Bromphen, Nasahist B, Dimetane Extentabs) and Ipratropium intranasal (Atrovent).

3. Adenoviruses are a family of viruses, the ones that like people cause about 5 percent of all respiratory illnesses, from mild flulike symptoms to pneumonia, involving upper and lower respiratory tract infections (URI, LRI), swollen adenoids, conjunctivitis and diarrhea. The typical incubation period for gastroenteritis is 3-10 days; for respiratory tract infections it is between 2 and 14 days. Outbreaks of adenovirus-associated respiratory disease have been more common in the late winter, spring, and early summer; however, adenovirus infections can occur throughout the year. Most children, in urban areas, have been infected with the more common adenoviruses by the time they reach school age. Up to twenty cases a week per one hundred WWI recruits could be expected. Adenoviruses are often isolated from apparently healthy individuals. The adenoviruses

are a major family of icosahedral DNA containing viruses which have unique molecular biological properties. ARD is most often associated with adenovirus types 4 and 7, and more recently adenovirus 14, in the United States. Enteric adenoviruses 40 and 41 cause gastroenteritis, usually in children. An effective vaccine against Adenovirus serotype 4 (Ad4) and serotype 7 (Ad7) was approved in 1971. The economy-driven cessation of vaccine production by its sole producer in 1996 resulted in re-emergence of outbreaks, with Ad4 predominating in 98% of cases, 5 fatalities. On March 16, 2011, the FDA approved an adenovirus vaccine for manufacture by Teva Pharmaceuticals.

4. Echovirus is one of several families of viruses that affect the gastrointestinal tract collectively called enteroviruses. Echoviruses also cause respiratory infections. In the US, echovirus infections are most common in the summer and fall. It is transmitted by contact with stools contaminated by the virus, and possibly by breathing in air particles from an infected person. Serious infections with echoviruses are less common, but can be significant particularly in immune compromised patients. As many as 1 in 5 cases of viral meningitis are caused by an Echovirus. Complete recovery without treatment is expected in patients who have the less severe type of illness. Infections of organs such as the heart (pericarditis and myocarditis) may cause severe distress and can be fatal. No specific antivirals are available for the Echovirus other than hand-washing, when in contact with sick people, no vaccines are available. Immune Globulin (IGIV) may help people with severe Echo virus infections.

Diagnosis and Treatment of Respiratory Infections

Infectious Agent	Symptoms	Treatment
Common Cold		
Coronaviruses	Upper respiratory tract infection (URI) lasting for a week, nasal congestion	Hydrocortisone, eucalyptus, lavender, peppermint or salt help water. Mentholyptus cough drops. For SARS ventilate, levofloxacin (Levaquin), and corticosteroids Methylprednisolone IV and then oral Prednisone. Pfizer and Moderna COVID-19 vaccines cure in two shots, no lasting immunity from contagious allergic rhinitis. Clean with Lysol.
Rhinoviruses	URI, Swollen lymph nodes, upper respiratory tract infection, nasal infection, peak misery after two days, lasts a week	Over-the-Counter: Diphenhydramine (Benylin, Benadryl), Chlorpheniramine (Telachlor, Chlo-Amine,

		Chlor-Trimeton, Aller-Chlor), Brompheniramine (Bromphen, Nasahist B, Dimetane Extentabs), Ipratropium intranasal (Atrovent)
Echovirus	URI, sore throat, skin rash, harpangia, croup, may inflame endocarditis, pneumonia, meningitis, prevalent in summer and fall in US	None, clean. Immune Globulin Intravenous (IGIV) for serious infections
Adenoviruses	URI and lower respiratory tract infection (LRI), may also cause conjunctivitis, bladder infection, inflamed pharynx, diarrhea and rheumatism of the lower extremities for a week, prevalent in late winter, spring and summer	None, clean. Vaccine re-authorized to Teva Pharm on contract with the U.S. Army. Get light exercise. Eat white rice for diarrhea. Clean. Avoid young children.
Flu Like Symptoms		
Influenza A & B	Body or muscle aches, chills, cough, fever over 101° F, 38°C, headaches, and sore throat, incubates for two days, lasts two days, prevalent in winter.	Mentholyptus cough drop. OTC Theraflu, Allegra (Sanofi-Aventis) and Children's Allegra (fexofenadine) and Allegra-D (fexofenadine and pseudoephedrine); Prescription Oseltamivir (Tamiflu) and Zanamivir (Relenza). Vaccine ineffective. Antibiotics for pneumonia
Parainflueza Types 1-4	LRI in children, URI in adults, prevalent in fall and winter	No vaccine, clean. Treat secondary infections with Antibiotics
Respiratory Syncytial Infection	LRI and breathing passages. Most otherwise healthy people recover from RSV infection in 1 to 2 weeks	Ribavirin (Virazole), asthmas inhalers ie. corticosteroids: flunisolide (Aerobid), beclomethasone (QVAR), (Flovent); triamcinolone, (Azmacort), Antibiotics for pneumonia or ear infection
Bacterial Agent		

Whooping cough *Bordetella pertussis*	Sporadic epidemic respiratory infection begins with runny nose that lasts a week, before the infection descends to the lungs for six weeks of mild rheumatism and coughing	Antibiotics only cure if taken the first week before the infection descends into the lungs. Antibiotics taken later reduce contagiousness. Clean.
Strep Group A Rheumatic Heart Disease: *Streptococcus pyogenes*, acquired from young adults	Highly contagious URI, sore throat, lasting a week, rheumatic heart disease sets in after a week with a 25% chance of dying over 10 years, if untreated	{neumovax. Cured quickly with antibiotics and plenty of cardiovascular exercise. Eat vegan. No sugar. Clean. Stock up or get a refillable prescription for antibiotics.
Strep Group B Gout: *Steptobacillus agalactiae* acquired from nursing mothers	LRI infection, persistent endocarditis, hyper uremia and severe prolonged rheumatism of the lower extremities	Cured with a full course of antibiotics, long periods of light exercise, sunlight or Vitamin D for cripples. Eat vegan, no caffeine. Clean. Avoid nursing mothers and contaminated fabrics.
Pneumonia: *Streptococcus pneumoniae*, *Chlamydia pneumonia*e and *Staphylococcus aureus* acquired from hospitals, Strep + Staph = toxic shock syndrome	The term pneumonia is used to describe any severe respiratory infection, these strains are most highly contagious, also cause meningitis, ear and skin infection, endocarditis and mix and mutate with other resistant systemic bacterial and viral infections.	Pneumovax. Penicillin, ceftriaxone, cefotaxime and cardiovascular exercise. The corticosteroid Prednisone is also used, but is immune-suppressant. Ventilation in hospitals saves lives. Antitoxin for Step/Staph toxic shock syndrome. Eat vegan. Drink safely. Clean. Avoid people for their sake.
Fungal Agent		
Histoplasma capsulatum	The Ohio and Mississippi River valleys are the most heavily contaminated regions in the United States, although distribution of the organism is worldwide. Infection results from the inhalation of spores from an environmental source and leads to several clinical states.	A total dose of 500 to 1000 mg of amphotericin B is used to treat severe primary infections, and 2 to 2.5 gm is used to treat all symptomatic disseminated infection. Ketoconazole 400 to 800 mg/day are used for non-meningeal infection and 800 to 1200 mg/day for disseminated infections with meningitis.

Aspergillus fumigatus, *A. flavus*, *A. niger* and others	Allergic aspergillosis, invasive or disseminated infection or fungus ball (or mycetoma), allergic bronchopulmonary or invasive disease, releases carcinogenic aflotoxin.	A total dose of 500 to 1000 mg of amphotericin B is used to treat severe primary infections. Oral sporanox (itraconazole) is reported to be effective. Hydrocortisone crème used topically on affected bonchopulmonary region-chest or nose, cures.

Source: Hospitals & Asylums HA-24-4-11

C. Pneumonia is described as a dry cough and flu a wet cough. Pneumonia is an inflammation of the lung, usually caused by an infection and is the typical cause of death amongst people with influenza. Three common causes are bacteria, viruses and fungi. Pneumococcal pneumonia is caused by bacteria called *Streptococcus pneumoniae,* also called pneumococcus. Pneumonia kills an estimated 55,477 annually out of 1.2 million hospital admissions accounting for 5.6% of inpatient hospital deaths. 60% of elderly people receive a pneumococcus vaccine. The outpatient treatment for pneumonia is Ampicillin (Principen), hospital ventilation calls for doxycycline or clindamycin to treat the toxic shock syndrome that results when hospital *Staph* meet normal social levels of *Strep*. In the U.S., an estimated 25–50 million cases of the flu are reported annually - leading to 150,000 hospitalizations and 30,000–40,000 deaths yearly. If these figures were to be estimated incorporating the rest of the world, there would be an average of approximately 1 billion cases of flu, around 3–5 million cases of severe illness, and 300,000–500,000 deaths yearly. Over 90% of those deaths are in persons over the age of 64 years old. On average there are over 200,000 hospitalizations per year, with wide range according to the severity of the season. About 50% of those hospitalizations are among those ages 64 and older. The highest rates of infection are in children. Flu rates are often over 30% in some communities, resulting in school shut downs and parents missing work due to having to stay home with their kids. Information regarding, low cost, over-the-counter mentholyptus cough drops and prescription amantadine (Symmetrel), effective against human influenza type A and other diseases, and oseltamivir (Tamiflu), zanamivir (Relenza), or peramivir (Rapivab) to treat influenza types A or B, must be discussed in every advertisement regarding the highly ineffective flu vaccine. After the 2017-18 flu season, prescription flu drugs need to be sold anonymously in packages for families or one dose given at the desk to prevent the uncured flu from inoculating the waiting room and staff.

1. Human influenza is a highly transmissible respiratory illness that's caused by the influenza viruses. We see yearly winter epidemics, called seasonal influenza that affect up to 30% of the population, killing on average 30,000 a year in the US or 350,000 globally. The incubation time for influenza (time from exposure to onset of symptoms) is short, about two days. The onset usually is sudden. It is marked by chills, fever, headache, lassitude and general malaise, loss of appetite, muscular aches and pains and sometimes nausea, occasionally with vomiting. Respiratory symptoms, such as sneezing

and nasal discharge, may be present coughing, with or without sputum, may occur, and hoarseness sometimes develops. The fever of 101-105 ° F (40.6 º C) usually lasts for two to four days. Treatment consists of rest in bed, continuing for twenty-four to forty-eight hours after the temperature has become normal. Flu is dangerous to the extent that it can lead to pneumonia, especially for the elderly, the malnourished, or individuals stressed by chronic lung or heart problems. The viruses that cause flu are prone to antigenic drift, making vaccine manufacture difficult. Type A Influenza viruses are subdivided into groups based on two surface proteins, HA and NA, Influenza B or Influenza C based on protein composition. Type A viruses are found in many kinds of animals, including ducks, chickens, pigs, and whales, and also humans. The type B virus widely circulates in humans. Type C has been found in humans, pigs, and dogs and causes mild respiratory infections, but does not spark epidemics. Flu viruses last for hours in dried mucus.

2. Influenza attacks the respiratory tract in humans (nose, throat, and lungs). The flu is different from a cold. Influenza usually comes on suddenly and may include these symptoms: (1) Fever, (2) Headache, (3) Tiredness (can be extreme), (4) Dry cough, (5) Sore throat, (6) Nasal congestion, (7) Body aches. These symptoms are usually referred to as "flu-like symptoms." An outbreak of influenza outside of the flu season (winter in the northern hemisphere) is known as a pandemic. Many people use the term "stomach flu" to describe illnesses with nausea, vomiting, or diarrhea. These symptoms can be caused by many different viruses, bacteria, or even parasites. While vomiting, diarrhea, and being nauseous or "sick to your stomach" can sometimes be related to the flu – particularly in children – these problems are rarely the main symptoms of influenza. The flu is a respiratory disease and not a stomach or intestinal disease. The main way that influenza viruses and other respiratory ailments are spread is from person to person in respiratory droplets of coughs and sneezes. (This is called "droplet spread.") This can happen when droplets from a cough or sneeze of an infected person are propelled (generally up to 3 feet) through the air and deposited on the mouth or nose of people nearby. Though much less frequent, the viruses also can be spread when a person touches respiratory droplets on another person or an object and then touches their own mouth or nose (or someone else's mouth or nose) before washing their hands.

3. Flu patients should, (1) Rest, (2) Drink plenty of liquids, (3) Avoid using alcohol and tobacco, (4) Take medication to relieve the symptoms of flu. Most people who get influenza will recover in one to two weeks, but some people will develop life-threatening complications (such as pneumonia) as a result of the flu. The FDA recently removed some 600 different types of flu remedies from the market. The most effective remedy has always been Over-the-counter Theraflu, most consumer are better the next day. The FDA has approved Allegra (Sanofi-Aventis) and Children's Allegra (fexofenadine) and Allegra-D (fexofenadine and pseudoephedrine) product lines to be marketed over-the-counter. The two prescription antivirals that are most commonly used these days are the neuraminidase inhibitors Oseltamivir (Tamiflu) and Zanamivir (Relenza). Systematic review of 51 studies found no evidence that the flu vaccine is any more effective than a placebo in children. Studies published in 2008 found that influenza vaccination was not associated with a reduced risk of pneumonia in older people although it did contribute to a reduction in mortality. Dangerous complications with influenza involve bacterial

infections that cause pneumonia wherefore broad spectrum antibiotics that are effective against *Haemophilus influenziae* such as ampicillin (Principen) or levofloxacin (Levaquin) save lives.

4. Influenza is the deadliest disease in the history of the world. Influenza, also known as the flu, is a contagious disease that is caused by the influenza virus. History suggests that the influenza pandemics have occurred three times in the 20th century 1918, 1957, and 1968. The 1918 Spanish flu caused an estimated 600,000 death in the US alone, 218.4 deaths per 100,000 Americans, and between 40 and 60 million worldwide. The 1918 Spanish Flu killed the greatest number of people over such a period of time of any natural or man made calamity. The 1957 Asian flu, 2 million lives globally, 22 deaths per 100,000 population; and 1968 Hong Kong flu, 1 million lives globally, 13.9 deaths per 100,000 population. The outbreak of severe acute respiratory syndrome (SARS) in 2003 lasted around three months, resulting in a total of 774 deaths from more than 8,000 cases of infections in close to 30 countries. In Hong Kong the total number of deaths was around 300, or roughly 0.004% of the population. Yet Hong Kong's GDP for the affected quarter fell an estimated 2% and retail sales fell by 6.1%. A 2005 report by the U.S. Congressional Budget Office estimated the damage from a severe flu pandemic to the American economy at around 5% of GDP. Of the 10 influenza pandemics over the past 300 years, about half have begun in fall or winter, while the other half began in the spring or summer, according to the Center for Infectious Disease Research and Policy at the University of Minnesota. The infamous 1918 flu pandemic, which killed 50 million people worldwide, began in the spring, became dormant in the summer and roared back to life in the fall. Almost all deaths related to current influenza epidemics occur among the elderly. However, mortality was greatest among the young, ages 20-40, during the 1918–1919 pandemic. Mortality during the swine flu A(H1N1) pandemic of 2009 also seems to indicate mortality are mostly amongst people in their 30s.

5. The virologic basis for a recurrent epidemics is a continued process of antigenic change (antigenic drift) among circulating influenza viruses. Between 1972 and 1992 influenza claimed the lives of an average of 21,000 each season with a range between 0 and 47,000 deaths, in the United States. In recent years 95% of deaths have occurred amongst people older than 65 years of age. Mortality is generally highest in seasons when H3N2 predominates. In contrast to annual epidemics worldwide pandemics occur infrequently in association with the unpredictable emergence of a new Influenza A subtype. Pandemics can lead to widespread increases in Influenza morbidity and mortality. The 1918-1919 Spanish influenza was an A(H1N1) and led to an estimated 500,000 deaths in the United States and more than 20 million worldwide. The 1957-1958 Asian influenza was an A(H2N2), the 1968-1969 Hong Kong Influenza was an A(H3N2). Influenza A(H1N1) stopped circulating in 1957 and reappeared in 1977. Influenza A(H2N2) disappeared from the human population in 1968

6. Pandemic influenza is a global threat from which no country is immune and the actions required are a shared responsibility of the whole international community. The experience of SARS has demonstrated that in the 21st century a pandemic virus could spread throughout the world in a matter of months, if not weeks. In response WHO

devised a five point strategic action plan. (1) Reduce human exposure to the H5N1 virus. By reducing opportunities for human infection WHO would reduce opportunities for a pandemic virus to emerge. (2) Strengthen the early warning system to ensure that affected countries, WHO, and the international community have all data and clinical specimens needed for an accurate risk assessment. (3) Intensify rapid containment operations to prevent the H5N1 virus from further increasing its transmissibility among humans or delay its international spread. (4) Build capacity to cope with a pandemic to ensure that all countries have formulated and tested pandemic response plans and that WHO is fully able to perform its leadership role during a pandemic. (5) Coordinate global scientific research and development to ensure that pandemic vaccines and antiviral drugs are rapidly and widely available shortly after the start of a pandemic and that scientific understanding of the virus evolves quickly.

D. Parainfluenza and respiratory synctial viruses (RSVs) cause bronchitis, bronchiolitis, sinus tenderness, swollen glands, red throat, croup and pneumonia, primarily in young children by members of the paramyxoviridae family of viruses, others of which cause mumps and measles. Para-influenza viruses, there are four types of medical interest, cause lower respiratory diseases in kids and upper respiratory problems in adults. The virus, that strikes in fall and winter, is responsible for approximately 40-50% of croup cases and 10-15% of bronchiolitis and bronchitis cases and some pneumonias. They are highly infectious through personal contact and need invade our bodies no deeper than our noses or throats to replicate in the mucus there. Most people grow immune to them, which is why parents at the playground aren't hacking as much as the kids. There is no vaccine. People usually recover without treatment. Theraflu was known to cure overnight. The FDA has approved Allegra (Sanofi-Aventis) and Children's Allegra (fexofenadine) and Allegra-D (fexofenadine and pseudoephedrine) for sale Over-the-counter. Corticosteroid inhalers and Prednisone may be effective for the treatment of chronic disease but they depress the immune system. Treat secondary infections with Antibiotics.

1. Respiratory syncytial virus (RSV) infections are usually mild and seem like a common cold. In most cases, RSV infections go away in about 10 to 14 days. Home treatment to ease symptoms and prevent complications is usually all that is needed. NSAIDS such as acetaminophen or ibuprofen may be taken to relieve suffering. Corticosteroids may be administered if the pneumonia worsens or does not go away on time. Antibiotics are not usually necessary but should be administered if an ear infection (otitis media) or pneumonia develop, both are caused by the same *Streptococcus pneumonia* bacterium, treated with antibiotics, eg. Penicillin, Streptomycin and Tetracycline with probiotics to minimize side-effects. Children who develop lower respiratory infections, especially bronchiolitis, may need medicines, such as bronchodilators, for the rest of their lives. When selecting an inhaler for the first time, or choosing a new one after triamicinolone (Azmacort) was removed by the producer for fluorocarbon concerns, avoid salmeterol, salmeterol has been known to be fatal. Flovent (Fluticasone Propionate) seems a safe corticosteroid inhaler.

E. People who inhale the spores of *Histoplasma capsulatum* generally do not develop symptoms. The saprophytic form of the fungus is found in the soil of chicken houses, in caves where bats reside, and in the droppings from starlings and blackbirds. The Ohio and Mississippi River valleys are the most heavily contaminated regions in the United States, although distribution of the organism is worldwide. Infection results from the inhalation of spores from an environmental source and leads to several clinical states. In asymptomatic infection, multiple parenchymal or hilar calcifications may be found in the chest radiograph. Acute symptomatic infection may mimic a viral upper respiratory tract infection with low-grade fever, generalized somatic symptoms, and dry cough that lasts from a few days to a few weeks. Soft, scattered pulmonary infiltrates plus hilar and mediastinal lymphadenopathy are characteristic and usually resolve without residual structural damage. A severe confluent pneumonia that persists for 2 to 3 months or acute respiratory distress syndrome and death may follow inhalation of a large number of organisms from a heavily contaminated source. Progressive destruction of lung tissue and loss of pulmonary function is due to the continuing mycotic infection. Treatment with amphotericin B appears to slow the progression of chronic cavitary disease, but it does not significantly improve lung function. Immune disturbance diseases, such as leukemia, lymphoproliferative syndromes and AIDS predispose patients to histoplasmosis. Adrenal insufficiency is found in half of the instances of disseminated disease. Histoplasmomas are healed primary pulmonary or lymph node foci of infection. Typically they have a fibrotic capsule and a caseaous center that contains a calcified nodule. They often increase in size form less than 1 to 4 cm over a 10-year to 25-year period. Distinguishing them from neoplasia may be difficult. The diagnosis of histoplasmosis must be made by isolation of the organism in culture or histologic specimen. Sputum, blood and urine are reliable. Skin testing with histoplasmin, an antigenic preparation made from a culture filtrate of the mycelia, is useful as an epidemiologic tool but does not have good clinical reliability. A total dose of 500 to 1000 mg of amphotericin B is used to treat severe primary infections, and 2 to 2.5 gm is used to treat all symptomatic disseminated infection. Ketoconazole has been used in the treatment of disseminated histoplasmosis; its role is yet to be fully defined, but it is probably adjunctive to amphotericin B.

1. Aspergillosis is caused by species of the ubiquitous mold *Aspergillus*. Infections caused by *Aspergillus fumigatus*, *A. flavus*, *A. niger* and others result in allergic aspergillosis, invasive or disseminated infection or fungus ball (or mycetoma). Fungus ball may develop in the setting of allergic bronchopulmonary or invasive disease. Bronchopulmonary aspergillosis is frequently a progressive disease with IgE-mediated asthma and IgG-mediated type III parenchymal reactions. Common signs and symptoms are repeated attacks of wheezing with fever, evanescent pulmonary infiltrates, bronchial plugging, repeated isolation of *Aspergillus* from sputum, eosinophilia, and positive skin test results to *Aspergillus* antigen. Serum IgG antibody levels to *Aspergillus* organisms and total serum IgE are elevated. Central saccular bronchiectasis can often be identified in the middle-lung or upper-lung fields in chest radiographs. Patients expectorate brown sputum plugs that contain the organisms. Long-term therapy with oral corticosteroids plus standard antiasthma regiments are often required to control the disease process. Colonization of the tracheobronchial tree with concentric rings of hyphae and

surrounding fibrosing granulomatous inflammation or chonic nonspecific inflammatory elements occur in patients with chronic obstructive pulmonary disease. Periodic acid-schiff or silver stains are used to demonstrate *Aspergillus* hyphae in histologic sections. Since symptoms in invasive aspergillosis are usually related to the point of entry and since 90% or more begin in the lungs, fever, chills, shortness of breath, non-productive cough, and pleuritic pain are commonly noted. Hemorrhagic infarction or necrotizing bronchopneumonia are noted. Life-threatening hemoptysis is a major clinical presentation of mycetoma. Other complications include bacterial lung abscess, bronchopleural fistula with fungal empyema and spread of infection to thoracic vertebral bodies. The diagnosis of invasive disease is usually difficult because cultures only transiently yield positive results. *Aspergillus* organisms are a frequent laboratory contaminant and this further complicates the certainty of diagnosis. In immunocompromised situations, aggressive therapy with amphotericin B must be initiated. Systemic therapy with amphotericin B for fungus ball is of no value. Occasionally control of symptoms and reduction in the size of the fungus ball can be achieved by aerosol or insufflation of amphotericin B. Surgical excision is the treatment of choice; the major justification for resection is life-threatening hemmhorage, with a mortality of 5% to 10%. The outcome of surgical therapy usually depends on the degree of underlying lung disease.

2. Cryptococcosis is caused by *Cryptococcus neoformans*, a yeast that can be isolated from the excreta of pigeons and other birds. Although *Cryptococci* organisms in nature are largely unencapsulated, they rapidly form a polysaccharide capsule that protects them from attack by neutrophils and monocytes following their inhalation into the lung. Multiform pulmonary lesions can develop, ranging from an asymptomatic solitary nodule to nonspecific pulmonary infiltrates, and occasionally are associated with pleural effusion, cavitation and calcification. Cryptococcal pneumonia, as well as bronchial colonization, often occurs without subsequent spread to the central nervous system (CNS). Although most cases of pulmonary cryptococcosis resolve without specific therapy, some develop progressive pneumonic spread, whereas others remain clinically and radiographically stable for extended periods. In AIDS patients *Cryptococcus* infection is 80% fatal. Amphotericin B with or without flucytosine remains the treatment of choice for meningeal cryptococcosis. Modification of the dose of amphotericin B from 2 to 3 grams may be successful when one is dealing only with pulmonary cryptococcosis. Either perioperative flyctosine, ketoconazole, or miconazole may be used to prevent the 5% incidence of cryptococcal meningitis associated with resection of pulmonary lesions.

F. Allergic Rhinitis (Hay Fever) is induced following exposure of the nasal mucosa to the allergen through inhalation. The characteristic symptoms include profuse watery nasal discharge with sneezing, frequently accompanied by redness, irritated and watery eyes and headache. In North America there are three peaks in the pattern of seasonal rhinitis: the first occurs in the spring when trees shed their pollen; the second, during the summer months, involves pollen from many grasses as well as late flowering trees and weeds, and the last peak, in the autumn, is typified by weed and secondarily by grass pollen grains. Ragweed pollen (Ambrosia) predominates during this time and is the most allergenic

pollen found in North America. Many kinds of fungi and flowering plants are responsible for allergic rhinitis. The most important fungal allergens are found in the Deuteromycetes, particularly the families of Dematiaceae and Moniliaceae, which include such ubiquitous genera as *Alternaria*, *Cladosporium*, *Aspergillus* and *Penicillium.* Of these Alteranria possesses the most allergenic substances. Although they produce a great deal of windborn pollen Gymnosperms rarely elicit allergic rhinitis, whereas most windborne pollen from Agniosperms are common incitors. The most troublesome trees in North America are the oaks (Quiercus), hickories (Carya) and elms (Ulmus) but weedy urban box elder (Acer) pollen has recently been shown to have the highest level of allergencity among tree pollen. Many grass family (Poaceae) pollen are highly allergenic, e.g. redtop (Agrostis), sweet vernal (anthoxanthum) orchard (Bactylis), crab (Digitaria) and timothy (Phleum). Of the weedy families, the Asteraceae, containing the ragweeds (Ambrosia), Marsh elders (Iva, cockleburs (Xanthium) and sagebrushes (Artemisia) and the Chenopodiaceae, including lamb's quarters (Chemopodium), burning buses (Kochia), and Russian thistles (Salsola).

1. Acute symptoms are also treated by the administration of antihistamines and vasoconstrictors such as ephedrine (*Ephedra sinica*). A drug warning regarding pseudo-ephedrine needs to be put out because the brain shrink is too illiterate to tolerate use and abuse of this effective coronavirus cure under 42USC§242. Corticosteroids are the most important class of drugs for the treatment of serious cases. The cheapest effective treatment is to put a dab of hydrocortisone crème on the nose. Steroids are: Precription (nasal): Flonase (fluticasone), Nasacort (triamcinolone), Nasalide (flunisolide), Nasonex (mometasone), Pulmicort and Rhinocort (budesonide), Qvar, Vancesnase DS, Vancenase pocket inhaler, Vanceril, and Vanceril DS (beclomethasone). Steroid Nasal Sprays People with allergies are likely to be prescribed topical nasal steroids, which are sniffed into the nose rather than inhale into the lungs. Several nasal steroids are also approved for nonallergic rhinitis, including fluticasone (Flonase) and budesonide (Rhinocort AQ). Decongestants: Nonprescription: Actifed Allergy Daytime, Allerest, Drixoral Nondrowsy Formula, Edifc/24, Sudafed. Nonprescription Nasal Sprays: Afrin, Cheracol, Dristan, Neo-Synephrine, Nostril/Nostrilla, Otrivin, Privine, Vicks Sinex Long-Acting. Prescription: Dura-Vent (chlorpheniramine and phenylephrine), Entex LA, Guaifed PD, Respaire, and Sinuvent (guaifenesin and phenylephrine), Exgest LA (guafenesin and phenylpropanolamine). Anticholinergic spray: Prescription (Nasal spray): Atrovent nasal (ipratropium bromide). Prescription (inhaled): Atrovent 0.03% or 0.06%, nebulized or metered-dose inhaler. Essential oils of lavender, peppermint, and eucalyptus treat allergic rhinitis.

G. Asthma is a disorder of the airways. Persons with asthma have increased bronchoconstrictor responsiveness to various inhaled stimuli and have airway obstructive changes in severity spontaneously or with treatment. Increased airway responsiveness and reversible airway obstruction are both important elements of the disorder. Airway obstruction is caused by bronchoconstriction, increased airway secretion, and mucosal edema. Asthma is usually mild, causing little disability, but in some persons it is severe, persistent, debilitating and even life threatening. In the United States asthma affects 3% to 5% of the adult population. It occurs in all age groups but begins predominantly early

in life. About one half of cases develop before age 10 and one third before age 40. In childhood there is a 2:1 (male/female) predominance, but the prevalence equalizes by age 30. Asthma-related conditions are responsible for 14 million doctors' visits and 2 million emergency room visits a year by children in the United States. Between 1980 and 1994 the number of asthma cases in children under 5 increased by more than 160 percent and rose by 74 percent among children ages 5 through 14. Asthma is the most common chronic childhood illness, in 1998 it affected an estimated 8.65 million American children, more than 12 percent of the entire under-18 population. In 1994 that figure was just 5 percent.

1. Asthma counts for an estimated 11.8 million missed school days nationally and costs more than $1 billion per year in lost productivity in the United States due to parents staying home to care for their children. Roughly 49 percent of infants with eczema develop asthma by age 4, and about 30 percent of all eczema cases in toddlers are linked to an allergy, of which a third are food related. This is mostly an indication for hydrocortisone crème to treat eczema and aspergillus food contamination, but also for metronidazole to treat spoiled food and Epsom salt baths to treat methicillin resistant *Staphylococcus aureus* (MRSA). From 50 to 80 percent of children with asthma develop symptoms before age 5. The vast majority of their asthma symptoms, however, are triggered by viral infections, not allergies. Studies have shown that as many as 70 percent of people with asthma have GERD, a chronic form of heartburn, compared with 20 to 30 percent of the general population. This is almost caused by antibiotic resistant *Helicobacter pylori*, from cud or dish water, and is cured only with metronidazole. Infection with the rhinovirus, which causes the common cold as well as other respiratory illnesses, can cause wheezing, often sending an asthma sufferer into a full-fledged attack. Other infectious agents linked to asthma symptoms include respiratory syncytial virus (RSV), *Chlamydia pneumonia*e, and *Mycoplasma pneumoniae*. Asthma patients infected with mycoplasma have six times more mast cells in their lung tissue than uninfected asthma patients, meaning they have a much greater risk of inflammation. In some cases, a course of antibiotics may make a huge difference in the ability to control asthma symptoms

2. Attacks of bronchial asthma are usually precipitated by inhalation of the specific allergen, and this form of allergy often has a more chronic course than seen in allergic rhinitis even though the eliciting agents are the same. Penicillin with its antigenic benzyl penicilloyl antigenic determinants and other haptenic moieties is perhaps the worst offender, and some type of allergy appears in from 0.5% to 18% of patients using this drug therapeutically. Hives after 24-48 hours or generalized anaphylaxis is the most common. A survey of 300 people with asthma found that 68% had attacks a few times a year, 17% a few times per month, and 15% a few times per week or more. 84% suffer in the Spring, 76% in the fall, 73% in the winter and 64% in the summer. Smoke was the leading cause of an asthma attack in 59% of respondents, followed closely by dust 56%, mold/mildew 52%, pollen 51%, cold air 47%, change of seasons 45%, common cold/influenza 44%, chemicals, paints, etc. 41%, hairspray, perfumes, etc. 40%, pets/animals 35%, stress, tension, anxiety 31%, exercise 29%, humidity, 23%, food 4%, other 2%, none of the above 3%. Medications for attacks, such bronchial inhalants,

particularly fast-acting corticosteroids were the most preferred treatment 96% of the time. There are more than 5,000 deaths annually due to asthma, and asthma related deaths among children 5 to 14 years of age more than doubled from 1979 to 1995. In one report on 51 asthma related deaths in children under age 20, researchers found a third had "trivial or mild" asthma, while a third had no previous hospitalization. Sixty-three percent collapsed suddenly minutes after developing shortness of breath, and 78 percent died before reaching the hospital. For half of those who died, the final attack lasted less than 2 hours.

3. The goal in treating asthma is to use the smallest amount of medication necessary to achieve two goals: keeping the airways in the lungs open, both during attacks and over the long term, and reducing the ongoing inflammation that's the cornerstone of the disease. There are three types of anti-inflammatory drugs that doctors typically prescribe for asthma: inhaled corticosteroids, cromolyn and leukotriene modifiers. To keep airways open, they often prescribe short and long acting bronchodilators known as beta2 agonists. Most doctors follow the National Heart, Lung and Blood Institute's step approach for treating asthma in adults and children:-Mild intermittent – prescribe only a short acting beta2 agonist for when attacks occur. Mild persistent – In addition, prescribe a daily low dosage of an inhaled corticosteroid, or cromolyn or nedocromil. Also consider a leukotriene modifier. Moderate persistent – Change the daily inhaled corticosteroid to a medium dosage. Also prescribe a daily inhaled long-acting beta2-agaonist. Continue to consider a leukotriene modifier, and continue prescribing a short-acting beta2-agonist for when attacks occur. Severe persistent – change the daily inhaled corticosteroid to a high dosage, and prescribe oral steroids as needed for disease control. Corticosteroid rescue inhalers are essential to the treatment of asthma and must be exempted from the Ozone export ban that goes into effect in 2020 under Montreal Protocol on Substances that Deplete the Ozone Layer. Hydrocortisone crème may be an effective alternative with less Cushing's disease side-effect. Effective use of eucalyptus and lavender essential oils, soaps and oral medicines such as cough drops, may be healthier.

§346 Heart Disease and Stroke

A. Coronary heart disease is America's No. 1 killer, stroke is No. 3 and a leading cause of serious disability. 90% of heart attacks, heart disease and stroke involves atherosclerosis, a hardening of the arteries, due to physical injury or defect of the heart, unlawful monoclonal antibodies to the heart such as trans-fat, and/or bacterial infection by *Streptococcus pyogenes* with 25% chance of dying of a heart attack within ten years, if untreated with antibiotics, or *methicillin resistant Staphylococcus aureus* (MRSA) 50% fatal on hospital admission without emergency surgery. Exceeding 300,000 cases annually, sudden cardiac death (SCD) is the leading cause of death in the U.S. Of the estimated 65 million Americans with high cholesterol, 7 million Americans suffer angina and of the 2.4 million people who died in 2004, 666,000 died from heart disease and 150,000 from stroke accounting for more than 40% of all deaths, one every 33 seconds. An estimated 700,000 people suffer strokes annually, of the survivors, 50-70% regain functional independence, but 15-30% are permanently disabled. Globally heart attacks

and strokes kill about 12 million people every year (7.2 million due to ischaemic heart disease and 5.5 million to cerebrovascular disease). In addition, 3.9 million people die annually from hypertensive and other heart conditions.

1. The invisible cardio-toxic monoclonal antibody to the heart, unnecessarily used in animal toxicology laboratory research, is un-washable, it contaminates the wash and the clothes and backpack of the sweaty wetback, all such fabrics must be thrown away, recovery can be instant or take three days if overexposed. University cardiotoxic animal research is malevolent by its nature and their frequent intentional leaks are known as keg parties. The usual location of attack is at or near the university hosting the keg party, but they are frequently involved in interstate and international exportation and intimate partner violence. These scientists can be discovered in such publications as the American Journal of Physiology, they should not be contacted, the Secretary of Health and Human Services can be safely emailed to enhance control of the laboratory supply under 42USC§262. Statin drugs can temporarily neutralize pain caused by cardiotoxins and possibly related hypercholesterolemia, but they cause such severe brain shrinkage and brain damage, that immediately becomes chronically infected, if the person is not innoculated with Pneumovax, statins are a dementia and stroke risk that in the worst (judicial) case, cause the patient cross-contaminate all their fabrics in the wash and become dependent on statin drugs for which there is a drug abuse warning under 42USC§242. The evolving treatment for atherosclerosis is "vegan diet, fresh fabric, exercise, and antibiotics to cure endocarditis caused by *Streptococcus pyogenes* and Epsom salt bath to sterilize endocarditis caused by methicillin resistant *Staphylococcus aureus* and Hawthorn, the supreme herb for the heart, to eliminate *Staph* lesions".

2. According to the U.S. government, one in every 300 Americans will be killed by a blocked artery in 2007. Every 34 seconds an American dies as the result of a blocked cardiac artery. As an American, there's a 90 percent chance that poor circulation will trigger a serious health problem at some point in your life. More than 6.8 million Americans undergo heart bypass, balloon angioplasty and other circulation-related procedures each year. 1 million undergo angioplasty and 500,000 heart surgery. 700,000 Americans will suffer a sudden blockage of blood flow to the brain in 2007- 83 every hour of the day. Each year, about 1.1 million people in the United States have heart attacks, and almost half of them die. 65 million Americans monitor their cholesterol. Mortality differs significantly by race or ethnic group as measured by age adjusted death rates. In 1998 these death rates per 100,000 people from heart disease in the United States were 211.8 for black non-Hispanics, compared to 145.3 for white non-Hispanics, 101.5 for Hispanics, 106 for American Indians and 78 for Asians. Cardiac patients must take care of their health with a vegan diet. Atherosclerosis patients and sedentary workers must stop eating animal products because animal fat is clogging their arteries and the blood must be cleaned of dietary fats and cholesterol to absorb the painful plaques. Even exposed to monoclonal antibody cardio-toxin, the chest pain should go away when all dietary animal fat is digested, but one should not be exposed or sweaty exercise would be dangerous, and one should be completely cured of angina before eating meat. The pound of flesh is reserved for people who do hard physical labor or endurance sports 8 hours a day and don't have angina. It is important to avoid LDL cholesterol such

as that found in potato chips and trans-fats. Sufficient levels of HDL cholesterol such as that found in brown rice are needed to be found in a vegan diet of more than 2.2 pounds of fruit, vegetables and whole grains daily to fuel an active exercise routine, without being overstuffed. Rice and beans make a relatively quickly digested complete protein macronutrient to squeeze through animal fat clogged arteries and feel full. Store some iron and calcium-phosphorus apatite in human body fat to prevent iron deficiency anemia and osteoporosis, that would otherwise result from a vegan diet, without sufficient daily intake of iron and calcium from green leafy vegetables and phosphorus from mushrooms, soy or mung beans.

3. Diseases and conditions of the heart's muscle make it difficult for the heart to pump blood. Oxygen deprivation to the heart muscle itself, usually caused by atherosclerosis, a build up of plaque in the coronary arteries, causes acute pain in the heart known as angina. Angina that affects an estimated 7 million Americans. Damaged or diseased blood vessels make the heart work harder than normal and are often torturously painful. Problems with the heart's electrical system, called arrhythmias, can make it difficult for the heart to pump blood efficiently. Angina is chest pain or discomfort that occurs when an area of the heart muscle doesn't get enough oxygen-rich blood. It's thought that nearly 7 million people in the United States suffer from angina. About 400,000 patients go to their doctors with new cases of angina every year. Angina may feel like pressure or squeezing in your chest. The pain also may occur in the shoulders, arms, neck, jaw, or back. It can feel like indigestion. Angina itself isn't a disease. Rather, it's a symptom of an underlying heart problem. Angina is usually a symptom of coronary artery disease (CAD), the most common type of heart disease. CAD occurs when a fatty material called plaque builds up on the inner walls of the coronary arteries. These arteries carry oxygen-rich blood to your heart. When plaque builds up in the arteries, the condition is called atherosclerosis. Nitrates are the most commonly used medicines to treat angina. They relax and widen blood vessels. This allows more blood to flow to the heart while reducing its workload. Nitroglycerin is the most commonly used nitrate for angina. Nitroglycerin that dissolves under your tongue or between your cheeks and gum is used to relieve an angina episode. Nitroglycerin in the form of pills and skin patches is used to prevent attacks of angina. These forms of nitroglycerin act too slowly to relieve pain during an angina attack.

B. A heart attack occurs when blood flow to a section of heart muscle becomes blocked. If the flow of blood isn't restored quickly, the section of heart muscle becomes damaged from lack of oxygen and begins to die. Heart attack is a leading killer of both men and women in the United States. But fortunately, today there are excellent treatments for heart attack that can save lives and prevent disabilities. Treatment is most effective when started within 1 hour of the beginning of symptoms. If you think you or someone you're with is having a heart attack, call 9-1-1 right away. Heart attacks occur most often as a result of a condition called coronary artery disease (CAD). In CAD, a fatty material called plaque (plak) builds up on the inside walls of the coronary arteries (the arteries that supply blood and oxygen to your heart). Eventually, an area of plaque can rupture, causing a blood clot to form on the surface of the plaque. If the clot becomes large enough, it can mostly or completely block the flow of oxygen-rich blood to the

part of the heart muscle fed by the artery. During a heart attack, if the blockage in the coronary artery isn't treated quickly, the heart muscle will begin to die and be replaced by scar tissue. This heart damage may not be obvious, or it may cause severe or long-lasting problems. The dead sensation of a heart attack can also be caused by aspirin overdose in people who haven't been prescribed antibiotics.

1. An aneurysm is an abnormal bulge or "ballooning" in the wall of an artery. Arteries are blood vessels that carry oxygen-rich blood from the heart to other parts of the body. An aneurysm that grows and becomes large enough can burst, causing dangerous, often fatal, bleeding inside the body. Most aneurysms occur in the aorta. The aorta is the main artery that carries blood from the heart to the rest of the body. The aorta comes out from the left ventricle of the heart and travels through the chest and abdomen. An aneurysm that occurs in the aorta in the chest is called a thoracic aortic aneurysm. An aneurysm that occurs in the aorta in the abdomen is called an abdominal aortic aneurysm. Aneurysms also can occur in arteries in the brain, heart, intestine, neck, spleen, back of the knees and thighs, and in other parts of the body. If an aneurysm in the brain bursts, it causes a stroke. About 15,000 Americans die each year from ruptured aortic aneurysms. Ruptured aortic aneurysm is the 10th leading cause of death in men over age 50 in the United States. Many cases of ruptured aneurysm can be prevented with early diagnosis and medical treatment. Because aneurysms can develop and become large before causing any symptoms, it is important to look for them in people who are at the highest risk. Experts recommend that men who are 65 to 75 years old should be checked for abdominal aortic aneurysms. When found in time, aneurysms can usually be treated successfully with medicines or surgery. If an aortic aneurysm is found, the doctor may prescribe medicine to reduce the heart rate and blood pressure. This can reduce the risk of rupture. Large aortic aneurysms, if found in time, can often be repaired with surgery to replace the diseased portion of the aorta.

2. A stroke occurs when a blood vessel that brings oxygen and nutrients to the brain1. Three quarters of a million Americans suffer a cerebral vascular accident (CVA), also known as a stroke, each year. One-fifth of them die of the stroke, and at least one-third remain permanently disabled. Stroke ranks as the number four most common cause of death (behind heart disease, cancer and chronic lower respiratory disease) but number one as the cause of disability and a contributor to dementia. Cerebral vascular disease costs the U.S. health care system an estimated $60 billion each year. Stroke symptoms include a sudden numbness or weakness of the face, arm or leg (especially on one side of the body), sudden confusion or difficulty understanding speech, sudden loss of the ability to speak, sudden trouble seeing in one or both eyes, sudden trouble walking, dizziness, or loss of balance or coordination or a sudden severe headache with no known cause. A stroke is a sudden loss of function of part of the brain. Usually the cause is either (1) ischemic stroke; sudden loss of blood flow to part of the brain because an artery that supplies blood to that part of the brain has become blocked (ischemia) due to atherosclerosis, in 87 percent of strokes or (2) hemorrhagic stroke; bleeding (hemorrhage) into the brain because an artery has burst, due to high blood pressure in 7-10 percent of cases. In about 15 percent of individuals who come to an emergency room with the sudden onset of a brain disorder, the cause of stroke turns out to be an epileptic seizure

followed by weakness on one side, or something else such as a brain tumor, low blood sugar (hypoglycemia), an abscess in the brain, a blood clot over the surface of the brain caused by head trauma, or some other condition

3. Getting treatment for an ischemic stroke within three hours of the onset of symptoms with recombinant tissue plasminogen activator (rtPA) can dissolve clots and lessen disability by 40 percent if it is administered within three hours of an ischemic stroke. A hemorrhagic stroke caused when a blood vessel breaks and bleeds into the brain is much harder to treat: more than half are fatal. rtPA, a clot-busting drug, is not for home use because it would increase hemorrhaging and a physician must distinguish between ischemic and hemorrhagic stroke. rtPA would probably kill someone presenting with a hemorrhagic stroke. Extensive physical therapy for many months helps many regain function. rtPA (recombinant tissue plasminogen activator) is for mild strokes only <25 on the NIH stroke scale, in patients age <80, without hemorrhage, anticoagulant use or elevated blood pressure. Atropine and pralidoxime (DuoDote®) is indicated for the emergency treatment hemorrhagic strokes caused by poisoning by organophosphorous nerve agents and insecticides and galantamine lucid dreaming pill.

C. It is estimated that 65 million American adults live with high blood cholesterol and need to make the therapeutic lifestyle changes (TLC) to lower their cholesterol and, with it, their risk for heart disease. Cholesterol is a waxy, fat-like substance that is found in all cells of the body. The body needs some cholesterol to work the right way. The body however makes all the cholesterol it needs. Cholesterol is also found in some foods, such as eggs. The body uses cholesterol to make hormones, vitamin D, and substances that help you digest foods. Blood is watery, and cholesterol is fatty. Just like oil and water, the two do not mix. To travel in the bloodstream, cholesterol is carried in small packages called lipoproteins. The small packages are made of fat (lipid) on the inside and proteins on the outside. Two kinds of lipoproteins carry cholesterol throughout your body. It is important to have healthy levels of both: Low-density lipoprotein (LDL) cholesterol is sometimes called bad cholesterol. High LDL cholesterol leads to a buildup of cholesterol in arteries. The higher the LDL level in your blood, the greater the chance of getting heart disease. High-density lipoprotein (HDL) cholesterol is sometimes called good cholesterol. HDL carries cholesterol from other parts of the body back to your liver. The liver removes the cholesterol from your body. The higher the HDL cholesterol level, the lower the chance of getting heart disease.

Initial classification based on total cholesterol and HDL cholesterol levels

Total Cholesterol Level	**Category**
Less than 200 mg/dL	Desirable level that puts you at lower risk for coronary heart disease. A cholesterol level of 200 mg/dL or higher raises your risk.
200 to 239 mg/dL	Borderline high
240 mg/dL and above	High blood cholesterol. A person with this level has

	more than twice the risk of coronary heart disease as someone whose cholesterol is below 200 mg/dL.

HDL Cholesterol Level	**Category**
Less than 40 mg/dL (for men) Less than 50 mg/dL (for women)	Low HDL cholesterol. A major risk factor for heart disease.
60 mg/dL and above	High HDL cholesterol. An HDL of 60 mg/dL and above is considered protective against heart disease.

Source: AHA

1. The American Heart Association (AHA) endorses the National Cholesterol Education Program (NCEP) guidelines for detection of high cholesterol. The Third Report of the Expert panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III or ATP III) was released in 2001. It recommends that everyone age 20 and older have a fasting "lipoprotein profile" every five years. This test is done after a 9-12-hour fast without food, liquids or pills. It gives information about total cholesterol, low-density lipoprotein (LDL) or "bad" cholesterol, high-density lipoprotein (HDL) or "good" cholesterol and triglycerides (blood fats). Researchers have established healthy ranges for each of these. If a fasting lipoprotein profile isn't possible, the values for total cholesterol and HDL cholesterol are acceptable. If total cholesterol is 200 mg/dL or more, and HDL cholesterol is less than 40 mg/dL (for men) and less than 50 mg/dL (for women), a lipoprotein profile must done to determine the LDL cholesterol and triglyceride levels.

LDL Cholesterol Level	**Category**
Less than 100 mg/dL	Optimal
100 to 129 mg/dL	Near or above optimal
130 to 159 mg/dL	Borderline high
160 to 189 mg/dL	High
190 mg/dL and above	Very high

2. Triglyceride are the most common type of fat in the body. Many people who have heart disease or diabetes have high triglyceride levels. Normal triglyceride levels vary by age and sex. A high triglyceride level combined with low HDL cholesterol or high LDL cholesterol seems to speed up atherosclerosis (the buildup of fatty deposits in artery walls). A substance called CRP has been discovered that is even more indicative of a person's risk for heart attack. People should request a CRP test, when checking

cholesterol and triglyceride levels. Atherosclerosis increases the risk for heart attack and stroke.

Triglyceride Level	Category
Less than 150 mg/dL	Normal
150–199 mg/dL	Borderline high
200–499 mg/dL	High
500 mg/dL and above	Very high

Source: American Heart Association

D. To prevent or recover from a heart attack the best approach is to stay fit. Risk of cardio vascular and other chronic diseases can be greatly reduced through not smoking, smoke free workplaces, temperant consumption of alcohol, healthy low fat diet and sufficient physical activity to elevate the heart rate for at least thirty minutes a day. Quitting smoking is generally not critical for cardiovascular disease, although it is a good idea, quitting trans-fats and cholesterol is a matter of life and death or at the very least excruciating agony. It is estimated that up to 80% of cases of coronary heart disease, 90% of type 2 diabetes cases, and one-third of cancers can be avoided by changing to a healthier diet, increasing physical activity, stopping smoking and evading malevolent laboratory leaks through social and security measures. The diet for people recovering from atherosclerosis or other hearts conditions should completely avoid cholesterol and trans-fats. Although a change in diet from anything goes to a healthy diet is a reward in itself for anyone wishing to enjoy greater energy and health, for a person suffering cardiovascular problems it is particularly rewarding as relief from pain and the only way to recovery. Planning a heart healthy diet should be done in three phases.

Phase I: When suffering angina or a heart attack eat only fruits and raw or boiled vegetables. These foods contain absolutely no fat or cholesterol and contain a number of helpful vitamins and minerals. These foods are not problematic although personal allergies may complicate (or simplify) the diet. It may be necessary to eat a lot to be satisfied. Separate meals of fruit and meals of vegetables to better appreciate them.

Phase II: When feeling somewhat or totally recovered after a few days or weeks begin to include whole grains into the diet of fruit and vegetables. Whole grains like brown rice, quinoa, beans etc. are more substantial foods and should be used to satisfy the desire for meat and bread. They often take an hour or more to cook but taste delicious. Olive oil and other natural oils can be used in moderation to make more flavorful vegetables.

Phase III After a month or two it is okay to include portions of chicken and fish in the diet. After six months most clogging of the arteries has cleared out. Do not revert to an anything goes diet although it should be possible to eat a bag of potato chips or steak

without pain after six months of pain free healthy eating. Continue eating healthy and exercise to keep in shape. Avoid bread because it is fattening. Avoid fried foods and cholesterol and never eat them in excess or alone.

1. Exercise is also very important and rewarding for people recovering from cardiovascular disease. Although every person is different and some people need to avoid vigorous exercise because the strain could blow their heart, cardio-vascular exercise is an important component for recovery. People should get 30 minutes of vigorous cardiovascular exercise a day where their respiration is increased and they break a sweat. The only way to do this is by jogging or playing vigorous sports with a lot of sprinting like basketball. Walking is also good but to get the healing effects of exercise it may take several hours. Sit-ups are also important to keep the abdomen trim and the excretory system unobstructed. Jogging 3 -7 days a week of sufficient duration to break a sweat and clear the arteries is the most sensible approach to cardio-vascular exercise. Ten or twenty mile walk and jogs are a good way to clean out badly clogged arteries. Normally, a 3 mile run is the minimum cardiovascular exercise needed to sustain an otherwise sedentary lifestyle and the test of cardiovascular health is that a runner/walker is able to complete a 26 mile marathon in one day.

D. By counting the number of pulsations over a fifteen-second interval and multiplying that number by four, calculate the heart rate (in beats per minute). A normal heart rate is between 60 and 100 beats per minute. A slower than normal rhythm in which the heart rate is below 60 beats per minute indicates sinus bradycardia. If the rhythm exceeds 100 beats per minute, a sinus tachycardia would be present. Heart rates slower than 60 beats per minute can be normal if there are no symptoms such as fatigue, shortness of breath, light-headedness or dizziness. Rapid heart rates (greater than 100 beats per minute) may be normal or abnormal, depending on circumstances. Conditions that weaken the heart muscle may cause rapid heart rhythms, called tachycardias, with rates greater than 100 beats per minute and possibly much faster. The faster the heart rate, the great the chance that delivery of oxygen and other nutrients to the brain and other organs will be impaired. With very fast beats (over 200 a minute) the person will likely become light-headed and dizzy and even pass out. An irregular heart rate might indicate early beats, called premature contractions (coming from either the atria or the ventricles) or may be an indicator of a rhythm problem called atrial fibrillation, in which the atria beats at rates greater than 400 beats per minute. The heart may also beat too slowly (called bradycardia) with heart rates below 60 beat per minute.

1. Sinus bradycardia is commonly caused by second-degree heart block, Mobitz type I (block typically occurs in the AV node), second-degree heart block, Mobitz type II (block typically occurs in the His bundle or below), third-degree heart block or complete heart block, Asystole. Several forms of inherited arrhythmic diseases have common associated gene subtypes (1) Arrhythmogenic right ventricular dysplasia (fat deposits in right ventricular wall) exhibit gene subtypes PKP2, DSP, GSG2, (2) Hypertrophic cardiomyopathy (thickened heart muscle exhibiting gene subtypes MYH7, MYBPC3, (3) Long QT syndrome (has specific ECG patterns) exhibit gene subtypes KCNQ1 (long

QT1); KCNH2 (long QT2); SCN5A (long QT3) and (4) Brugada syndrome (has specific ECG pattern) exhibits gene subtypes SCN5A.

2. Atrial fibrillation is a very common heart rhythm problem. It is known as an "irregular rhythm". The chance of developing atrial fibrillation increases with age. According to recent statistics from the American Heart Association, atrial fibrillation may be found in 3 to 5 percent of people over the age of 65. First-line treatment is medication, including antiarrhythmic drugs. If antiarrhythmic drug therapy fails, catheter ablation should be considered. The success rate of catheter ablation is 90 percent or greater for superventricular tachycardia, such as atrial flutter, atrial tachycardia, AV node, AV node reentrant tachycardia, Wolff-Parkinson-White syndrome, 50 to 85 percent for atrial fibrillation, 50 to 75 percent for ventricular tachycardia from coronary artery disease and 90 percent or greater for focal ventricular tachycardia. Reversible causes of bradycardia are nonessential medicines such as beta blockers, calcium channel blockers, digitalis, antiarrhythmic drugs such as sotalol and amiodarone, Lyme disease, hypothyroidism, electrolyte abnormality and drug toxicity.

E. Sudden cardiac arrest is the condition in which a patient collapses suddenly due to a heart rhythm abnormality. A blockage in the left anterior descending artery is called "the widowmaker". Sudden coronary death frequently involves a rapidly progressing coronary lesion, in which plaque disruption and often partial thrombus (and possibly embolization) lead to regional myocardial ischemia that induce a fatal ventricular arrhythmia. Sudden cardiac arrest victims have a 93 percent fatality rate. In the United States, sudden cardiac arrest takes a life every two minutes, nearly 1,000 individuals each day. The event is most often associated with rapid rhythms from the lower chamber, called ventricular tachycardia or ventricular fibrillation. The heart rhythm problems that cause sudden cardiac arrest most often affect people who have heart disease (an abnormal heart) caused by a heart attack, blockages of the coronary arteries, a weak heart muscle, thick heart muscles or other problems. Reversible causes of sudden cardiac arrest are neutralizing toxic drugs, correct electrolyte abnormalities, and remove blockage (stent) or bypass blockade (surgery). Someone in the household should be trained in cardiopulmonary resuscitation (CPR). In one study of an athletic department on the use of automated external defibrillators (AEDs) found it has been used on 20% for student athletes, 33% for athletic department staff and 47% for fans, with survival rates of 0% for students, 75% for staff, 57% for fans, and 61% overall.

1. Studies of exercise by apparently healthy adults report an acute event rate of 1 per 187,500 person-hours of exercise and death rate of male joggers of 1 per 396,000 man-hours of jogging. The incidence of cardiac arrest while jogging is approximately 1 episode per year for every 18,000 healthy men, by appears to be lower for men with higher levels of habitual physical activity. While the risk of sudden cardiac death is increased during vigorous exercise, this risk is lower among those habitually active. There are no scientific studies on exercise-related cardiac events in women. The major cause of cardiovascular complications during exercise is coronary artery disease (CAD). During medically supervised cardiac rehabilitation exercise programs , the risk of death in the U.S. is approximately 1 per 60,000 participant hours, maybe one death every four

years per program. The risk of SCD in joggers and marathon participants is estimated to 1/15,000 and 1/50,000 respectively. Preparticipation exercise testing should be reserved for men >40-45 years of age and women>50-55 year with moderate to high cardiovascular risk. The probability of an exercise induced cardiac event is greater in athletes with atherosclerotic coronary disease and left ventricular dysfunction and older athletes should be discouraged from participation in high intensity sports if they have left ventricular ejection fraction <50% or evidence of exercise-induced ischemic, ventricular arrhythmia or systolic hypotension. Make sure exercise clothes are cardiac glycoside free.

2. SCD is the leading cause of death in athletes. Exercise-related SCD occurs in one to five cases per one million athletes per year. Of the approximately 25 million competitive athletes in the U.S. there are 25-125 document cases of SCD per year, this is likely a significant underestimation because vigorous exercise does not require participation in organized athletics and independent athletes must guard their heart in certain cardiac conditions. It is estimated that there are 10-25 cases of SCD per year in individuals younger than 30 years. The overall occurrence rate of SCD in high school athletes is estimated to be 1: 100,000-1:300,000 athletes/year. SCD in older athletes (>35 years of age) is most often related to atherosclerotic coronary arterial disease with myocardial infarction. However, in younger athletes (<35 years of age) the majority of these cases are caused by defined and hereditary cardiovascular disorders. Cardiac electrical instability, due to an underlying pathology, deteriorating into fatal ventricular tachycardia or ventricular fibrillation appears to be the most common immediate cause of death. In one study of SCD in competitive athletes from 1985 to 1995 it was found that the majority of these athletes were involved in high school sports (62%) with collegiate athletes in a distant second (22%) and professional athletes ranking third (7%). 90% of athletes suffering SCD were male. 68% of these deaths occurred during football and basketball. Ninety percent of athletes collapsed during or immediately after a training session or competition. Although symptoms or a family history may of SCD may precede the event, most episodes of cardiac arrest are the first manifestation of disease in an "apparently healthy" individual. Many athletes are capable of exceptionally high levels of performance for long periods of time, even while harboring occult and potentially lethal cardiovascular malformations.

3. More than 20 cardiac pathologies have been identified as causes of SCD in athletes. Findings at autopsy reveal a predominance of an enlarged heart, hypertrophic cardiomyopathy (HCM) (26%), commotion cordia (20%) and aberrant coronary arteries (13%) as the underlying cause of death. Responsible for 20% o SCD in U.S. athletes commotion cordis can be caused by a sudden forceful impact to the chest wall that can elicit electrical instability leading to asystole or ventricular fibrillation, the mean age of victims is 13 years, and the resuscitation rate is only 15%. Only 18% of fatalities had symptoms attributed to the cardiovascular system in the preceding 36 months prior to death, although as many as 10 of 12 older athletes had symptoms prior to death although all had normal ECG findings. SCD in older athletes (<35 years old) is most often related to coronary artery disease with the incidence of SCD increasing with age, including older populations of vigorous exercisers, estimates of SCD incidence approach 1:15,000-

1:18,000. Most of these deaths, of young and old athletes, are thought to be related to electrical instability leading to ventricular tachycardia and eventually, ventricular fibrillation. Inflammation, typically related to Coxsackie B virus in 50% of cases, or bacterial infection in the myocardial tissue can lead to electrical instability leading to fatal complete heart block after considerable chest pain and dizziness.

4. Accounting for only 2% of SCD in U.S. athletes, Marfan's syndrome is an autosomal dominant inherited connective tissue disorder occurring in approximately one in 10,000 individuals, who are characteristically very tall and thin, often with disproportionately long limbs, with an arm span greater than their height and have an increased risk of progressive dilation or the aortic root, potentially leading to dissection or rupture, that should monitored every 6 months by ECG. Approximately one in 10,000 Americans have prolonged QT syndrome exhibited by an abnormal ECG, 60% have a family history of long QT or SCD, one-third of patients present with palpitations, seizures and syncope. The trigger depends on the mutation, that can be detected by genetic testing, in QT1, the common trigger is swimming, in QT2 it is extreme emotion, in QT3 it is inactivity, in QT4 it is a loud noise, such a an alarm clock. Treatment often involves therapy with Beta-blockers, a pacemaker or ICD, typically then refraining from activity although 70% of athletes with ICDs make a return to play.

5. Arrhythmogenic right ventricular dysplasia or cardiomyopathy (ARVD or ARVC) is characterized by fibrofatty infiltration of the myocardium, estimates range from 2.8% of SCD in athletes in the U.S. to as high as 22% in Europe. Athletes with this condition are disqualified from sports and must investigate the benefits of moderate levels of exercise. A rest period of approximately 6 months is recommended following the onset of myocarditis, an inflammatory disease of the myocardium. Similarly a diagnosis of acute pericarditis disqualifies athletes from participation in competitive sports, however, once the condition is resolved, sports may be allowed. Sinus bradycardias, sinus tachycardia, premature atrial contraction and nonsustained supraventricular arrhythmias are generally manageable non-lethal rhythm disturbances and for symptomatic athletes with no evidence of underlying high-risk disease, all sports are allowed. Athletes with pacemakers however should not participate in collision sports. Sports participation for athletes with aortic stenosis depends on the severity of the stenosis. All sports are allowed for athletes with mild aortic stenosis and moderate and low intensity sportsa re allowed for athletes with moderate aortic stenosis. However play is not allowed for athletes with severe aortic stenosis or occlusion. Mitral valve prolapse accounts for 2% of SCD in athletes. The solution for dysrhythmia is often an implanted battery-powered pacemaker which will jolt the heart to keep it in line.

F. Congestive heart failure (CHF) is a constellation of problems rather than a specific disease. It means that the heart is not functioning properly, so that blood is not being pumped around the body efficiently. The end result is that tissues are not receiving adequate blood supply to meet their needs. People with heart failure frequently suffer from fatigue and tire easily when exerting themselves, because decreased pumping action form the heart does not deliver enough blood to the leg muscle during walking or other exercise. As blood pressure rises, it provides higher and higher resistance to the blood

flowing out of the heart into the aorta. The higher the resistance in the "pipes" the harder the pump has to squeeze to get the blood out into the system to feed the organs and muscles. The lungs become congested with blood. This causes some of the water in the blood to squeeze through the very thin walls of the blood vessels into the air sacs of the lungs. That makes it harder to breathe, because oxygen can't pass through the air sacs into the blood vessels when the air sacs are flood with water. Eventually this backup causes edema, or swelling, in the rest of the body, especially the ankles. When the heart can't pump adequately, people get fatigued and develop shortness of breath when they try to exert themselves. Hypertension was the most common cause of congestive heart failure until the middle of the last century. CHF is a common clinical entity affecting nearly 5 million people in the United States, approximately 1 million will be hospitalized this year. Of CHF cases 75% have antecedent hypertension. Approximately one-fourth of male and one-half of female myocardial infarction cases will develop CHF in 5 years. The 5-year mortality for CHF in general is about 50%. For severe class 4 CHF, there is 50% mortality in 1 year.

1. Dysfunction of the heart or the overall cardiovascular system can only occur by one of the following mechanisms. (1) Disruption of the continuity of the circulatory system (e.g. gunshot wound through the thoracic aorta) that permits the blood to escape; in such cases the heart cannot fill, and the resistance against which it pumps is lost. (2) Disorders of cardiac conduction (e.g heart block) or arrhythmias owing to generation of impulses in an uncoordinated manner (e.g. ventricular fibrillation) which leads to contractions of the muscular walls that are not uniform and efficient. (3) A lesion preventing valve opening or one narrowing the lumen of a vessel (e.g. aortic valvular stenosis or coarctation), which obstructs blood flow and overworks the pump behind the obstruction. (4) Regurgitants flow (e.g., mitral or aortic valvular regurgitation) that causes some of the output form each contraction to efflux backward; this necessarily forces portions of the pump to expel the same blood several times and thereby induces substantial myocardial stress. (5) Failure of the pump itself. In the most frequent circumstances, damaged muscle itself contracts weakly or inadequately and the chambers cannot empty properly. In some conditions, however, the muscle cannot relax sufficiently, the left ventricular chamber cannot dilate during diastole, and the heart cannot properly fill. Any one of the causes mentioned above, when sufficiently severe or advanced, may ultimately impair cardiac function and render the heart unable to maintain an output sufficient for the metabolic requirements of the tissues and organs of the body producing congestive heart failure (CHF).

2. Ejection fraction (EF) measures the percentage of blood that is ejected from the heart. The EF can be calculated through various tests by determining the difference between the volume of blood in the left ventricle at the end of a full relaxation. If EF is less than 35 percent, an implantable cardioverter defibrillator, may be indicated. If the EF is greater than 50 percent, it is less likely an implantable defibrillator would be needed. Cardiac output (CO) = stroke volume (SV) x heart rate (HR). Heart failure occurs when the heart weakens and cannot effectively pump blood to the rest of the body. Blood may back up from the left side of the heart into the lungs, causing congestion and shortness of breath, this is called left heart failure. Or blood may back up on the right side of the heart,

resulting in leg swelling and swelling of other tissues and organs. This is called right heart failure. A person may have either right or left heart failure, or both. The effects of pure left-sided heart failure are largely due to pulmonary congestion and edema. Right-sided heart failure induces essentially a systemic venous congestive syndrome with hepatic and splenic enlargement peripheral edema, pleural and pericardial effusions and ascites. In contrast to left-sided failure, respiratory symptoms may be absent or quite insignificant in right-sided failure. In many cases of frank chronic cardiac decompensation, however, the patients presents with both right and left sided heart failure. To some extent the right and left sides of the heart act as two distinct anatomic and functional units. Under various pathologic stresses, one side or even one chamber may fail, so from the clinical standpoint, left-sided and right sided failure can occur separately. Nevertheless, because the vascular system is a closed circuit, failure of one side cannot exist for long without eventually producing excessive strain on the other, terminating in total heart failure.

G. In general cardiac drugs are the second leading cause of fatal drug overdose and antiarrhythmia and antihypertension drugs are no exception. Because 75% of cases of heart failure involve antecedent high blood pressure it is important to review hypertension medicines both for the treatment of malignant hypertension and as possible cause of cardiac failure. Drugs that block activation of angiotensin by blocking angiotensin-converting enzyme, ACE inhibitors such as captopril, enalapril, lisinopril or any drug with a proper name ending in –pril), or by blocking angiotensin II at its receptor angiotensin receptor blockers (ARBs) (losartan irbesartan, candesartan, or other drug ending in –sartan) will reduce urinary losses of potassium, magnesium and probably the other ions that are depleted by diuretics. Because potassium loss from the kidney is driven by exchange of potassium for sodium as regulated by aldosterone, salt intake is an important concern. The more salt eaten, the more potassium lost. Every sodium ion reabsorbed from the renal tubule leads to excretion of a potassium ion; high sodium intake aggravates potassium losses, and when potassium is depleted, potassium ions are exchanged for hydrogen ions, leading to acid urine with alkaline blood. Blocking the effect of high renin – potassium and magnesium depletion – by blocking the effect of angiotensin II with angiotensin receptor blockers (ARBs) prevent secondary hyperaldosteronism. This may be the best approach for people who have either congestive heart failure or secondary hyperaldosteronism from renal artery stenosis or other high-renin states. ACE inhibitors, also block formation of angiotensin II, but this effect wears off after a few weeks because there are other pathways for the formation of angiotensin II. Beta-blockers seem to be the most highly recommended for slowing the ventiruclar response rate in atrial fibrillation, converting reentrant supraventricular tachyarrhythmias, and suppressing ventiruclar arrhythmias, but chronic treatment with propranolol, metoprolol or timolol following myocardial infarction decreases 1 year mortality, but bradychardia and congestive heart failure, could result from decompensation. Drugs that slow the upstroke, such as quinidine, procainamide, diopyramide, lidocaine, mexiletine, tocainide, moricizine, propafenone and flecainide, have been found worsen outcomes when compared to no treatment in patients with ventricular arrhythmias at risk for sudden coronary death.

Heart failure drugs
Angiotensin-converting enzyme (ACE) inhibitors: Used to help improve the heart's function. May vasodilate the blood vessels and lower blood pressure, making it easier for the failing heart to pump blood. It may adversely affect the kidneys and cause a cough in some people. Note: ACE inhibitors or ARBs plus a beta blocker fulfill the AHA's Get with the Guidelines heart failure program for treating congestive heart failure.
Angiotensin II receptor blockers (ARBs): Used to help improve the heart's function. May vasodilate the blood vessels and lower blood pressure, making it easier for the failing heart to pump blood. May adversely affect the kidneys.
Beta blockers: Can improve heart function in patients with heart failure. Note that some medications act by blocking both alpha and beta receptors. One such drug, carvedilol, blocks the alpha-1 receptor as well as beta receptors.
Digitalis: May make a weak heart pump stronger. May be useful if heart failure does not improve with ACE inhibitors or ARBs. Side effects include worsening heart rhythm problems and yellow vision. Dosage should be reduced in people with heart failure and kidney failure.
Hawthorne: Supreme herb for the heart. Treats high or low blood pressure, heart disease, edema, angina and heart arrhythmia. Hawthorne doesn't store in the body and isn't accumulative in action. Unlike prescription antiarrhythmia medicine Hawthorne does not have any adverse cardiac effects.

Source Table 25.2 Cohen '10: pg. 97-98

1. *Digitalis purpurea,* or foxglove had been used by illiterate farmers and housewives in England and on the Continent for centuries to treat congestive heart failure and arrhythmia. *Digitalis* slows the wildly beating ventricles to a normal level by blocking or delaying the conduction of the electric impulse through the atrioventricular node. By increasing the heart stoke, *Digitalis* increases the amount of blood being oxygenated by the lungs, as well as the blood in general circulation, by as much as 30% with each beat. Because of this improved action of the heart and circulation, the drug tends to improve renal secretion to relieve edema, and to aid the cardiac muscle to compensate for mechanical defects or structural lesions. More than 3 million heart patients in the United States routinely use the glycoside digoxin from *D. lanata*, and this is but one of six glycosides from *Digitalis* prescribed today. *Digitalis* whole leaf, digitoxin, digoxin, lanatoside C, acetyldigitoxin and deslanoside. Since the effective dose may be as high as 70% of the toxic dose, administration must be done carefully on an individual basis. Recently it has been recommended the use of whole leaf preparations over isolated glycosides. Cardiac glycosides bring only temporary relief and must be administered orally during the whole course of the disease. Adverse reactions are found in about 20% of hospitalized patients receiving *Digitalis* preparations (Elvin-Lewis '77: 184, 186). The FDA required warning for Digitalis and related cardiotonic drugs for human use in oral dosage forms, states "Digitalis alone or with other drugs has been used in the treatment of obesity. This use of digoxin or other digitalis glycosides is unwarranted. Moreover, since they may cause potentially fatal arrhythmias or other adverse effects, the use of these drugs in the treatment of obesity is dangerous" 21CFR§201.317 to which could be appended, "Hawthorne is the supreme herb for the heart".

2. Hawthorne (*Crataegus laevigata*) may be better for the treatment of congestive heart failure than both *Digitalis* and modern antihypertensive drugs used in the treatment of congestive heart failure, and is likely to cure more people than nitrates or nitrites. Patients leaving the emergency room would be much more likely to benefit with a recommendation for Hawthorne than for Aspirin, which does help to prevent platelet aggregation and thrombosis that occur in the only most advanced stages of atherosclerosis, and taken in excess the analgesic affect can leave the heart muscle feeling dead complicating the accurate diagnosis of infarction and estimate of myocardial damage, although not harmful, Aspirin is not worth the trip to the hospital. Hawthorne (*Crataegus laevigata*) is outstanding both to prevent heart problems and to treat high or low blood pressure, heart disease, edema, angina and heart arrhythmia. Hawthorne doesn't store in the body and isn't accumulative in action. Unlike prescription cardiovascular and antihypertensive medicine Hawthorne does not have any adverse cardiac effects that might cause decompensation in congestive heart failure, for instance when the treatment for tachycardia causes brachycardia, that is why Hawthorne is known as the "supreme herb for the heart". It is important to take Hawthorne on a regular basis if using as a heart tonic. One drinks four cups of strong herbal tea infusion or cups of water mixed with 2 droppers of tincture, 40 drops, a day, for as many months as the number of years the chronic disease has progressed untreated or for one week to treat a simple infarction.

Common heart rhythm (antiarrhythmic) medication and their effects

Medicine	Effects	Comments
Beta-blocker	PO Slows pulse (treats SVT, and atrial fibrillation or flutter) lowers blood pressure, helps treat heart failure and coronary artery disease.	Avoid in patients with asthma; can cause impotence, depression, bradycardia and congestive heart failure
Calcium channel blocker	PO Slows pulse (treats SVT and atrial fibrillation or flutter); lowers blood pressure	Not as good as a beta-blocker with coronary artery disease
Adenosine	IV for atrioventriuclar nodal reentrant supraventricular arrhythmia.	Commonly causes brief ventricular escape rhythms
Amiodarone	IV Best drug treatment for ventricular tachycardia and atrial fibrillation or flutter	Many potential side effects; can affect thyroid, liver, lungs; requires follow up every three months; ventricular tachycardia (proarrhythmia) is a rare complication
Diltiazem	IV for urgent ventricular	

	rate control	
Dofetilide	Can treat atrial fibrillation or flutter	Can bring on or worsen ventricular tachycardia (proarrhythmia)
Dronedarone	Can treat atrial fibrillation or flutter	Amiodarone-like drug with fewer side effects
Flecainide	Can treat SVT and atrial fibrillation	Can bring on ventricular tachycardia (proarrhythmia)
Mexiletine	Even less effective than sotalol for ventricular tachycardia	Does not worsen ventricular tachycardia; can cause confusion, dizziness, numbness and tingling
Procainamide	IV Sustained ventricular tachycardia	Hypotension may occur with IV loading
Propafenone	PO Can treat SVT and atrial fibrillation	Can bring on ventricular tachycardia (proarrhythmia)
Sotalol	PO Less effective than amiodarone for ventricular tachycardia and atrial fibrillation or flutter	Can bring on or worsen ventricular tachycardia (proarrhythmia)
Verapimil	IV or PO for atrial fibrillation or flutter or atrioventricular nodal reentrant supraventricular	Hypotension resulting from vasodilation; consider pretreatment with calcium

Source: Table 25.1 Cohen ’10: 95; Table 18.2 Heger, Nieman & Criley '04: 271

3. To perform chemical cardioversion the doctor may use medications known as antiarrhythmic drugs to help convert certain arrhythmias (such as atrial fibrillation and atrial flutter) into normal rhythms. Antiarrhythmia drugs have a number of adverse cardiac side-effects. Beta-blockers seem to be the most highly recommended for slowing the ventiruclar response rate in atrial fibrillation, converting reentrant supraventricular tachyarrhythmias, and suppressing ventiruclar arrhythmias, but chronic treatment with propranolol, metoprolol or timolol following myocardial infarction decreases 1 year mortality, but bradychardia and congestive heart failure, could result from decompensation. Drugs that slow the upstroke, such as quinidine, procainamide, diopyramide, lidocaine, mexiletine, tocainide, moricizine, propafenone and flecainide, have been found worsen outcomes when compared to no treatment in patients with ventricular arrhythmias at risk for sudden coronary death. In general cardiac drugs are the second leading cause of fatal drug overdose and anti-arrhythmia drugs are no exception. Hawthorne (*Crataegus laevigata*) is outstanding to prevent heart problems and to treat high or low blood pressure, heart disease, edema, angina and heart arrhythmia. Hawthorne doesn’t store in the body and isn’t accumulative in action. Unlike prescription anti-arrhythmia medicine Hawthorne does not have any adverse cardiac effects called decompensation in congestive heart failure, for instance when the treatment for tachycardia causes brachycardia, that is why Hawthorne is called the "supreme herb for the heart". Hawthorn is contraindicated for use with most high blood pressure

medicines wrongly prescribed to treat arrhythmia to prevent low blood pressure. Full recoveries in less than a year have been reported with Hawthorn.

§347 Hypertension

A. High blood pressure is reported to be the most common problem for which people go to doctors in the United States. Hypertension is one of the leading causes of heart attack and stroke. According to the National Institutes of Health, the number of adults with high blood pressure, with a resting BP > 140/90 mm Hg, has risen dramatically over the last ten years from fifty million to sixty-five million. In 1990, approximately one in four adults in the United States had hypertension. In 2000, it was about one in three Americans, or sixty-five million people over the age of eighteen, with elevated blood pressure. High blood pressure is a major risk factor for the development of heart disease, including coronary artery disease (the number one killer of Americans) and congestive heart failure (the number one cause for hospital admission in people over the age of sixty-five). It is also a major risk factor for stroke and kidney damage. 30 to 50 percent of individuals with hypertension will be "salt sensitive". High blood pressure is a major risk factor for the development of heart disease, including coronary artery disease (the number one killer of Americans) and congestive heart failure (the number one cause for hospital admission in people over the age of sixty-five). It is also a major risk factor for stroke and kidney damage. In large populations, the prevalence of hypertension rises with the levels of sodium intake. Most groups with very low sodium intake have no hypertension. When higher levels of salt are introduced, hypertension develops. Only about 5 to 10 percent of high blood pressure has a known cause. Despite the fact that less than half of people are salt sensitive, dietary salt restriction will lower blood pressure in most people. To be effective dietary restrictions extend to salt, fat and sugar. One problem with high blood pressure is that most people can't feel it. That means that a person could have elevated blood pressure for a long period of time and be completely unaware of it. Hypotension is characterized by an abnormally low tension of muscle cells in peripheral blood vessels, which are marked by capillary permeability and fragility and is treated as congestive heart failure. In the 1950s it was discovered that Reserpine and other *Rauvolfia* alkaloids, used in Ayurvedic medicine for the treatment of schizophremia, act on the sympathetic nervous system by depleting almost all the neurotransmitter substance, norepinephrine, from sympathetic nerve tissue. This neural blocking results in relaxation of the vessels and output of the heart, with subsequent reduction in blood pressure. Drug therapy can now control about 80% of all cases of hypertension. 12.5 mg hydrochlorothiazide (HCTZ) is the commonest and cheapest drug for treating high blood pressure, is enough.

1. Drug therapy can now control about 80% of all cases of hypertension. Drugs do not cure, but their control of this disease marks a tremendous change in the outlook for patients whose inflexible fate until 1950 was a stroke, heart failure, or kidney failure. Thiazine diuretics are the commonest and cheapest drug for treating high blood pressure is hydrochlorothizide, a drug that is particularly effective in the elderly and people with African ancestors, it acts first as a diuretic; after six weeks or so, the main effect is to relax the small artery branches, the arterioles. The main issue with this drug is

determining the correct dose: for most individuals a dose of 12.5 mg daily is enough, and for others 12.5 mg every other day. Hydrochlorothizide is usually available in tablets of 25 mg or more, so half of the smallest tablet is the optimal dose. There are other categories of drugs that may be necessary in specific high blood pressure patients. Aldosterone blockers – aldosterone is made in the adrenal gland and travels to the kidney to save sodium (salt) and water. It also acts as a constrictor of blood vessels. Blocking aldosterone may lower blood pressure by both mechanisms. These drugs are most often used in conjunction with other drugs, or may be used alone. High potassium is the most common side effect. Sympatholytic drugs are older drugs that decrease the outpouring of nervous system hormone with numerous side effects that are therefore rarely used. Direct vasodilators directly dilate the blood vessels and are used only in special situations.

2. Arterial hypertension is the medical term for high blood pressure. Effective measures to improve blood pressure without drugs include weight loss, exercise, and avoidance of substance that aggravate blood pressure. The most important substance to avoid is salt but also aggravating are alcohol, licorice, decongestants, amphetamines, birth control and NSAIDs. With rare exceptions high blood pressure is related to the powerful hormone systems needed to survive that controls salt and water. The exceptions include tumors of the inner part of the adrenal gland (the adrenal medulla) called pheochromocytomas, and a congenital narrowing of the aorta called aortic coarctation. Much commoner is high blood pressure due to kidney problems or to enlargement of the outer part of the adrenal gland (the adrenal cortex). To control high blood pressure that is difficult the best way to sort out the cause is to measure the renin (a kidney enzyme) and aldosterone (an adrenal gland hormone) in the blood plasma; this is most informative after the individual take a dose of diuretic to stimulate the production of renin and aldosterone. The kidney and adrenal gland have a central role in the long-term regulation of body salt and water. When it goes wrong, it causes high blood pressure. If the kidney senses that the body is too dry or the blood pressure is too low it puts out renin, the enzyme that activates a precursor to angiotensin I, a short chain of amino acids. Angiotensin I is converted to angiotensin II by an enzyme called angiotensin converting enzyme (ACE). Angiotensin II can raise blood pressure by itself because if constricts arteries by causing thickening of the arteries and heart muscle but it also goes to the outer part of the adrenal gland (the adrenal cortex) and causes the adrenal gland to release aldosterone. Aldosterone goes to the kidney, where it causes salt and water retention and excretion of potassium, magnesium and other ions.

B. Blood pressure is the force of the blood pushing out against the walls of the blood vessels. As blood is pumped out of the heart into the arteries that lead away from it, there is a certain pressure in the system created by this pumping actin of the heart. Blood pressure is measured in a few different ways, but the most common method is called sphygmomanometry that refers to inflating a blood pressure cuff on the arm (or leg, in some cases). Air is slowly let out of the cuff while the person taking your blood pressure listens with a stethoscope below the cuff to hear the pulse. When the person first hearts the pulse as the cuff deflates, the pressure is recorded as the systolic pressure. The bottom number is called the diastolic pressure. It reflects the pressure in the arteries when it normalizes. The circulatory system is a closed system. There are no valves

anywhere in the pipes to let blood out. In addition to the pumping and filling of the heart, pressure is maintained in this closed system by the tension in the walls of the arteries. Arteries have a layer of muscle in their walls. This muscle layer can contract or relax and have a great impact on the pressure in the overall system. Arteries that supply blood to muscles and organs have the ability to dilate (enlarge) under conditions when more blood is required lowering blood pressure. Muscles help to squeeze the arteries and veins to raise pressure to normal. The blood pressure is therefore maintained by the constriction and relaxation of the arteries as well as the pumping of the heart

1. High blood pressure is a blood pressure reading of 140/90 mmHg or higher. Both numbers are important. Once high blood pressure develops, it usually lasts a lifetime. Blood pressure changes during the day. It is lowest as you sleep and rises when you get up. It also can rise when you are excited, nervous, or active. Still, for most of your waking hours, your blood pressure stays pretty much the same when you are sitting or standing still. That level should be lower than 120/80 mmHg. When the level stays high, 140/90 mmHg or higher, it implies high blood pressure. For example, 160/80 mmHg would be stage 2 high blood pressure. With high blood pressure, the heart works harder, your arteries take a beating, and your chances of a stroke, heart attack, and kidney problems are greater. Normal blood pressure is a reading of less than 120/80 mmHg (mmHg = millimeters of mercury, a unit for measuring pressure). Drops in blood pressure that don't threaten life are called hypotension. Some people do just fine with blood pressures of 85/50 and doctors treat some people with conditions such as congestive heart failure to reduce their pressures down to these levels. Other people feel terrible when their systolic pressure drops from 150 down to 130. Hypotension is abnormally low blood pressure. Hypotension is blood pressure that is lower than 90/60 mmHg. In a healthy person, hypotension without signs or symptoms is usually not a problem and requires no treatment. Doctors will want to identify and treat any underlying condition that is causing the hypotension, if one can be found. Hypotension can be dangerous if a person falls because of dizziness or fainting. Shock, a severe form of hypotension, is a life-threatening condition that is often fatal if not treated immediately. Shock can be successfully treated if the cause can be found and the right treatment provided in time.

Blood Pressure Sphygmomanometry Reading

Normal (optimal): less than 120 systolic and less than 80 diastolic
Prehypertension: 120-139 systolic or 80-89 diastolic, or both
Stage 1 Hypertension: 140-159 systolic or 90-99 diastolic, or both
Stage 2 Hypertension: greater than 160 systolic or greater than 100 diastolic, or both.
Stage 3 Malignant hypertension: greater than 200 systolic or diastolic greater than 130, or both.

2. High blood pressure is common and has been identified as one of the most important risk factors in both coronary heart disease and cerebrovascular accidents, it may also lead to congestive heart failure (hypertensive heart disease), aortic dissection, and renal failure. The detrimental effects of blood pressure increase continuously as the pressure increases. A sustained diastolic pressure greater than 90 mm Hg or a sustained systolic

pressure in excess of 140 mm Hg are generally considered to constitute hypertension. By this criteria, screening programs reveal that 25 percent of the population is hypertensive. The prevalence increases with age, but in older groups the disease is likely to be mild, but in young adults tends to be more severe. Blacks are affected by hypertension about twice as often as whites and seem more vulnerable to its complications. About 90 to 95 percent of hypertension is idiopathic and apparently primary (essential hypertension). Of the remaining 5 to 10 percent most is secondary to renal disease or, less often, to narrowing of the renal artery, usually by an atheromatous plaque (renovascular hypertension). Infrequently, secondary hypertension is the result is the result of adrenal disorders, such as primary aldosteronism, Cushing's syndrome, or pheochromocytoma. Both essential and secondary hypertension may be either benign or malignant, according to the clinical course. About 5 percent of hypertensive persons show a rapidly rising blood pressure, which, if untreated, leads to death within a year or two from accelerated or malignant hypertension Malignant hypertension usually develops in the fourth decade of life and is defined as a systolic blood pressure over 200 mm Hg or diastolic pressure over 130 mm Hg.

3. Malignant hypertension is relatively rare occurring in 1 to 5% of people with high blood pressure. Before introduction of the new antihypertensive drugs, malignant hypertension was associated with a 50% mortality rate within 3 months of onset, progressing to 90% within a year. At present, however, about 75% of patients will survive 5 years, and 50% survive with precrisis renal function. The full blown syndrome of malignant hypertension is characterized by a systolic pressure greater than 200 mm Hg and a diastolic pressures greater than 130 mm Hg, papilledema retinopathy, encephalitis, cardiovascular abnormalities and renal failure sometimes encountered in "hypertensive crisis". At the onset of rapidly mounting blood pressure, their is marked proteinuria and microscopic or sometimes macroscopic hematuria, but no significant alteration in renal function. Soon, however, renal failure makes its appearance and the patient is unable to urinate. The syndrome is a true medical emergency requiring the institution of aggressive and prompt antihypertensive therapy before the development of irreversible renal lesions.

C. The magnitude of arterial pressure depends on two fundamental hemodynamic variables: cardiac output and total peripheral resistance. Vasoconstricting agents are angiotensin II, catecholamines, thromboxane, leukotienes, and endothelin. Vasodilators include kinins, prostaglandins and nitric oxide. Arterial hypertension can best be considered a disease dependent on factors that may alter the relationship between blood volume and total arteriolar resistance. The kidneys play an important role in blood pressure regulation by at least three mechanisms (1) renin-angiotensin system (2) sodium homeostasis and (3) renal vasodepressor substances. Environmental factors implicated in the causation of hypertension include stress, obesity, smoking, inactivity, and heavy consumption of salt. Hypertension is associated with two forms of small blood vessel disease: hyaline ateriolosclerosis and hyperplastic arteriolosclerosis. The body is very sensitive to changes in blood pressure. Special cells in the arteries, called baroreceptors, can sense if blood pressure begins to rise or drop. When the baroreceptors sense a rise or drop in blood pressure, they cause certain responses to occur throughout the body in an attempt to bring the blood pressure back to normal. For example, if you stand up quickly,

the baroreceptors will sense a drop in your blood pressure. They quickly take action to make sure that blood continues to flow to the brain, kidneys, and other important organs. The baroreceptors cause the heart to beat faster and harder. They also cause the small arteries (arterioles) and veins (the vessels that carry blood back to the heart) to narrow. When the kidney senses low blood pressure it produces a hormone called renin. This hormone is spilled from the kidney into the circulation and acts on another chemical, which then acts on a another, and in the long run the message goes to the arteries in the body to squeeze down, thus raising the overall pressure in the system. This phenomenon of contracting arteries in the body is known as vasoconstriction. The arteries have muscles in their wall for exactly this reason.

1. Another consequence of renin production by the kidneys is the triggering and the production and release of hormones and chemicals form the adrenal glands, which sit on top of the kidneys. These substances not only contribute to the constriction of the arteries, but also pass through the kidneys and cause them to reabsorb salt and water back into the circulatory system, thus helping to raise blood pressure by maintaining the fluid volume in your blood vessels. Many diseases, including hypertension, can create damage to the kidney. Tumors, infection, diabetes, autoimmune diseases (lupus, for example) or kidney stones can also cause kidney problems resulting in higher blood pressure. Buildup of cholesterol in the renal artery can create a partial blockage and thereby decrease blood flow to the kidney, triggering renin production and raising pressure. Each adrenal gland looks like a little triangular hat sitting atop the kidney below it. It is made up of two parts: the middle core, known as the medulla, and the outer layer, known as the cortex (cover). The medulla makes and stores adrenaline and couple closely related compounds, which quickly raise blood pressure in a crisis situation. The outer cortex of each adrenal gland makes a hormone called aldosterone. Aldosterone is a very powerful compound that travels by way of the blood to the kidney, where it tells the kidney to reabsorb sodium (salt) before it goes out in the urine. Nerve signals and hormones from the brain serve as messenger to raise blood pressure often through many steps. Pain or cold temperatures can do this too.

2. Regular exercise, especially aerobic exercise (sustained exercise that raises the heart rate but doesn't put sudden strain on your system like heavy weight lifting), lowers blood pressure, strengthens the heart and cardiovascular system, helps muscles to utilize the oxygen delivered by the blood more efficiently, improve energy levels and endurance, improve muscle strength, strengthen bones, increase flexibility and balance, reduce body fat, help to reduce tension, stress and depression, improve sleep, and increase self-esteem. Too much salt in the diet can be harmful. The chemical name for salt is sodium chloride. Nutrition labels on foods now list how much sodium is contained. Sodium is present in high amounts in certain types of foods. Ketchup and pickles are great examples of high-sodium foods. Many canned soups and most snack-food items (potato chips, corn chips, and the like are very high in salt also. Any type of meat that has preservatives to such as sausage, hot dots, or bacon, will contain high levels of sodium. Some people seem to be more sensitive to salt than others, meaning they will develop hypertension in response to excess sodium in their diet. There is no way to predict who might be salt sensitive. Evidence for a causative role of salt follows: In large populations, the prevalence of

hypertension rises with the levels of sodium intake. Most groups with very low sodium intake have no hypertension. When higher levels of salt are introduced, hypertension develops. Certain animals seem predisposed to high blood pressure when fed high-sodium diets. Despite the fact that less than half of people are salt sensitive, dietary salt restriction will lower blood pressure in most people. There is an increased risk of having hypertension if you: are over the age of thirty-five, are overweight, eat foods that are high in salt or fat, or both, are not active, smoke, drink excess alcohol (more than two drinks per day), have family members with high blood pressure, are African-American, are pregnant, take oral contraceptives (birth control pills) or are under stress. Secondary hypertension is the name given to high blood pressure with a known etiology. Only about 5 to 10 percent of high blood pressure has a known cause. The kidneys are frequently the cause of hypertension for many reasons. This is because the kidneys help to regulate blood pressure.

D. It wasn't until the 1940s and 50s that big changes in the treatment of hypertension took place, partly due to the fact that President Franklin Delano Roosevelt eventually died of a stroke, but also suffered from congestive heart failure and kidney failure, all complications of his long-standing hypertension. In the 1950s it was discovered that Reserpine and other *Rauvolfia* alkaloids, used in Ayurvedic medicine for the treatment of schizophremia, act on the sympathetic nervous system by depleting almost all the neurotransmitter substance, norepinephrine, from sympathetic nerve tissue. This neural blocking results in relaxation of the vessels and output of the heart, with subsequent reduction in blood pressure. Drug therapy can now control about 80% of all cases of hypertension. Drugs however do not cure, salt and meat elimination diets are necessary, but drug control of this disease marks a tremendous change in the outlook for patients who developed malignant hypertension whose inflexible fate until 1950 was a stroke, heart failure, or kidney failure. Although many drugs were tried in the early days of treatment, compounds began to be developed in the 1950s through the l970s that evolved into the new drugs classes currently in use. In the 1980s and 90s a couple more families of medications hit the scene. Today there are four basic classes of antihypertensive medications used in the treatment of high blood pressure – diuretics, beta-blockers, angiotensin converting enzyme (ACE) inhibitors and calcium channel blockers; aldosterone blockers are for certain patients. Patients must be willing to persevere and deal with the "art" of medicine, often known as "trial and error". Modern cardiac drugs, including all hypertension medication are however the third leading cause of fatal drug overdose, after opiates, antipsychotics and sleep aids, and the prescription for antihypertensives is rife with abuse. Doctors and nurses come out of medical school, able to rattle off these dangerous medicines, cardiologists are generally much more reluctant to prescribe these medicines than primary care doctors and these two offices, despite their disparate cardiac and hypertensive population, probably prescribe an equal amount of ACE inhibitors, beta-blockers, and calcium channel blockers to heart patients as to the high blood pressure patients that benefit from antihypertensive drugs. Among the many cardiotonic properties of Hawthorne *Crataegus laevigata* is the treatment of high blood pressure, whereby it is contraindicated for use in conjunction with other anti-hypertensive drugs due to low blood pressure.

Prescription Medicine for the Treatment of Hypertension

Diuretics Generic Name	**Diuretics Trade Name**	**Beta-blockers Generic Name**	**Beta-blockers Trade Name**
Bumetanide	Bumex	Acebutolol	Sectral
Chlorthalidone	Hygroton	Atenolol	Tenormin
Ethacrynic acid	Edecrin	Carvedilol	Coreg
Furosemide	Lasix	Labetalol	Normodyne, Trandate
Hydrochlorothiazide (HCTZ)	HydroDIURIL, Microzide	Metoprolol	Lopressor, Troprol
Indapamide	Lozol	Nadolol	Corgard
Metolazone	Zaroxolyn, Mykrox	Pindolol	Visken
Torsemide	Demadex	Propranolol	Inderal
ACE Inhibitors Generic Name	**ACE Inhibitors Trade Name**	**ARBs Generic Name**	**ARBs Trade Name**
Benazepril	Lotensin	Candesartan	Atacand
Captopril	Capoten	Eprosartan	Teveten
Enalapril	Vasotec	Irbesartan	Avapro
Fosinopril	Monopril	Losarten	Cozaar
Moexipril	Univasc	Olmesartan	Benicar
Perindopril	Aceon	Telmisartan	Micardis
Quinapril	Accupril	Valsartan	Diovan
Ramipril	Altace	**Aldosterone Blockers Generic Name**	**Aldosterone Blockers Trade Name**
Trandolaril	Mavik	Eplerenone	Inspra
Calcium Channel Blockers Generic Name	**Calcium Channel Blockers Trade Name**	Spironolactone	Aldactone
Amlodipine	Norvasc	**Alpha Blockers Generic Name**	**Alpha Blocker Trade Name**
Diltiazem	Cardizem, Tiazac	Doxazosin	Cardura
Felodipine	Plendil	Prazosin	Minipress
Nicardipine	Cardene	Terazosin	Hytrin
Nifedipine	Procardia, Adalat	**Sympatholytic Drugs Generic Name**	**Sympatholytic Drugs Trade Name**
Verapamil	Calan, Isoptin, Verelan	Clonidine	Catapres

Direct Vasodilators Generic Name	Direct Vasodilators Trade Name	Guanabenz	Wytensin
Hydralazine	Apresoline	Methyldopa	Aldomet
Minoxidil	Loniten		
Rauwolfia alkaloids Generic Name	**Rauwolfia alkaloids Trade Name**		
Rauwolfia serpentine			
Rauwolfemms			
Reserpidine Oral	Serpasil, Serpalan, Harmonyl, Novoreserpine, Raudixin, Rauval, Rauverid, Reserfia, Serpalan, Wolfina		
Deserpidine and Hydrochlorothiazide or Methyclothiazide	Demi-Regroton, Diupres, Diurigen with Reserpine, Diutensen-R, Dureticyl, Enduronyl, Enduronyl Forte, Hydropres, Oreticyl, Oreticyl Forte, Rauzide, Regroton		

Source: Wilson & Childre ’06: Appendix Table I-VII pgs. 136-139

1. People taking long term diuretic therapy to rid their body of salt and water, often experience adverse effects related to the depletion of the number of ions. Often the rubric hypokalemia (low blood level of potassium) is used to characterize the problem. The problem is however not a low eve of potassium in the blood, it is potassium depletion in the cells throughout the body, including muscles, heart, brain, and elsewhere. Potassium supplements do not restore intracellular potassium unless magnesium is taken at the same time. Maintaining adequate intracellular potassium helps prevent toxicity of digoxin (a heart medication that can cause serious problems if the blood level is too high, or the potassium level in the cells is too low) and minimizes the adverse effects on diabetes and cholesterol. Taking diuretic causes the body to react by turning on hormone systems designed to retain salt and water. Aldosterone causes the kidney to retain sodium and excrete potassium and other ions; when potassium is eventually depleted, there is excretion of hydrogen ions, leading to an alkaline state in the blood (alkalosis). Most individuals with depleted potassium have a normal serum potassium. If taking a diuretic and feel tired, achy, have cramps in extremities, are impotent, and feel faint when

standing up, presume depleted potassium. Usually when there is potassium depletion there is also depletion of magnesium, zinc, selenium, rubidium and other ions.

2. Drugs that reduce production of aldosterone by the adrenal gland also are magnesium and potassium sparing. Drugs that block activation of angiotensin by blocking angiotensin-converting enzyme, ACE inhibitors such as captopril, enalapril, lisinopril or any drug with a proper name ending in –pril), or by blocking angiotensin II at its receptor (losartan irbesartan, candesartan, or other drug ending in –sartan) will reduce urinary losses of potassium, magnesium and probably the other ions that are depleted by diuretics. Because potassium loss from the kidney is driven by exchange of potassium for sodium as regulated by aldosterone, salt intake is an important concern. The more salt eaten, the more potassium lost. Every sodium ion reabsorbed from the renal tubule leads to excretion of a potassium ion; high sodium intake aggravates potassium losses, and when potassium is depleted, potassium ions are exchanged for hydrogen ions, leading to acid urine with alkaline blood. Blocking the effect of high renin – potassium and magnesiu depletion – by blocking the effect of angiotensin II with angiotensin receptor blockers (ARBs) will prevent secondary hyperaldosteronism. This may be the best approach for people who have either congestive heart failure or secondary hyperaldosteronism from renal artery stenosis or other high-renin states. ACE inhibitors, also block formation of angiotensin II, but this effect wears off after a few weeks because there are other pathways for the formation of angiotensin II.

3. If potassium-sparing diuretics and ARBs or ACE inhibitors are used together, there is a real risk of seriously increased levels of potassium in the blood (hyperkalemia). For primary hyperaldosteronism the specific treatment is blockers of aldosterone such as spironolactone and eplerenone; amiloride can also be used and is the specific treatment for hypertension due to abnormalities of the renal tubule such as Liddle's syndrome. The problem is not low levels of potassium in the blood (hypokalemia) but potassium/magnesium depletion; potassium supplements do not solve the problem because magnesium is required to restore intracellular potassium. A recommended approach is to: (1) reduce salt intake below 2-3 grams per day; (2) reduce the dose of diuretic, (3) use potassium/magnesium sparing diuretics to prevent losses or (4) use angiotensin blockers to reduce secondary hyperadlosteronism and thus prevent depletion of potassium and magnesium (Spence '05: 152). To minimize potassium losses, one can reduce salt intake; use angiotensin-receptor blockers (ARBs) to prevent angiotensin II from causing the adrenal cortex to release aldosterone; or block the effects of aldosterone on the kidney tubule by using potassium-magnesium sparing diuretics. A minority of patients with difficult to treat high blood pressure will require potassium and magnesium supplementation. Potassium depletion is usually managed by a combination of reducing salt intake, reducing the dose of diuretic and using either potassium/magnesium sparing diuretics or drugs that prevent excess aldosterone production such as angiotensin receptor blockers. For most individuals, particularly the elderly, a daily dose of 12.5 mg hydrochlorothiazide (HCTZ) is the commonest and cheapest drug for treating high blood pressure, is enough. Among that do not deplete the body's potassium and magnesium, amiloride is generally preferred for men, because men who take spironolactone often have sore nipples and sometimes breast enlargement. This does not appear to be a

problem with eplerenone, a new aldosterone antabgonist. Avoid triamterene, because half the people who take it develop an abnormality in the urine (triamterene casts) and it is implicated in kidney inflammation (interstitial mephritis) and kidney stones. If a small does of one of the thiazide family of diuretics if required, a common ratio might be HCTZ 12.5 mg to amiloride 10-20 mg, or spironolactone 100 mg. For people with secondary hyperaldosteronism, overproduction of aldosterone because of high levels of renin and angiotensin - angiotensin receptor blockers are more effective.

4. Any ACE inhibitor will cause a cough in about 8 percent of people and swelling of the face and tongue (angiodedema) in about one in one thousand. One can avoid these adverse effects by switching to angiotensin blockers, which have benefits similar to those of ACE inhibitors. The first dose of any ACE inhibitor or angiotensin blocker can cause a severe drop in blood pressure, particularly in people taking diuretics. They can also cause acute kidney failure in people that have severe narrowing of both kidney arteries. This problem is rare except in very severe high blood pressure or heart failure. Among ACE inhibitors the main difference is due to the presence of a sulfhydryl group in captropril, which is responsible for the loss of taste and a characteristic generalized rash that looks like measles. Both of these problems will disappear if you switch to another ACE inhibitor or to an angiotensin blocker. Captopril is very short acting and must be taken two or three times per day to achieve desired effects in all but the least severe cases. Lisinopril, quinapril, and some of the other ACE inhibitors are long acting enough to work well when taken once a day. Captopril is also the most expensive of ACE inhibitors.

5. Beta-blockers block one of the two kinds of adrenaline receptor (a structure on the surface of cells that responds to adrenaline), the beta receptors. Beta receptors are of two types, beta-1 and bta-2. Stimulating beta-1 receptors causes the heart to speed up and beat more forcefullyl. Stimulating the beta-2 receptors causes the bronchi to dilate and the arteries that got to the muscles to dilate. Alpha-blockers block the second of the two kinds of adrenaline receptor, the alpha receptors: the alpha-1 receptor when stimulated causes the arteries to constrict, and the alpha-2 receptor when stimulated inhibits the sympathetic nervous system. Alpha-blockers are used selectively to block the alpha-1 receptors by preventing the arteries from constricting, they tend to lower blood pressure. They also have beneficial effects on cholesterol and diabetes, and are now commonly used for bladder symptoms from prostate gland enlargement. The main ones in use are prazosin, doxazosin, and terazosin. Compared with prazosin, the latter two are longer acting so can be taken less often, and they tend to cause less trouble with a faint feeling on standing. Doxazosin is the longest acting, and probably the best choice for that reason.

6. Beta-blockers have issues in the different ways individual bodies handle the drugs (pharmacokinetics) and the way the drugs interact with adrenaline receptors (pharmacodynamics). Concerns include how drugs metabolize, how long the drug action lasts, how the drugs are absorbed into various body tissues, and how tightly the drug binds to receptors. Propranolol undergoes extensive metabolism during its first pass through the liver (first-pass metabolism); about 70 percent of an oral dose is broken down

in the liver and never makes to the rest of the body. Both propranolol and metoprolol have a twenty-fold range in the blood levels achieved with a given dose that in different people can lead to blood levels that range from five to one hundred units. If propranolol and metoprolol don't work well at the dose prescribed hypertension can be controlled, at a much lower cost, with a beta-blocker that is excreted by the kidney or metabolized in a different way. Nadolol and atenolol are two beta-blockers that are excreted by the kidney, creating special problems for the elderly and for people with impaired kidney function. They can build up in the blood-stream, causing relatively slow heart action (bradycardia), and aggravate heart failure, which in turn aggravates the kidney function. If the heart rate has been getting slower and slower switch to a beta-blocker that is not excreted by the kidney, but metabolized by the liver.

7. The best and most convenient beta-blocker is pindolol, it has the most potent ISA, so it does not cause the adverse effects due to blockade of beta-2 receptors. (ISA, intrinsic sympathomimetic activity of drugs that block beta-1 receptors and stimulate beta-2 receptors.) Pindolol is also the best beta-blocker for people with diabetes, high cholesterol, or blocked arteries in the legs; it is less likely to aggravate cholesterol and diabetes, and less likely to cause fatigue and is the least likely to cause rebound hypertension if doses are missed. The downside of pindolol is that small proportion of people (about 5 percent) experience vivid dreams, tremor or anxiety because of the drug's greater penetration into the brain. Beta-blockers penetrate brain tissue to markedly varied extents because of difference in how well they dissolve in fat. These differences explain why pindolol, with its extreme penetration into brain tissue, is the most likely beta-blocker to cause anxiety, tremors and vivid dreams, and why propranolol, which is also concentrated in the brain, is the most likely to cause subjective tiredness and hallucinations. Selective blockade of beta-1 receptors that speed up the heart and cause it to beat harder and stimulation of beta-2 receptors that cause dilation of the large air tubes in the lung and of the arteries that go to muscles. Nonselective drugs such as propranolol, nadolol and timolol are more likely to cause adverse effects due to beta-2 blockade. Drugs that stimulate beta-2 receptors will have a different profile again; pindolol, a relatively potent beta-2 stimulator, had beneficial effects on cholesterol, may benefit diabetes, and is least likely to cause problems with cold extremities and asthma.

8. Calcium-channel antagonists, or calcium-channel blockers, dilate arteries by interfering with the channels that permit calcium to enter cells; they are useful for both hypertension and angina. Calcium-channel antagonists, or calcium-channel blockers, dilate arteries by interfering with the channels that permit calcium to enter cells. Trouble with constipation or shortness of breath or other symptoms of heart failure, is often helped by changing from verapamil or diltiazem to another type of drug, or changing to a dihydropyridine (the largest class of CCBs) such as nifedipine, felodipine, or amlodipine. If the problem is a slow heart rate from diltiazem, changing to a dihydropyridine or another class of drug should help; if it doesn't, check out a pacemaker. Consumers of both diltiazem and a beta-blocker, may need to reduce the dose of beta-blocker. Those having a lot of angina on a dihydropyridine such as felopidipine, are helped by adding a beta-blocker (or switching to diltiazem for those who can't take a beta-blocker). If it doesn't help, find out about endartectomy, angioplasty or bypass surgery, and make sure

that all the risk factors are optimally controlled. If the problem is ankle swelling, flushing, or headache, switching from nifedipine or felodipine to amlodipine or another class of drug should help. Diltiazem and verapamil are not very strong and are extremely expensive, so are not advised for treating high blood pressure: the main reason to use them. Verapamil is good for heat-rhythm disturbances such as atrial fibrillation and diltiazem is good for angina (chest pain brought on by exertion, due to narrowing of the coronary arteries). There are other categories of drugs that may be necessary in specific high blood pressure patients. Aldosterone blockers – aldosterone is made in the adrenal gland and travels to the kidney to save sodium (salt) and water. It also acts as a constrictor of blood vessels. Blocking aldosterone may lower blood pressure by both mechanisms. These drugs are most often used in conjunction with other drugs, or may be used alone. High potassium is the most common side effect. Sympatholytic drugs are older drugs that decrease the outpouring of nervous system hormone with numerous side effects that are therefore rarely used. Direct vasodilators directly dilate the blood vessels and are used only in special situations.

9. Drugs in the class called dihydropyridines, the largest group, tend to be the best at lowering blood pressure. Diltiazem is a somewhat weaker vasodilator in the peripheral arteries throughout the body, but it affects the coronary arteries and so may be better for angina. Verapamil is another relatively weak drug that may aggravate heart failure. The main dihydrpyrinidines are nifedipine, felodipine, amlodipine, nisodipine, and nicardipine. Nifedipine and felodipine are quite short acting, and the slow-release pills that have been developed are only partially effective in correcting the problem of peaks and troughs in blood pressure. Nifedipine is relatively expensive, but the best value is felodipine, and if it is causing too many side effects, amlodipine may be better. Nicardipine is very expensive and usually has to be taken several time a day, so it has little advantage. A special problem occurs when dihydropyridines are taken with grapefruit juice that reduce the metabolism of a number of drugs. Felodipine blood levels go up on average about 300 percent with grapefruit juice, nisodipine levels about 500 percent. A number of important interactions occur between grapefruit and other drugs such as cyclosporine, terfenadine (an antihistamine), and propafenone; based on the known metabolism of warfarin and the cholesterol-lowering drugs such as lovastatin and simvastatin, can be anticipated to be affected by grapefruit juice. As a rule of thumb any drug that should not be taken with erythromycin, ketoconazole or itraconazole, should not be taken with grapefruit juice. Hawthorn, the supreme herb for the heart, is indicated for the treatment of high and low blood pressure. If Hawthorn works, it is safer than prescription drugs.

§348 Renal Disease

A. Human kidneys serves to convert more than 1700 liters of blood per day into about 1 liter of a highly specialized concentrated fluid called urine. In so doing the kidney excretes the waste products of metabolism, precisely regulates the body's concentration of water and salt, maintains the appropriate acid balance of plasma, and serves as an endocrine organ, secreting such hormones as erythropoietin, renin and prostaglandins. Renal disease is responsible for a great deal of morbidity by, fortunately, are not equally

major causes of mortality. Approximately 45,000 deaths are attributed yearly to renal disease in the United States. Millions of people are affected annually by nonfatal kidney diseases, most notably infections of the kidney or lower urinary tract, kidney stones and urinary obstruction. Twenty percent of all women suffer from infections of the urinary tract or kidney at some time in their lives, and as many as 5% of the U.S. population develops renal stones. Modern treatment, notably dialysis and transplantation, keep many patients alive who earlier would have died of renal failure. Renal failure may classified as acute or chronic depending on the rapidity of onset and the subsequent course of azotemia. The general incidence of chronic renal failure in the UA, defined as "people who can benefit from hemodialysis or renal transplantation" is 50 per million population per year. More than 95,000 patients are being treated with either dialysis or transplantation, each year by 1988. Stone Breaker™ eliminates gallstones and urinary stones overnight.

1. Archeologic studies show that urinary tract stone disease was an affliction of humans earlier than 4800 B.C. Ancient Greek and Roman physicians recorded the symptoms and treatment of urologic stone disease. In the 20th century, advances in technology and microscopic techniques have led to a better understanding of the structural characteristics of calculi, their chemical composition, and the various components of urine; however, the herbal stone dissolution remedies seem to have been forgotten in a rush to perform expensive surgeries. The herbal remedy works overnight. Ingredients of the new formulation of Stone Breaker™: formerly Madden/Hydrangia now includes extracts of: Stonebreaker herb (*Phyllanthus niruri*), Hydrangea root (*Hydrangea arborescens*), Celery seed (*Apium graveolens*), Burdock seed (*Arctium lappa*); and other Ingredients: certified organic grain alcohol & distilled water. The old formula of this over-the-counter formula available online, not prescribed by physicians, has been known to completely dissolve plain x-ray film detectable urinary stones in two days to avoid surgery and make a complete recovery. At around $10 a bottle and no known side-effects it should definitely be taken before surgery or expensive medical treatment. Caution: Do not take during pregnancy and keep out of reach of children. Shake well before taking 40 drops in a full cup of water, three times per day. For children Clark's rule is to divide the child's weight (in pounds) by 150 to get the fraction of the adult dose to give to the child. Example: For a 50 pound child give 50/150 (or 1/3) of the adult dose. Therefore, if the adult dose is 40 drops taken 3 times per day, the child's dose will be 13.3 drops taken 3 times per day. Some extracts are not suitable for children. Consult a doctor for advice.

B. The kidneys are bean-shaped, reddish organs that lie retroperitoneally on either side of vertebral column in the posterior part of the abdomen. In the kidney a series of tubules act to filter the blood and remove from it metabolic waters and excess material by the process of urine formation and excretion. By monitoring acid-base balance, osmotic relationships, and the content of organic and inorganic solutes, the kidney regulates the composition and physical properties of the blood. Urine, colored yellow by urobilinogen, a breakdown product of hemoglobin, is more hypertonic than plasma and somewhat more acid, it consists of urea, uric acid, creatinine, ammonia and hydrogen and potassium ions. The kidney also acts to control the volume of body fluids through the mediation of an antidiuretic hormone released from the pituitary. The volume of urine varies inversely

with the amount of hormone secreted, which in turn depends on the amount of solute concentration of the blood reaching the hypothalamus. Diuretic are chemicals that induce a net loss of fluid from the body by the urinary tract. They are used to eliminate excess liquid and toxic products from the tissues and the vascular system. Of the many groups of diuretics (osmotic diuretics, mercurial compounds, carbonic anhydrase inhibitors, thiazides) only the xanthines (purine bases) are derived from natural sources. Coffee and tea have long been known to influence the flow of urine, by the xanthine caffeine is only weakly diuretic. Theophylline is about three times as active and used today, as aminophylline. Tea made from the *Chimaphila umbellate* (spotted wintergreen of the North Temperate zone, *Ericaceae*) retards the excretion of urine.

1. The normal capacity of the bladder is about 400 mL. Frequency may be caused by residual urine, which decreases the functional capacity of the organ. When the mucosa, submucosa, and even the muscularis become inflamed (e.g., infection, foreign body, stones, tumor), the capacity of the bladder decreases sharply. This decrease is due to 2 factors: the pain resulting from even mild stretching of the bladder and the loss of bladder compliance resulting from inflammatory edema. When the bladder is normal, urination can be delayed if circumstances require it, but this is not so in acute cystitis. Once diminished bladder capacity is reached, any further distention may be agonizing, and the patient may urinate involuntarily. Infection, fibrosis, low or high urine pH of the bladder cause frequent urination. Nocturia may be a symptom of renal disease related to a decrease in the functioning renal parenchyma with a loss of concentrating power. Nocturia can occur in the absence of disease in persons who drink excessive amounts of fluids in the evening. Coffee and alcoholic beverages, because of their specific diuretic effect, often product nocturia if consumed late in the day. Dysuria is painful urination usually related to acute inflammation of the bladder, urethra or prostate. The pain is present only with voiding and disappears soon after urination is complete. More severe pain sometimes occurs in the bladder just at the end of voiding, suggesting that inflammation of the bladder is the likely cause. Dysuria often is the first symptom suggesting urinary infection and is often associated with urinary frequency and urgency. Enuresis means bedwetting at night. It is physiologic during the first 2 or 3 years of life but becomes troublesome, after that age. If enuresis persists beyond age 5 or 6 urologic investigation is essential as it may be the result of a functional delayed neuromuscular maturation or the urethrovesical component or a symptom of organic disease (e.g. infection, distal urethral stenosis in girls, posterior urethral valves in boys, neurogenic bladder).

2. Bladder outlet obstruction results in hesitancy, loss of force and decrease of caliber of the stream, terminal dribbling, urgency, acute and chronic urinary retention, interruption of the urinary stream, sense of residual urine and cystitis. A urethral catheter will relieve the obstruction somewhat by eliminating the trigonal stretch. Normal intravesical pressure is about 30 cm of water at the beginning of micturition. There are many reasons for incontinence, when the patient loses urine without any warning, this may be a constant or periodic symptom. Oliguria and anuria may be caused by acute renal failure (due to shock or dehydration), fluid-ion imbalance, or bilateral ureteral obstruction. Pneumaturia is the passage of gas urine almost always because there is a fistula between

the urinary tract and the bowel. Cloudy urine is usually alkaline, causing the precipitation of phosphate, but can also be caused by infection. Chyluria is the passage of lymphatic fluid or chyle as a milky white urine. Hematuria, bloody urine, is a danger signal that cannot be ignored. Is it painful? Is it due to jogging, beets, rhodamine B red coloring agent or laxatives containing phenolphthalein. Hematuria associated with renal colic suggests ureteral stone, bleeding renal tumor, tubercular or schistosomal infection of the bladder. Urethral discharge in men is one of the most common complaints in urology. The causative organism is usually *N. gonorrhoeae* or *C. trachomatis*.

C. Urinary tract infections (UTIs) are a common problem, accounting for over eight million doctor visits each year in the United States. Infections of the urethra and bladder (cystitis) often occurring together, can be caused by numerous microorganisms that normally inhabit the gut or adjacent skin and mucous membranes. Those most commonly isolated are *Streptococcus agalactae*, *Escherichia coli*, *Klebsiella species* and *Proteus* species, although urine may also yield the yeast *Candida albicans* in diabetics. Urethral infections with *Neisseria gonorrhoeae*, *Mycoplasma hominis*, *Trichomonas vaginalis*, and *Chlamydia* species also develop through venereal contact. In the absence of obstruction, patients may recover spontaneously from urethritis or cystitis. However surgery is used to correct anatomical problems related to retention of bladder urine and bladder lavage with antibiotics is used to eradicate additional bacteria. Most urinary tract infections not acquired in a hospital, where antibiotic resistant mutants abound, are successfully treated with penicillin or Bactrim and by administration of vitamin C, which lowers the urine pH. But since urine helps flush bacteria from the urinary tract, anything that obstructs the flow can lead to a UTI. That includes an enlarged prostate gland, which is a common condition in older men. If the problem is confined to the lower part of the urinary tract, the symptoms may be relatively mild, unusually frequent urination sometimes with pain or burning. But if the infection reaches the kidneys, it can cause severe pain, nausea, fever, and significant malaise. Infected kidneys can be damaged permanently unless the condition is addressed. Treatment usually begins with a urine test to identify the bacterium responsible for an infection, and then appropriate antibiotics are prescribed. Painkillers may be needed as well. When the UTI is not severe, symptoms often disappear a day or two after treatment starts. However, the bacteria may linger longer. Follow-up urine tests are recommended to make sure the infection is gone before medication is discontinued. Metronidazole might lead to a swifter cure than other antibiotics commonly used in urology with a narrower spectrum of antibiotic activity.

1. The nonspecific infections of the genitourinary tract are caused mainly by aerobic gram-negative rods (e.g., *Escherichia coli*, *Proteus mirabilis, Enterobacter spp., Gardnerella vaginalis [Haemophilus vaginalis], Klebisella spp., Proteus mirabilis, Proteus spp* [indole-positive], *Pseudomonas aeruginosa, Serratia spp.*) and gram-positive cocci (e.g. staphylococcus, *Staphylococcus aureus*, *S. epidermidis*, *S. saprophyticus*; enterococci; *Streptococcu*s Group D, *S. fecalis S. bovi*, Streptococcus, group B) and to a lesser extent by obligate anaerobic bacteria (e.g. *Bacteroides fragilis*, *peptrostreptococci*). In addition, nonspecific infections of the urethra frequently are caused by organisms that require special techniques of identification (e.g. *Neisseria gonorrhoeae*, *Chlamydia trachomatis*, *Ureaplasma urealyticum*, *Gardnerella vaginalis,*

Candida spp.). Most uncomplicated urinary tract infections acquired outside the hospital environment are caused by coliform bacteria, chiefly *E. coli*.

2. Common infectious syndromes are defined by the proclivity of certain bacteria to infect certain parts of the urinary tract. Acute urethral syndrome in women often with low bacteria counts on urine cultures, may be caused by bacteria of *Chlamydia trachomatis*. Acute urethritis in men presents with dysuria accompanied by urethral discharge, most often representing a sexually transmitted disease caused by *Neisseria gonorrhoeae* (yellow discharge) or by nongonococcal agents, e.g. *C. trachomatis* or *U. urealyticum* (white discharge). Acute cystitis presents with painful urination sometimes with hematuria, suprapubic and low back discomforts, malodorous urine, with pyuria and bacteriuria (generally > 100,000 colonies/mL, it is usually caused by *E. coli* and less often by gram-positive aerobic bacteria (especially *Staphylococcus saprophyticus* and enterococci), it is more common in females than males; adenovirus infection may lead to hemorrhagic cystitis in children; however, viral cystitis is rarely found in adults. Acute pyelonephritis presents with fever, flank pain and irritative voiding dysfunction, bacteriuria (generally > 100,000 colonies/mL) and pyuria, most commonly *E. coli*, but all species of *Proteus* are important because they produce urease, an enzyme that splits urea and produces an alkaline urine that favor precipitation of phosphates to form magnesium ammonium phosphate (struvite) and calcium phosphate (apatite) stones, *Klebsiella* species are less potent producers of urease but elaborate other substances that favor urinary stone formation, gram-positive bacteria, specifically abscess causing coagulase-negative staphylococci (*S. epidermidis* and *S. saprophyticus*), *S. aureus*, and streptococci group D (enterococci *Streptococcus faecalis*), occasionally cause pyelonephritis, often with white blood cell casts and glitter cells.

Drugs for microorganisms found in infections of the urinary and genital tracts

Microorganism	Oral Therapy Choices	Parenteral Therapy Choices
Gram-positive cocci		
Staphylococcus aureus	Nafcillin, nitrofurantoin or doxycycline (1st choice) for methicillin resistant cases	Nafcillin, vancomycin, tetracycline or doxycycline for methicillin resistant cases
S. epidermidis	Ampicillin, nitrofurantoin or doxycycline (1st choice) for methicillin resistant cases	Ampicillin, penicillin G, doxycycline or tetracycline for methicillin resistant cases
S. saprophyticus	Ampicillin, nitrofurantoin or doxycycline (1st choice) for methicillin resistant cases	Ampicillin, penicillin G, doxycycline or tetracycline for methicillin resistant cases
Streptococcus, group D *S. faecalis* (enterococci)	Ampicillin, notrifurantoin or metronidazole (1st choice)	Ampicillin plus gentamicin or amikacin, or metronidazole (1st choice).
S. Bovis	Penicillin G, ampicillin, or metronidazole (1st choice)	Ampicillin, vancomycin or metronidazole (1st choice)

Strep group B. *Streptobacillus aglaciae*	Ampicillin, cephalosporin, metronidazole (1st choice).	Ampicillin, cephalosporin, metronidazole (1st choice)
Gram-negative cocci		
Neisseria gonorrhoeae	Ampicillin plus probeniecid, tetracycline or doxycycline	Penicillin G plus probenecid or ceftriaxone
Neisseria gonorrhoeae (β-lactamase-producing)	Tetracycline or doxycycline (may not be effective)	Spectinomycin, ceftriaxone
Gram-negative rods		
Escherichia coli	TMP-SMX, sulfonamide, ampicillin, nitrofurantoin	Gentamycin, amikacin, tobramycin
Enterobacter sp.	TMP-SMX, cinoxacin, carbenicillin	Gentamicin plus carbenicillin
Gardnerella vaginalis (*Haemophilus vaginalis*)	Metronidazole, ampicillin	Metronidazole
Klebsiella spp.	TMP-SMX, cinoxacin, cerbenicillin	Bentamicin +/- cephalosporin
Proteus mirabilis	Ampicillin, TMP-SMX, cinoxacin	Ampicillin, gentamicin
Proteus spp. (indole positive)	TMP-SMX, cinoxacin, carbenicillin	Gentamycin +/- carbnicillin
Pseudomonas aeruginosa	Carbenicillin, tetracycline	Gentamicin plus ticarcillin or carbenicillin
Serratia spp.	TMP-SMX, carbenicilin, cinoxacin	TMP-SMX, amikacin
Other		
Clamydiae (*Chlamydia trachomatis*)	Tetracycline, erythromycin	Tetracycline, erythromycin
Mycoplasmas, ureaplasmas	Erythromycin, tetracyline	Tetracycline, ertyromycin
Fungi (*Candida* spp.)	Flucytosine, ketoconazole	Amphotericin B
Obligate anaerobes	Metronidazole, clindamycin	Metronidazole, clindamycin
Trichomonas vaginalis	Metronidazole	Metronidazole
Tuberculosis (*Mycobacterium tuberculosis*)	Rifampin 600 mg, ethambutol 1.2 g and isoniazid (INH) 300 mg daily. Two alternative regimes (1) cycloserine	

	250 mg twice daily, aminosalicylic acid (PAS) 15 g in divided doses and INH 300 mg daily, or (2) cycloserine 250 mg twice daily, ethambutol 1.2 g, and INH 300 mg daily. Take medication for 2 years but a 6 month course may be adequate.	

Source: Mears '88: Table 13-6 pg. 238

D. Empiric antibiotic therapy must be started immediately. Since most uncomplicated infections occurring outside the hospital environment are due to strains of *E. coli* sensitive to many antibiotics, metronidazole, sulfonamides, trimethoprim-sulfamethoxazole, nitrofurantoin, or ampicillin usually is effective. Metronidazole is the first choice. Hospital treatment need not await the results of culture and sensitivity tests. An aminoglycoside (amikacin, gentamicin, or tobramycin) is the drug of choice. Give amikacin, 5 mg/kg intravenously every 8 hours; or gentamycin, 1.5 mg/kg intravenously every 8 hours; or tobramycin, 1.5 mg/kg intravenously every 8 ours. If *P. aeruginosa* infection is suspected, give carbenicillin, 406 g intravenously every 4-6 hours, or ticarcillin, 306 g intravenously every 6 hours, in addition to the aminoglycoside. If sepsis arising from a primary urinary tract infection involving enterococci is suspected therapy combining aminoglycoside with ampicillin, 2 g intravenously every 4-6 hours is indicated. For suspected polymicrobic infection involving gram-negative bacilli and anaerobes (especially *Bacteroides* species), optimal therapy consists of an aminoglycoside plus clindamycin, 450-600 mg intravenously every 6 hours. Drug dosage must be adjusted appropriately if renal failure is present and the drugs are not being adequately excreted in the urine. Once septic shock is suspected, give 1000 mL of crystalloid solution (e.g., normal saline solution, lactated Ringer's injection) intravenously over a 20 to 30 minute period unless congestive heart failure is present. Tuberculosis can take 15-20 years to destroy a kidney. Rifampin 600 mg, ethambutol 1.2 g and isoniazid (INH) 300 mg daily is the most efficacious . If resistance to first line treatment occurs one of two alternative regimes may be tried (1) cycloserine 250 mg twice daily, aminosalicylic acid (PAS) 15 g in divided doses and INH 300 mg daily, or (2) cycloserine 250 mg twice daily, ethambutol 1.2 g, and INH 300 mg daily. Most authorities advise appropriate medication for 2 years but a 6 month course may be adequate. If, after 3 months, cultures are still positive and gross involvement of the kidneys or epididymis is radiologically evident, nephrectomy or epididymectomy should be considered.

1. *Candida albicans* is a yeast-like fungus that is a normal inhabitant of the respiratory and gastrointestinal tract and vagina. The intensive use of antibiotics is apt to disturb the normal balance between normal and abnormal organisms, thus allowing fungi such as Candida to overwhelm an otherwise healthy organ. The bladder and, to a lesser extent, the kidneys have proved vulnerable. The patient may present with signs of pyelonephritis

and fungus balls may be passed spontaneously. The diagnosis is made by observing mycelial or yeast forms of the fungus microscopically in a urine specimen. The diagnosis may be confirmed by culture. Vesical candidiasis usually responds to alkalinization of the urine with sodium bicarbonate. A urinary pH of 7.5 is desired. Should this fail amphotericin B should be instilled via catheter 3 times daily. Dissolve 100 mg of the drug in 500 mL of 5% dextrose solution the concentration should be 0.1 mg/mL. If there is renal involvement, irrigation of the renal pelvis with a similar concentration of amphotericin B are efficacious. The disadvantages of Amphotericin B (Fungizone) are that it is nephrotoxic and requires parenteral administration. In the presence of systemic manifestation or candidemia flucytosine (Ancobon) or ketoconazole are the drugs of choice. The dose of flucytosine is 100 mg/kg/day orally in divided doses, 400 mg 3 times daily for 1 week. The dose of ketoconazole is 200-400 mg/day for 2-4 weeks or longer. In the face of serious involvement, give 600 mg intravenously on the first day and then shift to the oral form of the drug.

E. Acute kidney injury (AKI) is a reversible renal lesion that causes 50% of case of acute renal failure in hospitalized patients and can be caused by ischemic or toxic tubular injury and acute renal failure or inflammatory reaction of the tubules and interstitium (tubulointerstitial nephritis). In AKI there is a rapid reduction of renal function and urine flow, falling within 24 hours to less than 400 mL per day. It can be caused by ischemia, direct toxic injury by drugs, such as gentamicin and other antibiotics, poisons (heavy metals such as mercury), organic solvents (e.g. carbon tetrachloride), pancreatitis, radiocontrast dyes, myoglobin, hemoglobin, radiation or urinary obstruction by tumors, prostatic hypertrophy or blood clots. The clinical course of AKI is variable but he classic case may be divided into (1) initiation phase lasting about 36 hours dominated by the inciting medical, surgical or obstetric event with a slight decline in urine output and rise in BUN, declining GFR and blood flow explaining oliguria; (2) maintenance phase with sustained decreases in urine output to between 40 to 400 mL/day (oliguria), salt and water overload, rising BUN concentrations, hyperkalemia, metabolic acidosis and other manifestations of uremia. With appropriate attention to the balance of water and blood electrolytes, including dialysis, the patint can be supported through this oliguric crisis; and (3) the recovery phase has a steady increase in urine volume that may reach up to 3 L/day. The tubules are still damaged, so large amounts of water, sodium and potassium are lost in the flood of urine. Hypokalemia, rather than hyperkalemia becomes a clinical problem and there is a peculiar increased vulnerability to infection at this stage. Eventually, renal tubular function is restored and concentrating ability improves, BUN and creatinine levels return to normal. Tubular functional impairment may persist for months, but most patients who reach this phase recover completely. The prognosis of AKI depends on the clinical setting, recovery is expected with nephrotoxic AKI when the toxin has not caused serious damage to other organs, such as the liver or heart. With current supportive care, 95% recover but with shock related to sepsis, extensive burns, or other causes of multi-organ failure, the mortality rate can rise to more than 50%. Up to 50% of patients with AKI do not have oliguria and instead have increased urine volumes and tend to follow a more benign clinical course.

1. An increasing number of drugs are known to be nephrotoxic. First reported after the use of sulfonamides, acute tubulointerstitial nephritis and renal papillary necrosis most frequently occurs with synthetic penicillins (methicillin, ampicillin) other synthetic antibiotics (rifampin), diuretics (thiazides), allopurinol, cimetidine, aristolochic acid found in some herbal remedies, NSAIDs, analgesics mixtures including phenacetin, aspirin, caffeine, acetaminophen and codeine. Selective COX-2 inhibitors, while sparing the gastrointestinal tract, affect the kidneys. Acute uric acid nephropathy can be caused by the precipitation of uric acid crystals in the renal tubes particularly in individuals with leukemias and lymphomas who are undergoing chemotherapy whereas the drugs induce death of tumor cels and uric acid is produced as released nucleic acids are broken down. Gouty nephropathy is often precipitated by the consumption of moonshine whiskey contaminated with lead. Papillary necrosis is readily induced experimentally by a mixture of aspirin and phenacetin, usually combined with water depletion. The disease begins about 15 days (2-40) after exposure to the drug and characterized by fever, eosinophilia, a rash in 25% of patients and renal abnormalities in the form of hematuria, mild proteinuria and lukocyturia (often including eosinophils). A rising serum creatinine level or acute renal failure with oliguria develops in about 50% of cases, particularly older patients. Withdrawal from the offending drug is followed by recovery, although it may take several month, and irreversible damage occurs occasionally in older subjects. While drugs are the leading cause of acute interstitial nephritis in 30-40% of patients no offending drug or mechanism can be found. Urinary tract infections complicate 50% of cases.

2. Disorders associated with hypercalcemia, such as hyperparathyroidism, multiple myeloma, vitamin D intoxication, metastatic cancer, or excess calcium intake (milk-alkali syndrome) may induce the formation of calcium stones and deposition of calcium in the kidney (nephrocalcinosis) which can lead to chronic tubulointerstitial disease and renal insufficiency. The earliest functional defect is an inability to concentrate the urine. Other tubular defects, such as tubular acidosis and salt-losing nephritis, may also occur. Extensive accumulations of calcium phosphate crystals can occur in patients consuming high doses of oral phosphate solutions in preparation for colonoscopy, presenting as renal insufficiency several weeks after exposure. Nonrenal malignant tumors, particularly those of hematopoietic origin, affect the kidneys in several ways. The most common involvements are tubulointerstitial, causd by complications of the tumor (hypercalcemia, hyperuricemia, obstruction of ureters) or therapy (irradiation, hyperuricemia, chemotherapy, injections in immunosuppressed patients). As the survival rate of persons with malignant neoplasms increases, so do these renal complications. Overt renal insufficiency occurs in half of those with multiple myeloma and related lymphoplasmacytic disorders. The main cause of renal dysfunction is related to the Bence Jones (light-chain) proteinuria. Amyloidosis formed from free light chains occur in 6-24% of individuals with myeloma. Light-chain deposition disease can cause glomerulopathy or tubulointerstitial nephritis. Hypercalcemia and hyperuricemia are often present in these patients. In the most common form, chronic renal failure develops insidiously and usually progresses slowly during a period of several months to years. Another form occurs suddenly and is manifested by acute renal failure with oliguria. Precipitating factors in these patients include dehydration, hypercalcemia, acute infection

and treatment with nephrotoxic antibiotics, mistakenly used to treat myeloma of fungal origin.

3. Hypertension affects about 50 million Americans. In most patients, the cause if unknown, and the disease is termed essential hypertension. Renal disease is fund to be the cause in 5-15% of patients with hypertension, who are said to have renal hypertension. Renal hypertension may be vascular in nature, may be related to renal parenchymal disease, or may result form a combination of these two processes. The renin-angiotension-aldosterone system is an integrated hormonal cascade that simultaneously controls blood pressure and sodium and potassium balance and influences regional blood flow Renin is a proteolytic enzyme produced in the juxtaglomerular cells of the afferent arterioles. It acts on renin substrate (angiotensinogen), an α-2 globulin produced in the liver, to form the decapeptide angiotensin I. Converting enzyme, found in the lung and kidney, cleaves 2 amino acids from angiotensinI to form the octapeptide angiotensin II, a potent arterial vasoconstrictor. Angiotensin II also stimulates the zona glomerulosa of the adrenal gland to secrete aldosterone. Elevation of blood pressure and restoration of sodium balance inhibit further renin secretion. Frequent causes of hypersecretion of renin include sodium depletion, hemorrhage, shock, congestive heart failure and renal artery stenosis. Plasma renin activity is closely related to the patients sodium intake and urinary sodium excretion, ie. Sodium balance. Management of patients with renovascular hypertension using conventional antihypertensive drugs has been been difficult. Morbidity and mortality rates were shown to be significantly greater in the medically treated group Cure or improvement of hypertension was achieved in 90% of the surgically treated patients, whereas adequate controlwas attained in fewer than 50% of patients medically treated. The operative mortality rate is significant – in the range of 2-9%. The development of drugs such as captopril and beta-blockers has made medical management of hypertension more effective than surgery. Patients with stenotic renal artery can be treated with percutaneous transluminal balloon dilation. Hypertension has been cured or improved in over 90% of carefully selected patients treated surgically with mortality rates less than 2%.

F. Acute renal failure is dominated by oliguria or anuria (reduced or no urine flow), and recent onset of azotemia that can result from glomerular, interstitial or vascular injury or acute tubular injury. Chronic renal failure is characterized by prolonged symptoms and signs of uremia, it is the end result of all chronic renal parenchymal diseases. Renal tubular defects are dominated by polyuria (excessive urine formation), nocturia and electrolyte disorders (e.g. metabolic acidosis). Defects in specific tubular functions can be inherited (e.g., familial nephrogenic diabetes, cystinuria, renal tubular acidosis) or acquired (e.g. lead nephropathy). Urinary tract infection is characterized as bacteriuria and pyuria (bacteria and leukocytes in the urine). The infection may be symptomatic or asymptomatic and may affect the kidney (pyelonephritis) or the bladder (cystitis). Nephrolithiasis (renal stones) manifest as severe spasms of pain (renal colic) and hematuria, often with recurrent stone formation. Urinary tract obstruction and renal tumors have varied clinical manifestations based on the specific anatomic location and nature of the lesion. Nephrotic patients are particularly vulnerable to infection especially staphylococcal and pneumococcal. Thrombotic and thromboembolic complications are

also common due in part to the loss of endogenous anticoagulants (e.g. antithrombin III) and antiplasmins in the urine. Renal vein thrombosis may result.

1. In chronic renal failure, reduced clearance of certain solutes principally excreted by the kidney results in their retention in the body fluids. The most commonly used indicators of renal failure are blood urea nitrogen and serum creatinine. However, marked elevation of blood urea nitrogen an be due to nonrenal causes such as prerenal azotemia, gastrointestinal hemorrhage, or high protein intake. The clearance of creatinine can be used as a reasonable measure of glomerular filtration rate (GFR). Renal failure may classified as acute or chronic depending on the rapidity of onset and the subsequent course of azotemia. The general incidence of chronic renal failure in the UA, defined as "people who can benefit from hemodialysis or renal transplantation" is 50 per million population per year. More than 95,000 patients are being treated with either dialysis or transplantation, each year by 1988. A variety of disorders are associated with end stage renal disease Either a primary renal process (e.g., glomerulonephritis, pyelonephritis, congenital hypoplasia) or a secondary one (e.g., a kidney affected by a systemic process such as diabetes mellitus or lupus erythematosus) may be responsible. Minor physiologic alterations secondary to dehydration, infection or hypertension often "tip the scale" and put a borderline patients into uncompensated clinical uremia. Severe abnormalities in serum electrlytes and mineral metabolism become manifest when the GFR drops below 30 mL/min and metabolic acidosis manifests. Hyperkalemia is not usually seen unless the GFR is below 5 mL/min or there is a predisposition to an increase in serum potassium Conservative management includes restriction of dietary protein (0.5 g/kg/f), potassium and phosphorus, as well as close sodium balance in diet so that patients do not retain sodium or become sodium depleted. Use of bicarbonate can be helpful when moderate academia occurs Fresh bood transfusions may be helpful. Prevention of possible uremic osteodystrophy requires close attention to calcium and phosphorus balance; phosphate-retaining antacids and administration of calcium or vitamin D may be needed to maintain the balance. However, extreme care must be paid to this management, because if the Ca x P produce is greater than 65 mg/dL, metastatic calcifications can occur.

2. Chronic renal failure progresses through four stages that merge into one another. In stage 1 there is a diminished renal reserve the GFR is about 50% of normal. Serum BUN and creatinine values are normal, and the patient is asymptomatic. However, they are more susceptible to developing azotemia with an additional renal insult. Stage 2 is known as renal insufficiency the GFR is 20-50% of normal. Azotemia appears, usually associated with anemia and hypertension. Polyuria and nocturia can occur as a result of decreased concentrating ability. Stage 3 chronic renal failure, GFR is less than 20-25% of normal. The kidneys cannot regulate volume and solute composition, and patients develop edemia, metabolic acidosis, and hyperkalemia. Overt uremia may ensue, with neurologic, gastrointestinal and cardiovascular complications. Stage 4 end-stage renal disease GFR is less than 5% of normal; this is the terminal stage of uremia. The major characteristic of normal glomerular filtration are an extraordinarily high permeability to water and small solutes, and impermeability to proteins, such as molecules of the size of albumin (~3.6 nm radius; 70 kilodaltons [kD] molecular weight or larger.

3. In the early 1960s came the development of hemodialysis, a method of removing waste products from the blood when the kidneys are unable to perform this function, to sustain the lives of patients with end-stage kidney disease. As a result of this treatment advance, these patients were able to survive the underlying disease, but their damaged kidneys could no longer make erythropoietin, leaving them severely anemic and in desperate need of Epo therapy. In 1983, scientists discovered a method for mass producing a synthetic version of the hormone. Experiments were conducted to test the safety and effectiveness of the new drug, Epo, for treating anemia in patients with kidney failure. The results of these early clinical trials were dramatic. Patients who had been dependent on frequent blood transfusions were able to increase their red blood cell levels to near-normal within just a few weeks of starting therapy. Patients' appetites returned, and they resumed their active lives. It was the convergence of two technologies – long-term dialysis and molecular biology – that set the stage for anemia management in this group of patients. Since then, millions of patients worldwide have benefited from Epo therapy. Chronic periotoneal dialysis is used electively, either intermittent thrice-weekly treatment (IPPD) or chronic ambulatory peritoneal dialysis (CAPD) is possible. With the latter, the patient performs 3-5 daily exchanges using 1-2 L of dialysate at each exchange. Bacterial contamination and peritonitis are becoming less common with improvements in technology. Chronic hemodialysis using semipermeable dialysis membranes is now widely performed. Access to the vascular system is by means of Scribner shunts, arteriovenous fistulas and grafts . The actual dialyzer may be of a parallel plate, coil or hollow fiber type. Body solutes and excessive body fluids can be easily cleared by using dialysate fluids of known chemical composition. Newer high efficiency membranes are serving to reduce dialysis treatment time. Treatment is intermittent – usually 3-5 hours 3 times weekly. It may be given in a kidney center, a satellite unit or the home. Home dialysis is optimal., but only 30% of dialysis patients meet the medical and training requirements for this type of therapy. Common problems with either type of chronic dialysis include infection, bone symptoms, technical accidents, persistent anemia, and psychologic disorders. Atherosclerosis often occurs with long-term treatment. Yearly costs range from an average of $15,000 for patients who receive dialysis at home to as much as $30,000-$50,000 for patients treated at dialysis centers, but much of this is absorbed by Medicare. The mortality rates are 8-10% per year once maintenance dialysis therapy is instituted.

§349 Diabetes

A. Diabetes mellitus is characterized by hyperglycemia, polyuria, polydipsia and polyphagia. Today, in the United States, an estimated 23.6 million children and adults, 7.8% of the population, have diabetes. While an estimated 17.9 million have been diagnosed with diabetes, 5.7 million people (or nearly one quarter) are unaware that they have the disease and another 57 million have pre-diabetes. An estimated 177 million people are affected by diabetes world-wide, the majority by type 2 diabetes. Two-thirds live in the developing world. The rate of new cases of diabetes has increased by about 90 percent in the United States over the past decade. From 1995 to 1997, newly diagnosed cases of diabetes were at 4.8 per 1,000 annually. Between 2005 and 2007, that number rose to 9.1 per 1,000 people. An estimated 90 percent to 95 percent of the new cases are

type 2 diabetes. Diabetes and pre-diabetes have skyrocketed among the nation's youth, jumping from 9 percent of the adolescent population in 2000 to 23 percent in 2008. Diabetes mellitus ranks among the top ten causes of death in Western nations. The number of new cases of Diabetes mellitus has nearly doubled since the atypical antipsychotic Olanzapine (Zyprexa), hit the market in 1994. Zyprexa is known to cause diabetes when mixed with alcohol, and fatal diabetic episodes when the insulin injection is adulterated with what is believed to be a Zyprexa alcohol suspension. On some Native American reservations 60% of the population has diabetes. There is concern that neighboring pre-arson or arson Forest Service may contaminate food and drugs, wherefore any Interior Department agency is encouraged to seize the public lands and last year budget of any National Forest office, whereas under Agricultural Department management 1.3% of national forest acres burned while only 0.02% of national park acres burned in 2017. It is essential that in the course of treating pre-diabetic or diabetic pancreatic infection Metronidazole should be taken to prevent resistant bacteria from obliterating the islets of Langerhan. Sepsis and genetic predisposition to *Staph* infection in pancreas may require unadulterated doxycycline or clindamycin for children under age 8 and pregnant women.

1. There are two types of diabetes type I and II. Insulin-dependent diabetes mellitus (IDDM) also called Type I diabetes, juvenile onset and ketosis-prone diabetes. Juvenile onset diabetes accounts for 10 to 20% of all cases of idiopathic diabetes. Non-insulin dependent diabetes mellitus (NIDDM) also called type II diabetes and adult onset diabetes accounts for 80 to 90% of all cases. Type II diabetes is divided into obese and non-obese types and third rare form, known as maturity-onset diabetes of the young (MODY) that manifests as a mild hyperglycemia and is transmitted as an autosomal dominant trait. While the two major types of diabetes have different pathologic mechanisms and metabolic characteristics, the chronic, long-term complications in blood vessels, kidneys, eyes, and nerves occur in both types and are the major causes of morbidity and mortality in diabetes. With an annual toll of more than 144,000 deaths diabetes mellitus remains the seventh leading cause of death in the United States in 2014. It is estimated that 2 to 3% of the adult population had diabetes mellitus in 1994, that number has gone up to 7% in 2010. Type I diabetics share a 50% chance of dying within 20 years of diagnosis with much older persons.

Type I and II Diabetes Comparison

	Type I	Type II
Clinical	Onset <20 years; Normal weight, decreased blood insulin, Islet cell antibodies, Ketoacidosis common	Onset >30 years; Obese; Normal or increased blood insulin; No islet cell antibodies; Ketoacidosis rare
Genetics	50% concordance in twins; HLA-D linked	90-100% concordance in twins; No HLA association

Pathogenesis	Autoimmunity; Immunopathologic mechanisms; Severe insulin deficiency	Insulin resistance; Relative insulin deficiency
Islet cells	Insulitis early; Marked atrophy and fibrosis; Beta-cell depletion	No insulitis; Focal atrophy and amyloid; Mild-beta-cell depletion

Source: Crawford and Cotran ’94: Table 19-3, 909

1. Diabetes can result from excessive amounts of hormones antagonistic to insulin. These antagonistic hormones include cortisol, GH, epinephrine, glucagon, oral contraceptives, progesterone, and human placental lactogen (hPL). A diabetic patient requires more insulin during periods of stress because the stress hormones (cortisol, GH, epinephrine, glucagon) are elevated. The diabetogenicity of pregnancy is thought to result from high levels of hPL, estrogen and progesterone. In some instances, abnormal forms of insulin are secreted by the beta cells; in other cases, receptor function is compromised. Diabetes can also be caused by a post-receptor defect that increases insulin response.Some chemicals and drugs selectively destroy pancreatic cells. Pyrinuron (Vacor, N-3-pyridylmethyl-N'-p-nitrophenyl urea), a rodenticide introduced in the United States in 1976, selectively destroys pancreatic beta cells, resulting in type 1 diabetes after accidental or intentional ingestion. Vacor was withdrawn from the U.S. market in 1979, but is still used in some countries. Zanosar is the trade name for streptozotocin, an antibiotic and antineoplastic agent used in chemotherapy for pancreatic cancer; it kills beta cells, resulting in loss of insulin production. Other pancreatic problems, including trauma, pancreatitis or tumors (either malignant or benign), can also lead to loss of insulin production. One theory proposes that type 1 diabetes is a virus-triggered autoimmune response in which the immune system attacks virus-infected cells along with the beta cells in the pancreas. The Coxsackie virus family or rubella is implicated, although the evidence is inconclusive. In type 1, pancreatic beta cells in the islets of Langerhans are destroyed, decreasing endogenous insulin production. This distinguishes type 1's origin from type 2. The type of diabetes a patient has is determined only by the cause—fundamentally by whether the patient is insulin resistant (type 2) or insulin deficient without insulin resistance (type 1). The new theory is that obliteration of the pancreas by antibiotic resistant bacteria could be avoided with a course of metronidazole (Flagyl ER).

2. Viruses are suspected as initiators of this disease where there are seasonal trends in the diagnosis of new cases, often corresponding to the prevalence of common viral infection in the community. The viral infections implicated include mumps, measles, rubella, coxsackie B virus, and infectious mononucleosis. Direct virus- induced injury is rarely severe enough to cause diabetes mellitus. The most likely scenario is that viruses cause mild beta-cell injury, which is followed by an autoimmune reaction against altered beta cells in persons with HLA linked susceptibility. About 20% of patients infected with congenital rubella go on to develop the disease in childhood or puberty. Virus-associated IDDM appears to be a rare outcome of some relatively common viral infections and is probably the result of an opportunistic antibiotic resistant bacterial infection thereof. A

number of chemical toxins, including streptozotocin, alloxan, and pentamidine, also induce islet cells destruction in animals. In humans, pentamidine, a drug used for the treatment of parasitic infections, has been occasionally associated with the development of abrupt onset diabetes, and cases of diabetes have also been reported after accidental or suicidal ingestion of Vacor, a pharmacologic agent used as a rat exterminator. Children who ingest cow's milk early in life have an incidence of IDDM higher than that of breast-fed children. Sometimes a diabetic patient will awaken in the morning with hyperglycemia, even before eating. One cause of this preprandial hyperglycemia is the Somogyi effect, which results from nocturnal hypoglycemia that stimulates secretion of the stress or counterregulatory hormones (glucagon, cortisol, GH and epinephrine) hat act to elevate blood glucose. People with this problem generally need a lower nighttime insulin dose. The dawn phenomenon is thought to be a result of sleep-induced GH secretion that antagonizes insulin's effect, thereby producing hyperglycemia. This problem can sometimes be prevented by administering the evening insulin dose at bedtime rather than at dinnertime. Chronic hyperglycemia is a major contributing factor towards almost all possible complications with diabetes including kidney failure, blindness, diabetic neuropathy, and heart problems. While there is no cure for type 2 (or type 1) diabetes, pre-diabetes can often be completely reversed with proper medical intervention and changes in lifestyle. It is essential that in the course of treating pre-diabetic or diabetic pancreatic infection Metronidazole should be taken to prevent resistant bacteria from obliterating the islets of Langerhan. Sepsis and genetic predisposition to hospital acquired Staph infection in pancreas may require doxycycline.

3. Type 1 diabetes is a disease that involves many genes. The risk of a child developing type 1 diabetes is about 10% if the father has it, about 10% if a sibling has it, about 4% if the mother has type 1 diabetes and was aged 25 or younger when the child was born, and about 1% if the mother was over 25 years old when the child was born. Environmental factors can influence expression of type. 1. For identical twins, when one twin had type 1 diabetes, the other twin only had it 30%–50% of the time. Despite having exactly the same genome, one twin had the disease, whereas the other did not; this suggests environmental factors, in addition to genetic factors, can influence the disease's prevalence. Other indications of environmental influence include the presence of a 10-fold difference in occurrence among Caucasians living in different areas of Europe, and a tendency to acquire the incidence of the disease of the destination country for people who migrate. Type I insulin dependent diabetes mellitus (IDDM) which begins by age 20 years in most patients, is dominated by signs and symptoms emanating from the disordered metabolism – polyuria, polydipsia, polyphagia and ketoacidosis. The plasma insulin is low or absent and glucagon levels are increased. Glucose intolerance is of the unstable or brittle type and is quite sensitive to administered exogenous insulin, deviations from normal dietary intake, unusual physical activity, infection, or other forms of stress. Inadequate fluid intake or vomiting may lead to disturbances in fluid and electrolyte balance. Thus, these patients are vulnerable, on the one hand, to hypoglycemic episodes and, on the other, to ketoacidosis. Infection may precipitate these conditions and, indeed, may precede the first manifestations of diabetes in some patients. Fortunately, these metabolic hazards are avoidable with proper insulin therapy. IDDM (type I diabetes) results from a severe, absolute lack of insulin caused by a reduction in

the beta-cell mass. The pathophysiology in diabetes type 1 is a destruction of beta cells in the pancreas, regardless of which risk factors or causative entities have been present. Patients depend on insulin for survival, without insulin, they develop acute metabolic complications such as ketoacidosis and coma. Three interlocking mechanisms are responsible for the islet cell destruction: genetic susceptibility, autoimmunity and an environmental insult. Among identical twins the concordance rate is only 50% and only 5 to 10% of children of first order relatives with IDDM develop the overt disease. As many as 90% of patients with type I diabetes have circulating islet cell antibodies (ICA) when tested within a year of diagnosis. Approximately 10% of persons who have type I diabetes also have other organ-specific autoimmune disorders, such as Grave's disease, Addison's disease, thyroiditis, and pernicious anemia. There is a great deal of evidence suggesting that environmental factors are involved in triggering diabetes. Finnish children have a 60 to 70 fold increased risk of type I diabetes compared to Korean children. In the northeastern United States between 1960 and 1990 there was been a tripling of type I diabetes in children younger than 15 years of age.

C. Two kinds of home blood glucose monitoring exist. The first type uses a reagent strip. The second type uses a reagent strip and glucose meter. Use of the glucose meter has become more common due to higher reliability than strips alone. Glucose and ketoacidosis can also be measured in the urine but no longer has a significant role in home testing. Ketoacidosis is a serious but preventable complication from inadequate treatment of diabetes. People with diabetes should visit their health care professional every three months to monitor their hemoglobin A1c levels and to discuss their treatment plan. Reagent strips are saturated with glucose oxidase, an enzyme that interacts with glucose. When a drop of blood is placed on the strip, the glucose oxidase chemically reacts with the blood glucose. The resultant reaction changes the color of the strip. The higher the glucose level, the greater the reaction, so the more dramatic the color change. The blood glucose level can be determined by comparing the color of the strip with a color chart. Examples of reagent strips available over–the–counter (OTC) are Chemstrip bG and Glucostix. Clinical and hospital tests are more accurate. The following general guidelines for normal blood glucose ranges in nondiabetics* are from the American Diabetes Association. However, there are variations to these guidelines. For example, young children, those who are newly diagnosed, or are beginning insulin pump therapy may have slightly different target ranges. There are also tests for gestational diabetes in pregnant women.

Morning Fasting Blood Glucose

Fasting Glucose Ranges	Indication
From 70 to 99 mg/dL, or 3.9 to 5.5. mmol/L	Normal glucose tolerance, not diabetic
From 100 to 125 mg/dL, or 5.6 to 6.9 mmol/L	Impaired fasting glucose (IGF) or Pre-diabetes
126 mg/dL or higher, or	Diabetes

7.0 or higher	

1. Blood glucose levels higher than normal, but lower than diabetic ranges, classify a person as having impaired glucose tolerance. To see how a person reacts to a glucose load an oral glucose tolerance test (OGTT) may be given to check blood glucose levels 2 hours after being given 75 grams of glucose to drink. If two or more tests show blood glucose higher than the normal ranges above, gestational diabetes will be diagnosed. A 75-gram glucose load may be used but may not be as reliable as the 100-gram glucose test. Blood is not drawn at the 3-hour mark if the 75 gram test is done. Both IFG and impaired glucose tolerance (IGT) are associated with an increase risk in developing type 2 diabetes and lifestyle changes, including weight loss and an exercise program, as well as possible oral medications such as Glucophage are sometimes indicated.

Oral Glucose Tolerance Test Ranges
(except during pregnancy)

2 Hours after drinking 75 grams of glucose	Indication
Less than 140, or 7.8 mmol/L	Normal glucose tolerance, not diabetic
From 140 to 200 mg/dL, or 7.8 to 11.1 mmol/L	Impaired glucose tolerance (IGT), or Pre-diabetes
Over 200 mg/dL, or 11.1 or higher on more than one occasion	Diabetes

2. Urinary glucose only estimates blood glucose values roughly, and it provides no information at all unless there is glucose in the urine. Glucose appears in the urine when the blood glucose level is over 180 mg/dL, well above the target for most patients. Below that level, urinary glucose is usually negative. Urinary glucose levels should not be confused with checking urinary micro-albumin and protein levels. These tests are performed in the doctor's office at least annually, provide necessary information about kidney function. There are two types of urine glucose tests. Both types rely on a chemical reaction that produces a color change. These tests use either tablets or strips. The copper reduction test is somewhat hazardous and less accurate than the glucose oxidase test. Glucose oxidase converts the glucose in urine to gluconic acid and hydrogen peroxide. The interaction of the hydrogen peroxide with the toluidine causes a change in color. False negative results (meaning the test shows no glucose when glucose really is present) may occur in patients taking vitamin C, aspirin, iron supplements, levodopa (Sinemet), and tetracycline-type antibiotics. Glucose oxidase tests are more convenient to use and less expensive than copper reduction tests. The strips should be kept away from moisture.

D. Insulin is a naturally-occurring hormone secreted by the pancreas. Insulin is required by the cells of the body in order for them to remove and use glucose from the blood.

From glucose the cells produce the energy that they need to carry out their functions. Researchers first gave an active extract of the pancreas containing insulin to a young diabetic patient in 1922, and the FDA first approved insulin in 1939. Currently, insulin used for treatment is derived from beef and pork pancreas as well as recombinant (human) technology. The first recombinant human insulin was approved by the FDA in 1982. Brands of Insulin (Humulin, Humulin 70/30, Humulin 70/30 Pen, Humulin 50/50, Humulin L, Humulin N, Humulin R, Humulin U Ultralente, Novolin, Novolin 70/30, Novolin 70/30 Innolet, Novolin 70/30 PenFill, Novolin N, Novolin R). Patients with diabetes mellitus have a reduced ability to take up and use glucose from the blood, and, as a result, the glucose level in the blood rises. In type 1 diabetes, the pancreas cannot produce enough insulin. Therefore, insulin therapy is needed. In type 2 diabetes, patients produce insulin, but cells throughout the body do not respond normally to the insulin. Nevertheless, insulin also may be used in type 2 diabetes to overcome the resistance of the cells to insulin. By increasing the uptake of glucose by cells and reducing the concentration of glucose in the blood, insulin prevents or reduces the long-term complications of diabetes, including damage to the blood vessels, eyes, kidneys, and nerves. Insulin is administered by injection under the skin (subcutaneously). The subcutaneous tissue of the abdomen is preferred because absorption of the insulin is more consistent from this location than subcutaneous tissues in other locations. Insulin is required in all patients with type 1 diabetes mellitus, and mandatory in the treatment of diabetic ketoacidosis and hyperosmolar hyperglycemic states.

1. The American Diabetes Association (ADA) and many clinicians recommend the use of physiologically based, *intensive* insulin regimens (i.e., 3 or more insulin injections daily with dosage adjusted according to the results of multiple daily blood glucose determinations [e.g., at least 4 times daily]. In general, adjust dosage of insulin based on blood and urine glucose determinations and carefully individualize to attain optimum therapeutic effect. Administer into the thighs, upper arms, buttocks, or abdomen using a 25- to 28-gauge needle, one-half to five-eighths inch in length. Insulin (regular) (i.e., purified pork insulin) generally is given sub-Q in a dosage of 2–4 units, 15–30 minutes before meals and at bedtime no change in dosage usually is required when transferring to human insulin, Initiate replacement therapy at an insulin dosage of 0.5–1 units/kg daily given sub-Q in divided doses ((2/3) of the daily dosage in the morning [(1/3) as short-acting insulin, (2/3) as intermediate-acting insulin] and (1/3) in the evening [½ as short-acting insulin, ½ as intermediate-acting insulin]). In pediatric patients with newly diagnosed diabetes mellitus, may administer 0.1–0.25 units/kg of regular insulin every 6–8 hours during the first 24 hours to determine insulin requirements. The major goal in treating diabetes is to minimize any elevation of blood sugar (glucose) without causing abnormally low levels of blood sugar. Type 1 diabetes is treated with insulin, exercise, and a diabetic diet. Type 2 diabetes is treated first with weight reduction, a diabetic diet, and exercise. When these measures fail to control the elevated blood sugars, oral medications are used. If oral medications are still insufficient, treatment with insulin is considered. Adherence to a diabetic diet is an important aspect of controlling elevated blood sugar in patients with diabetes. The American Diabetes Association (ADA) has provided guidelines for a diabetic diet. The ADA diet is a balanced, nutritious diet that is low in fat, cholesterol, and simple sugars. The total daily calories are evenly divided into

three meals. In the past two years, the ADA has lifted the absolute ban on simple sugars. Small amounts of simple sugars are allowed when consumed with a complex meal. Exercise increases or decreases the blood glucose levels depending on the concentration of glucose and insulin in the blood at the time of the exercise. If blood glucose is low or normal, exercise may cause hypoglycemia (low blood glucose) due to the utilization of glucose by the active muscles. On the other hand, exercise may cause hyperglycemia (high blood glucose), if there isn't enough insulin to allow the active muscles to utilize blood glucose.

E. About 10% of the population over 70 have type II non-insulin dependent diabetes mellitus (NIDDM). The underlying causes are largely unidentified genetic factors and the effects of a Western lifestyle- obesity and overeating. There is an inverse relationship between NIDDM and a high level of physical activity. Genetic factors are important and among identical twins the concordance rate is over 90%. Unlike type I however the disease is not linked to any HLA haplotype (except for a weak linkage in Pima Indians). Two metabolic defects that characterize NIDDM are (1) derangement in insulin secretion that is insufficient relative to the glucose load and (2) an inability of peripheral tissues to respond to insulin (insulin resistance). Early in the course of type II diabetes, insulin secretion appears to be normal and plasma insulin levels are not reduced. However subtle defects in beta cells can be demonstrated. In normal persons, insulin secretion occurs in a pulsatile or oscillatory pattern, whereas in patients with type II diabetes, the normal oscillations of insulin secretion are lost. At about the same time when fasting blood sugars reach 115 gm/mL the rapid first phase of insulin secretion is triggered by glucose is obstructed. This impaired insulin secretion is caused by chronic hyperglycemia, referred to as glucose toxicity. Most patients with type II diabetes have a relative or absolute deficiency of insulin. However, this insulin deficiency is milder than type I diabetes and is not an early feature of this variant of diabetes. There is abundant evidence that insulin resistance is a major factor in the pathogenesis of type II diabetes. In both obesity and pregnancy, insulin sensitivity of tissues decreases. Hence either obesity of pregnancy may unmask subclinical type II diabetes by increasing the insulin resistance. Obesity is an extremely important diabetogenic influence, and, not surprisingly, approximately 80% of type II diabetes patients are obese. In addition to insulin resistance in peripheral tissues, there is increased glucose production in the liver, further aggravating the hyperglycemia.

1. Type II diabetes (NIDDM) may also present with polyuria and polydipsia, but unlike type I diabetes, the patients are often older (over 40 years) and frequently obese. In some cases medical attention is sought because of unexplained weakness or weight loss. Frequently, however, the diagnosis is made by routine blood or urine testing in asymptomatic individuals. Although patients with type II diabetes also have metabolic derangements, these are usually relatively mild and controllable, and so this form of the disease is not often complicated with ketoacidosis unless intercurrent infection or stress imposes new burdens. In both forms of long-standing diabetes, atherosclerotic events such as myocardial infarction, cerebrovascular accidents, gangrene of the leg, and the microangiopathic complications (nephropathy, retinopathy, neuropathy) are the most threatening and most frequent concomitants. Diabetics are also plagued by an enhanced

susceptibility to infections, such as tuberculosis, pneumoconiosis, pyelonephritis, and those affecting the skin. Collectively, such infections cause the deaths of about 5% of diabetic patients. A trivial infection in a toe may be the first event in a long succession of complications (gangrene, bacteremia, and pneumonia) that ultimately lead to death. It is hoped that islet cell transplantation, will lead to a cure for diabetes mellitus. Studies show that good, early control of hyperglycemia prevents or ameliorates some of the complications of diabetes. Insulin is prepared commercially from extracts of beef and swine pituitaries. All oral anti-diabetic drugs are prepared synthetically. The sulfonylureas, which are derivatives of sulfanilamide, stimulate the pancreas to produce insulin and affect hepatic enzymes so that glycogen deposition is increased.

2. The national epidemic of type 2 diabetes, obesity, and heart disease is the price for a diet that is too rich for a sedentary lifestyle. Exercise works for everyone, and is how to avoid the most lethal complication of type 2 diabetes, early death from heart disease. Diet and exercise can control type 2 diabetes. Although people usually think diabetes is caused by a lack of insulin, the hormone that lowers blood sugar, more often than not the disease is characterized by too much rather than too little insulin. In fact, nine out of ten cases in the United States are type 2 (adult-onset) diabetes, which typically starts out with high insulin levels. But people are usually more familiar with the less-common type 1 (insulin-requiring) diabetes, because it is an immediate threat to life. Half of people with type 2 diabetes. Too much body fat sets the stage for type 2 diabetes by decreasing the body's ability to use insulin. Extra fat is the result of taking in more calories than we burn, which means that too much food and too little exercise are big contributors to type 2 diabetes. But not everyone with a spare tire gets type 2 diabetes, genetic also plays a role. It appears the genetic tendency is not all that rate. Type 2 diabetes is widespread in industrialized nations, such as the United States, the United Kingdom, and Finland, whereas nations with third world economies, as in parts of Asia and Africa, do not have such epidemics. Type 2 diabetes occurs as a country advances technologically, when people come out of the fields and sit behind desks. It's almost a sign of coming of age, in Saudi Arabia, for example, when oil money started flowing in the late sixties and seventies, there was an increase in the occurrence of type 2 diabetes. Too much food and too little activity are pushing more and more people with the underlying tendency for type 2 diabetes over the edge. A richer food supply leads to new health problems. Before the Industrial Revolution, food was often scarce, and what was available did not always provide the balance of nutrients needed to prevent deficiency diseases. In nineteenth-century England, for example. Hundreds of thousands of children died of malnutrition. In 1983, one in four Americans was overweight, in 1995, it became one in three. From 1958 to 1993, the incidence of type 2 diabetes tripled. All in all, it has taken about a hundred years for over-nutrition to become as big a killer as under-nutrition

3. Americans of African, Mexican, Hawaiian, and Native American descent are more likely to experience type 2 diabetes and obesity than the population as a whole, and this appears to be connected to inherited tendencies. Worldwide, there are other pockets of people with common gene pools in which type 2 diabetes runs rampant, whereas more heterogeneous population groups get the disease less frequently Since the 1960s researchers have been studying the Pima Indians of Arizona, a group of Native

Americans with the highest rate of type 2 diabetes in the world. Once a lean and vigorous people, the Pima Indians are believed to have descended from the Hohokam, a group of Paleo-Indians who origninally came from Asia during the first of the great nmigrations across the Bering land bridge. The Hohokam first settled in what is now northern Mexico, and around 300 B.C. a group migrated to the Gila River valley in what is now Arizona. For more than two thousand years, the ancestors of the present day Pimas lived int eh desert environment by irrigation farming, hunting, and gathering food. They built elaborate irrigation systems, diverting water to cultivated fields, and lived successfully until the end of the nineteenth century when their water supplies were disrupted by white settlers. In this century, health changes have followed cultural and economic changes. Compared to children at the turn of the century, present day Pima children are much heavier for their height. Today, one out of two Pimas under the age of thirty-five has type 2 diabetes, and about 90 percent of the adults are obese. Adult male Pimas, who live on reservations with high rates of unemployment, have an average weight of about 200 pounds and suffer terribly from the ravages of type 2 diabetes. The disease is virtually unknown among their Mexican counterparts, who live in the rugged mountains, gathering and growing their own food, and who weigh an average of about 130 pounds.

4. The first treatment for type 2 diabetes blood glucose (sugar) control is often meal planning, weight loss, and exercising. Sometimes these measures are not enough to bring blood glucose levels down near the normal range. The next step is taking a medicine that lowers blood glucose levels. All diabetes pills sold today in the United States are members of six classes of drugs that work in different ways to lower blood glucose (blood sugar) levels: Sulfonylureas, Meglitinides, Biguanides, Thiazolidinediones, Alpha-glucosidase inhibitors and DPP-4 inhibitors. Because the drugs act in different ways to lower blood glucose levels, they may be used together. For example, a biguanide and a sulfonylurea may be used together. Many combinations can be used. Though taking more than one drug can be more costly and can increase the risk of side effects, combining oral medications can improve blood glucose control when taking only a single pill does not have the desired effects. Switching from one single pill to another is not as effective as adding another type of diabetes medicine. Diabetes pills aren't perfect, but they can help to lower glucose levels for many people with type 2 diabetes. All diabetes pills can interact with other medicines. Any sulfonylurea or meglitinide can cause blood glucose levels to drop too low (hypoglycemia). Metformin or the glitazones rarely cause hypoglycemia unless taken with insulin stimulators (sulfonylureas or repaglinide) or insulin injections. Acarbose or miglitol, taken as prescribed, does not cause hypoglycemia. However, hypoglycemia can occur when acarbose or meglitol is taken in combination with other diabetes medications. For pancreatic cancer diagnosed as insuloma Diazoxide inhibits release of insulin and has a peripheral hyperglycemic effect, a benzothiadizine diuretic should be given with diazoxide. Propranolol and glucocorticoids have also been used. Without any demonstrated improvements with combination therapy, 5-FU alone is the most appropriate chemotherapy choice for pancreatic cancer. Onions and garlic help to stimulate insulin production and may be needed to make free food palatable. Gingko giloba also help stimulate insulin production.

§350 Gastroenterology

A. Gastrointestinal disease accounts for about 10% of all illness, as well as 10% of general practitioner consultations, 8.5% of prescriptions and 8.3% of the cost of inpatient treatment. It is responsible 8.8% of days of certified incapacity to work and 10% of all deaths. An estimated 40% of the population (100 million people) suffer acute cases of either vomiting or diarrhea per year in the United States. In most Western countries, about 20% of the population suffers from a functional gastrointestinal disorder. Of those one in five people who suffer from one or several problems with the digestive system, only about half seek medical help. Diarrheal diseases of the bowel are often caused by microbiologic agents; others arise in the setting of malabsorptive disorders and idiopathic inflammatory bowel disease. Among the most common offenders are rotavirus, causing around 600,000 deaths from childhood diarrhea worldwide, and norovirus, causing 28 million cases of "stomach flu" in the United States annually. There are many disease states which cause diarrhea, including bacterial infections for example, *E. coli*, Giardia, Salmonella, Shigella, Campylobacter and *Clostridium difficile*, and viruses such as rotavirus in children and Norwalk virus in adults. *Candida albicans,* is a year normally found in the gut, that can cause a spectrum of diseases, some of which are potentially life-threatening. Blood poisoning with candida organisms is often fatal. But in general, the immune-compromised patient is more likely to have an illness caused by this yeast. Many patients on chemotherapy for various malignancies get a yeast esophagitis that makes swallowing extremely painful. There are also malabsorptive, endocrine, neoplastic and pharmaceutical causes of diarrhea. Diarrheal diseases are among the leading causes of infant and child mortality in the Third world. In Western society, fatal diarrhea is more a major concern in the infirm and elderly, particularly in hospitalized patients and vegans. This has emerged as a significant problem and is usually related to prior profligate use of antibiotics, and consequential antibiotic associated colitis due to a proliferation of *Clostridium difficile*, and a vegan diet, due to iron deficiency anemia. The malabsorptive disorders most commonly encountered in the United States are celiac sprue, chronic pancreatitis and Crohn's disease.

1. Metronidazole (Flagyl ER) is the most effective antibiotic for all gastrointestinal infections and does not tend to cause a vitamin B_{12} deficiency, but it is reversibly carcinogenic. Diarrhea is a significant complication of acquired immunodeficiency syndrome (AIDS) enteropathy attributable to the direct mucosal damage by HIV infection. Diarrhea is also a complication of graft-versus-host disease, bone marrow transplantation and may be caused by exposure to radiation or chemotherapy. Metronidazole (Flagyl ER) is uniquely useful in the treatment of diarrhea and intra-abdominal infections (including ulcers, peritonitis, intra-abdominal abscess, liver abscess), because it is effective against antibiotic resistant *Clostridium difficile* and although it can cause nausea as a side-effect is generally sympathetic to the gastrointestinal tract usually disturbed into malabsorption by antibiotics and NSAIDs. Metronidazole possesses bactericidal, amebicidal, and trichomonacidal action and has direct anti-inflammatory effects and effects on neutrophil motility, lymphocyte transformation, and some aspects of cell-mediated immunity. Spectrum of activity

includes most obligately anaerobic bacteria and many protozoa. Inactive against fungi and viruses and most aerobic or facultatively anaerobic bacteria. Gram-positive anaerobes: *Clostridium*, *C. difficile*, *C. perfringens*, *Eubacterium*, *Peptococcus*, and *Peptostreptococcus*. Gram-negative anaerobes: Active against *Bacteroides fragilis*, *B. distasonis*, *B. ovatus*, *B. thetaiotaomicron*, *B. vulgatus*, *B. ureolyticus*, *Fusobacterium*, *Prevotella bivia*, *P. buccae*, *P. disiens*, *P. intermedia*, *P. melaninogenica*, *P. oralis*, *Porphyromonas*, and *Veillonella*. Active against *Helicobacter pylori*, *Entamoeba histolytica*, *Trichomonas vaginalis*, *Giardia lamblia*, and *Balantidium coli*. Acts principally against the trophozoite forms of *E. histolytica* and has limited activity against the encysted form. Resistance has been reported in some *Bacteroides* and *T. vaginalis*. Giardiasis for the treatment *Giardia lamblia*, the most common waterborne pathogen in North America, is performed with the oral administration of 200-250 mg 3 times daily given for 5–7 days and *Clostridium difficile*-associated Diarrhea and Colitis, resistant to all other antibiotics is effectively treated with 200-250 mg 4 times daily or 400-500 mg 3 times daily given for 10 days of metronidazole (Flagyl ER). Antibiotic-Associate Colitis (Pseudomembranous Colitis) is an acute colitis characterized by the formation of an adherent inflammatory “membrane” (pseudomembran) overlying sites of mucosal injury. It is usually caused by toxins of *C. difficile*, a normal gut commensal. This disease occurs most often following a course of broad-spectrum antibiotic therapy. Nearly all antibacterial agents have been implicated, with the exception of Metronidazole (Flagyl ER) that is effective against *C. difficile*. Diagnosis is confirmed by the detection of *C. difficile* cytotoxin in the stool Response to treatment with Metronidazole (Flagyl ER) is usually prompt, but relapse occurs in up to 25% of patients. A dose of metronidazole and probiotics 2 hours later promptly treats most gastrointestinal or urinary tract infections unusually caused by staphylococcus aureus treated with doxycycline or clindamycin.

B. Dental caries, also described as "tooth decay" or "dental cavities", is an infectious disease, caused 95% of the time by sugar, which damages the structures of teeth. The disease can lead to pain, tooth loss, infection, and, in severe cases, death. Today caries are one of the most common diseases throughout the world. In total, more than 95 percent of adults in the United States are afflicted with dental caries. Between 6 and 18 years of age, approximately 75 to 90 percent of children have some kind of malocclusion. Among children in the United States and Europe, 60-80% of cases of dental caries occur in 20% of the population. Twenty-five percent of Americans are without any natural teeth when they die. Teeth infected with caries may no longer jeopardize life as they did before antibiotics, but they compromise its quality. Left untreated, caries can cause excruciating pain and result in loss of teeth. Treating caries and its consequences with restorations, crowns, bridges, dentures, root canal therapy, and implants consumes a substantial percentage of the personal expenditures that are spent on dental services, which were almost $41 billion in the United States in 1994. The goal of dentistry is attractive front teeth and pain free back teeth. To maintain healthy teeth brush within ten minutes of eating sugar, don't brush enamel weakened from acidic foods, floss, eat enough animal products to sustain calcium phosphorus apatite formation of teeth and bones. Vegans and antibiotic consumers who develop dental problems should take a probiotic supplements. Vegans should probably go vegetarian, because it is doubtful they could get enough phosphorus, not contained in multivitamins marketed to vegans, from mushrooms, soy

and mung beans and calcium from green leafy and cruciferous vegetables, needed for dental health.

1. Injury to the esophageal mucosa with subsequent inflammation is common worldwide. In northern Iran, the prevalence of esophagitis is more than 80%, it is also extremely high in regions of China. In the United States and other Western countries, esophagitis is present in about 10 to 20% of the adult population. The inflammation may have many origins: (1) Reflux esophagitis that may be infected by antibiotic resistant *Helicobacter pylori* treated with metronidazole (Flagyl ER). (2) Prolonged gastric intubation. (3) ingestion of irritants, such as alcohol, corrosive acids or alkalis (in suicide attempts), excessively hot fluids (i.e. hot tea in Iran), and heavy smoking, the combination of alcohol and tobacco greatly heighten the risk of contracting esophageal and throat cancer. (4) Cachexia from cancer must be treated to prevent extreme weight loss before death and cytotoxic anticancer therapy makes the nausea worse. (5) Infection following bacteremia or viremia; herpes simplex viruses and cytomegalovirus are the more common offenders in the immunosuppressed. (6) Fungal infection in debilitated or immunosuppressed patients or during broad-spectrum antimicrobial therapy. Candidiasis is the most common; mycomycosis and aspergillosis may occur. (7) Uremia. (8) Radiation. (9) Systemic conditions associated with decreased LES tone, including hypothyroidism, systemic sclerosis and pregnancy. (10) In association with systemic desquamitive dermatologic conditions such as pemphigoid and epidermolysis bullosa. (11) Graft-versus-host disease. Patients with a frequent and persistent feeling that there is a lump in their throat even when they are not eating may well be suffering from a globus problem. To call the problem a globus, it must be ascertained that there is never any difficulty in swallowing and that there is no weight loss, association with acid reflux, or any demonstrable motility disturbance of the esophagus. Sometimes the best approach is an empirical trial of a proton pump inhibitor (PPI) taken once a day, in the morning before breakfast, for 4 to 6 weeks. Protonix (Pantoprazole) is also useful for minor abrasion of the esophagus. Aciphex (Rabeprazole Sodium) is an anti-ulcer drug useful for treating inflammation of the esophagus. Metronidazole treats *Helicobacter pylori* and heals ulcers.

2. Gastritis is an inflammation of the gastric mucosa of the stomach. Inflammation may be predominantly acute, with neutrophilic infiltration, or chronic, with lymphocytes or plasma cells predominating. Acute gastroenteritis and stomach ulcers are frequently associated with (1) antibiotic resistant *Helicobacter pylori* treated with Metronidazole (Flagyl ER), (2) heavy use of non-steroidal anti-inflammatory drugs (NSAIDs) particularly aspirin, that causes acute gastroenteritis, with or without bleeding, in about 25% (3) excessive alcohol consumption, (4) heavy smoking, (5) treatment with cancer chemotherapeutic drugs, (6) uremia, (7) systemic infections (e.g. salmonellosis), (8) severe stress, (9) ischemia and shock, (10) gastric irradiation, (11) mechanical trauma (e.g. nasogastric intubation), and (12) following distal gastrectomy. Depending on the severity of the anatomic changes, acute gastritis may be entirely asymptomatic, may cause variable epigastric pain, nausea, and vomiting, or may present with sticky black stool indicating potentially fatal blood loss from ulcers, treated with metronidazole, that is nauseating with alcohol.

3. A typical adult human in the United States imbibes 2 liters of fluid per day, to which is added 1 liter of saliva; 2 liters of gastric juice; 1 liter of bile; 2 liters of pancreatic juice; and 1 liter of intestinal secretions. Of these 9 liters of fluid presented to the intestine, less than 200 gm of stool are excreted per day, of which 65 to 85% is water and one-third is intestinal bacterial flora. Jejunal absorption of water amounts to 3 to 5 liters/ day, ileal absorption 2 to 4 liters/day. The colon normally absorbs 1 to 2 liters/day but is capable of absorbing almost 6 liters/day. An increase in stool mass, stool frequency or stool fluidity is perceived as diarrhea by most patients. For many individual this consist of daily stool production in excess of 250 gm, containing 70 to 95% water. More than 14 liters of fluid may be lost per day in severe cases of diarrhea, equivalent to the circulating blood volume. Diarrhea is often accompanies by pain, urgency, perianal discomfort and incontinence. Low-volume, painful, bloody diarrhea is known as dysentery. Diarrhea is perceived as the body's production of more than 4/5 cups (0.2 L) of stool a day. Constipation is perceived when the body produces fewer than three movements a week or when the stools are very hard, often described as rabbit-like or as scybala. Almost no one dies from the diagnosis of constipation, although it might the leading cause of death in heart patients unwisely consuming animal products, but many people die from diarrhea. Massive diarrhea is spontaneous in origin can be extremely worrisome, with highly significant fluid losses and the development of dehydration and low potassium levels in the blood, a very dangerous situation, indeed. Often it begins after an intestinal infection caused by a bacteria. The bowel is upset and does not fully recover. Small doses of anti-diarrheals, such as loperamide (Imodium) can fully reverse the problem. However, for a substantial number of patients, diarrheal symptoms remain and are annoying and debilitating. Dysentery is the presence of blood in the feces and although it can be caused by over 60 causes is indicative of some sort of bleeding in the intestinal tract or rectum.

C. Hepatobiliary disorders are very common. It is estimated that 200 million worldwide carry the hepatitis B virus; about 200 million suffer from hepatic schistosomiasis, primary liver cancer is the one of the commonest tumors in the world; 20% of all Britons have gall stones cured overnight with Stonebreaker (*Chanca piedra*) tincture; cirrhosis is now the fourth commonest cause of death in the males in the USA. Subsequent to the dissolution of the Soviet Union, in Russia the average male life expectancy has declined from nearly 70 to 50 due to alcoholic liver disease. Alcoholic liver disease is the most prevalent form of liver disease in most Western countries. In the U.S. more than 10 million Americans are alcoholics, alcohol causes more than 200,000 deaths annually, the fifth leading cause of death and 25 to 30% of hospitalized patients have problems related to alcohol abuse. Chronic alcohol consumption causes three distinct, albeit overlapping, forms of alcoholic liver disease (1) hepatic steatosis (fatty liver); (2) alcoholic hepatitis and (3) cirrhosis. Following even moderate intake of alcohol, small lipid droplets accumulate in hepatocytes. Short-term ingestion of up to 80 gm of ethanol per day (8 beers or 7 ounces of 80 proof liquor) generally produces mild, reversible hepatic changes, such as fatty liver. Daily ingestion of 160 gm or more of ethanol for 10 to 20 years is associated more consistently with severe injury; chronic intake of 80 to 160 gm/day is considered a borderline risk for severe injury. Only 10 to 15% of alcoholics however

develop cirrhosis. Women tend to be more susceptible. Alcoholic hepatitis tends to appear relatively acutely, usually following a bout of heavy drinking. Each bout of hepatitis incurs about a 10 to 20% risk of death. Cirrhosis is likely to appear in about one-third of patients within a few years if there are repeated bouts. In about 10% of patients, the alcoholic cirrhosis is discovered only at autopsy. In the end-stage alcoholic, the immediate causes of death are (1) hepatic coma (2) a massive gastrointestinal variceal hemorrhage (3) an intercurrent infection or (4) hepatorenal syndrome following a bout of alcoholic hepatitis. In about 3 to 6% of cases, death is related to the development of hepatocellular carcinoma. Alcohol withdrawal must be promptly diagnosed as being an acute cause of anxiety to the patient, because untreated delirium tremens has a mortality of 15%. Commonly detoxification is accomplished with chlordiazeposide at a starting dose of 50 mg oraly every 6 hours with extra doses of 25 mg as needed to control symptoms. After an effective total daily dose has been reached, a taper of 10% total dose per day can be instituted. If parenteral administration is required, an equivalent dose of lorazepam can be used. In cases of hepatic dysfunction oxazepam is the drug of choice. All suspected alcohol abusers should receive thiamine, 100 mg intramuscularly for 7 days (to help prevent Wernicki-Korsakoff encephalopathy) as well as folate, 1 mg daly, and multivitamins. Metronidazole interacts badly with alcohol, but is otherwise the most effective antibiotic for the liver. Treatment of alcoholic liver disease should involve quitting drinking to effect a cure with medicines such as metronidazole.

Drug Induced and Toxin-Induced Hepatic Injury

Tissue Reaction	Examples
Hepatocellular Damage	
Microvesicular fatty change	Tetracycline, salicylates, yellow phosphorus
Macrovesicular fatty change	Ethanol, methotrexate, amio-darone
Centrilobular necrosis	Bromobenzene, CCI_4, acetaminophen, halothane, rifampin
Diffuse or massive necrosis	Halothane, isoniazid, acetaminophen, α-methyldopa, trinitrotoluene, *Amanita phalloides,* (mushroom) toxin
Hepatitis, acute and chronic	α-methyldopa, isoniazid, nitrofurantoin, phenytoin, oxyphenisatin
Fibrosis-cirrhosis	Ethanol, methotrexate, amiodarone, most drugs that cause chronic hepatitis
Granuloma formation	Sulfonamides, α-methyldopa, quinidine, phenylbutazone, hydralazine, allopurinol
Cholestasis (with or without hepatocellular injury)	Chlorpromazine, anabolic steroids, erythromycin estolate, oral contraceptives, organic arsenicals
Vascular Disorders	
Veno-occlusive diesease	Cytotoxic drugs, pyrrolizidine alkaloids (bush tea)
Hepatic or portal vein thrombosis	Estrogens, including oral contraceptives, cytotoxic drugs
Peliosis hepatis	Anabolic steroids, oral contraceptives, danazol
Hyperplasia and Neoplasia	

Adenoma	Oral contraceptives
Hepatocellular carcinoma	Vinyl chloride, aflatoxin, Thorotrast
Cholangiocarcinonoma	Thorotrast
Angiosarcoma	Vinyl chloride, inorganic arsenicals, Thorotrast

Source: Crawford '94: Table 18-6, pg. 857

1. Hepatitis is a term used to describe liver problems. Many things can inflame the liver, often to the point of causing jaundice, the yellowing of the skin and tissues that is a telltale sign of liver disease, including alcohol, drugs, and other environmental chemicals and microbes. The term viral hepatitis is reserved for infection of the liver by a small group of viruses having a particular affinity for the liver. The hepatitis viruses, are A, B, C, D, and E. Most cases of hepatitis go away by themselves with favorable outcomes, though the illness can drag on for a month or two. Hepatitis B is the most dangerous. The relatively uncommon hepatitis C virus, is encountered mainly in the context of blood transfusions, drug abuse, and ingestion of contaminated water. It is related to the yellow fever virus and is a leading cause of chronic liver disease and cirrhosis. Incidence of hepatitis C decreased by more than 50 percent in the US between 1988 and 1993. Hepatitis E travels from host to host via fecal-oral contact and contamination of water rather like hepatitis A is newly recognized. Hepatitis B virus is much more complex and is only found in humans. It can take as long as six months to incubate to the point of producing symptoms of disease, versus six weeks for hepatitis A. It passes from person to person in blood, saliva and semen, which places it among venereal diseases. The virus is extremely stable and can stay dangerous. Because the germ's long term presence in the body often brings on liver cancer, it ranks as the world's most common viral cause of cancer. Between 1985 and 1993 the incidence of hepatitis B fell by 59 percent in the US. Weight loss, no-protein, no-alcohol diet and exercise are important for recovery from hepatitis like any other necrotic infection of the internal organs. Hepatitis D only thrives in cells also infected with hepatitis B, boosting the severity of the disease. Chronic viral hepatitis B is treated with Pegylated interferon alfa-2b (Pegasys), Nucleoside/nucleotide analogues (NAs) such as adefovir (Hepsera), entecavir (Baraclude), lamivudine (Epivir-HBV, Heptovir, Heptodin), telbivudine (Tyzeka) and tenofovir (Viread). Ribavirin is an oral drug used for treatment of chronic hepatitis C. This drug can cause anemia due to hemolysis, a process in which blood cells break down. Blood counts must be monitored during ribavirin therapy. Most importantly, ribavirin can cause severe damage to the developing fetus warranting birth control. Lamivudine is an oral drug used for treatment of chronic hepatitis B. It has very few side effects but a large fraction of treated patients the virus learns to mutate or change to avoid the drug's effects. Interferon injections are used for treatment of both chronic hepatitis B and hepatitis C, in different doses. Interferon causes fevers, chills, and flu-like symptoms, especially with the first few doses.

D. Intestinal diseases of microbial origin are marked principally by diarrhea and sometimes ulcero-inflammatory changes in the small or large intestine (or both). Infectious enterocolitis is a global problem of staggering proportions, causing more than 12,000 deaths per day among children in developing countries and constituting one-half of all deaths before age 5 worldwide. Although far less prevalent in industrialized

nations, in the these populations attack rates for enterocolitis still approach one to two illnesses per person per year, second only to the common cold in frequency. An estimated 40% of the population, 99 million people, suffer acute cases of either vomiting or diarrhea per year in the United States. Among the most common offenders are rotavirus and norovirus as well as enterotoxigenic *Escherichia coli*. Many pathogens, however, can cause diarrhea, and in 40 to 50% of cases, the specific agent cannot be isolated. While viruses and bacteria are the predominant enteric pathogens in the United States parasitic disease and protozoal infections collectively affect more than one-half of the world's population on a chronic or recurrent basis. Diarrheal diseases of the bowel are often caused by microbiologic agents; others arise in the setting of malabsorptive disorders and idiopathic inflammatory bowel disease. It is estimated that diarrheal illnesses due to the ingestion of contaminated food and water cause the death of some 20 million children around the world each year. Some 200 million individuals suffer from schistosomiasis, 400 million from hook work and no less than 1 billion from round worm infestation. The annual death rate from cholera in India still runs into many thousands. Most of these diseases are preventable with clean water and a functioning sewage system.

Major Causes of Bacterial Enterocolitis

Organism	Pathogenic Mechanism	Source	Clinical Feature
Escherichia coli	Toxic or invasive	Food, water or person-to-person	Diarrheal or amnesic
Enterotoxigenic (ETEC) *E.coli*	Cholera-like toxin, no invasion	Food, water	Traveler's diarrhea and inability to eat green leafy vegetables
Enterohemorrhagic (EHEC) *E. coli*	Shiga-like toxin, no invasion	Undercooked beef products	Hemorrhagic colitis, hemolytic uremic syndrome
Enteropathogenic E. coli (EPEC)	Attachment, enterocyte effacement, no invasion	Weaning foods, water	Watery diarrhea, infants and toddlers
Enteroinvasive (EIEC) *E. coli*	Invasion, local spread	Person-to-person	Fever, pain, diarrhea, dysentery
Salmonella	Invasion, translocation, lymphoid inflammation, dissemination	Milk, beef, eggs, poultry	Fever, pain, diarrhea, dysentery
Shigella	Invasion, local spread	Person-to-person, low inoculum	Fever, pain, diarrhea, dysentery, epidemic spread
Campylobacter	Toxic or invasive	Milk, poultry, animal contact	Fever, pain, diarrhea, dysentery, food

			sources, animal reservoirs
Yersinia enterocolitica	Invasion, translocation, lymphoid inflammation, dissemination	Milk, pork	Fever, pain, diarrhea, mesenteric adenitis, extraintestinal infection, food sources
Vibrio cholera, other Vibrios	Enterotoxin, no invasion	Water, shellfish, person-to-person spread	Watery diarrhea, cholera, pandemic spread
Clostridium difficile	Cotyotoxin, local invasion	Nosocomial environment	Fever, pain, bloody diarrhea, following antibiotic use, nosocomial acquisition
Clostridium perfringens	Enterotoxin, no invasion	Meat, poultry, fish	Watery diarrhea, food sources, "pigbel"
Staphyloccus aureus	Nosocomial environment	Unwashed hands	Methicillin resistant
Mycobacterium tuberculosis	Invasion, mural inflammatory foci with necrosis and scarring	Contaminate mil, swallowing of coughed-up organism	Chronic abdominal pain, complications of malabsorption, stricture, perforation, fistuals, hemorrhage

Source: Crawford '94: Table 17-8; 792

1. Infectious diarrhea, gastroenteritis is an inflammation of the stomach and intestines, characterized by abdominal distress, nausea, vomiting and diarrhea. Enteropathogenic strains of *Escherichia coli* are associated with infantile diarrhea and *Vibrio parahemolyticus* (Japanese raw-fish enteritis). One of the major causes of food poisoning is *Clostridium perfringens* and its toxins, *C. perfringens*, strain type F can produce a rare but more fatal type, *enteritis necroticans*. Other outbreaks of food poisoning have implicated Bacillus cereus and species of *Proteus*, *Klebsiella, Providencia* (Paracolon), *Citrobacter*, *Psudomonas*, *Enterobacter*, and *Actinomyces*. When there is suppression of gut flora due to antibiotic therapy, overgrowth of organisms, such as *Staphylococcus aureau*. Or *Vandida albivans*, *Stretococcus faecalis*, *Psuemonas aeroginosa*, and *Proeus mirabilis*, can result in enterocolitis or infection of the bowel wall. Enterocolitis may also be a manifestation of *Salmonella*, cholera, and *Shigella* infections. Cholera, a nonexudative form of acute diarrheal disease, is characterized by severe bloody diarrhea and dehydration due to the choleragen endotoxin associated with the etiologic agent, *Vibrio cholera*. This endotoxin, stimulates a prolonged increase in capillary permeability, inducing a basic lesion in the jejunal microcirculation with striking water and ion fluxes. Prognosis is excellent with current electrolyte replacement therapy, which involves infusing the patient with an alkaline saline solution in order to rehydrate him and to correct his acidosis. Once hydration has been achieved, tetracycline is used to

reduce the number of organisms shed in the stool. Homeostasis is maintained by infusing solutions at a rate to match the measured stool volume. In order to produce disease, ingested organisms must adhere to the mucosa; otherwise they will be swept away by the fluid stream. Adherence of enterotoxigenic organisms such as *E. coli* and *Vibrio cholera* is mediated by plasmid-coded adhesins. Adherence causes effacement of the apical enterocyte membrane, with destruction of the microvillus brush border and changes in the underlying cell cytoplasm. *Vibrio vulnificus* is a bacteria found in warm salt water that causes a serious infection. It's in the same family of bacterium that causes cholera. So far this year, 31 people across Florida have been infected by the severe strain of vibrio, and 10 have died. In fresh water, the *Naegleria fowleri* amoeba usually feeds on bacteria in the sediment of warm lakes and rivers. If it gets high up in the nose, it can get into the brain. Fatalities have been reported in Louisiana, Arkansas and in Florida, including the August death of a boy in the southwestern part of the state who contracted the amoeba while knee boarding in a water-filled ditch. Bacterial enterotoxins are polypeptides that cause diarrhea. Symptoms usually occur within a matter of hours from ingesting bacterial toxins. Traveler's diarrhea (*E. coli*) usually occurs following ingestion of fecally contaminated food or water; it begins abruptly and subsides within 2 to 3 days, but can lead to chronic infection.

E. There are three idiopathic disorders affecting the bowel (1) Irritable bowel syndrome (IBS), (2) Crohn's disease (CD) and (3) Ulcerative colitis (UC). Diagnosis is difficult and unrewarding, because it is an idiopathic disorder without known etiology or cure, however the basic distinction is that in IBS only the mucosa is affected, in CD the mucosa and submucosa are affected and in UC there is ulceration of all three layers and bleeding of the muscularis propria. Irritable bowel syndrome (IBS) is a disorder of the lower intestinal tract that can cause cramping, diarrhea, bloating and pain. The cause of IBS is also unknown but symptoms are more closely linked to the brain and emotional stress resulting in alternating diarrhea and constipation largely driven by emotional factors. Crohn's disease (named for Dr. Crohn who was part of study circa 1932) is an inflammation of the transmural wall of the intestines, usually of the small interesting but inflammation may involve any part of the GI tract. Ulcerative colitis (UC) is characterized by mucosal ulceration in the colon where it causes inflammation and ulcers in the top layer of the lining of the large intestine. In contrast, for those with Crohn's disease, all layers of the intestine may be involved, and normal healthy bowel can be found between sections of diseased bowel. All inflammatory bowel diseases, including Crohn's disease and UC, are immunologic-response or autoimmune diseases, defined by an abnormal response of the immune system. In the case of Crohn's and UC, an immune response or defense mechanism is triggered as a result of something such as an environmentally-related cause. Suddenly, the immune system becomes overactive and damage to the body results. For individuals with Crohn's and UC a variety of health issues can result. A compromised immune system, resulting in inflammatory bowel disease, can lead to ancillary disorders of the eyes, liver, gallbladder, muscles and joints, kidneys and skin. In some cases, a fistula (an abnormal connection between two organs, characteristic of Crohn's disease but not ulcerative colitis) can form aberrant passages from your bowels to your anus, vagina, or skin surface.

1. Some scientists have postulated that often the cause of IBS-D is a low-grade bacterial infection in the intestinal tract. Most parasites tested for in stool do not cause IBS. IBS is not easily confused with amebic dysentery, hookworm, roundworm, pinworm, or schistosominasis. However there are two parasites worth mentioning: *Dientamoeba fragilis* and *Blastocystis hominis*. *Dientamoeba fragilis* (*D. fragilis*) parasite may be responsible for mild diarrhea, pain, fatigue and loss of appetite. It this protozoan is found in stools it should be eradicated by means of a one week course of antibiotics. Closely related to *D. fragilis* are three other chronic diarrhea-causing parasites, all protozoans, cyclospora, cryptosporidia and isispora. The latter two are most often found in immune-compromised patients, such as those with HIV/AIDS. Cyclospora has been found in people with normal immune systems after they have eaten raspberries imported from Central America. *Blastocystis hominis* (*B. hominis*) parasite is frequently found in stools and may be responsible for disease, but this is highly uncertain. With remarkable regularity, tests for the presence of *Blastocystis* species in stool specimens come back with positive results. We know that blastocystis is present in thw human gut, but we do not yet known whether it is a pathogen that causes disease. It is not very likely that you have a parasite unless the particular illness incriminates a parasite. Most of the time, the pursuit of parasites is a time and resource wasting, futile exercise. The parasite most likely to cause IBS-like symptoms is a one-celled organism called *Giardia lamblia*, and the illness provoked by *Giardia* is called, giardiasis. There have been epidemics of giardiasis from St. Petersburg in Russia to Aspen, Colorado. Because beavers may become infected with giardia, inveterate campers who share the wild, their urinals, and their drinking water with beavers are at risk of acquiring the parasite by drinking improperly treated lake water. This is why giardiasis is often called beaver fever.

2. Drug treatment of irritable bowel disease (IBD) employs corticosteroids, sulphasalazine (Salazopyrin) and azathioprine (Imuran). Oral prednisone is generally the preferred corticosteroid, although hydrocortisone and ACTH may be given intravenously in severe attacks. Corticosteroids can also be given through the anal canal. In localized proctitis, prednisone suppositories are very useful, and in proctosigmoiditis prednisone 21-phosphate in water can be given as a retention enema, or administered as a foaming preparation. This local treatment can be used over quite long periods and side-effects are generally slight. Over the space of 20 years, about 20% of patients will show gradual proximal extension of the inflammation. Suphasalazine (Salazopyrin) is a compound of sulphapyridine and 5- amino salicylic acid, which is split into its two components by bacterial action in the colon. It is now accepted that 5-amino salicylic acid is the active component. The drug is the mainstay of maintenance therapy in ulcerative colitis and many patients take it prophylactically over years. Unfortunately it is not so effective at preventing relapse in Crohn's disease. Side-effects are common, especially nausea and vomiting, but they are lessened with enteric-coated tablets. Other side-effets include skin rashes, headaches and rarely, blood dyscrasia. Oligospermia occurs, but is reversed if the drug continues. Azathiprine (Imuran) is of value in maintaining remission in chronic active CD. Some believe that it promotes the healing of fistulae. Side-effects, especially on haemopoiesis, can be severe, and it should only be used when other treatments are ineffective. Regular blood counts must be made. If colitis is active it is a serious mistake to give constipating drugs such as codeine phosphate or loperamide whereas there is a

strong suspicion that they may precipitate toxic megacolon. However, after disease have been excised by right hemicolectomy, or colectomy and ileorectal anastomosis, these drugs are very helpful. After terminal ileal resection, cholestyramine may be useful. Sometimes lower abdominal pain is a feature of relapse and may be helped by antispasmodics such as mebeverine or propantheline.

Drugs Used in Managing Irritable Bowel Syndrome (IBS)

Antibiotic	Metronidazole (Flagyl ER), Doxycycline and clindamycin for *Staph* infection
Anti-diarrheals	Diphenoxylate (Lomotil) Loperamide (Imodium) Octerotide (Sandostatin)
Laxatives	Lubricants, Mineral Oil, Secretory laxatives, Senna, Cascara, Bisacodyl, Osmotic laxatives, Lactulose, Magnesium slats (Milk of Magnesia, Citromag), Polyethylene glycol (Miralax)
Others	Lubiprostone (not in Canada) Prucalopride (not on the market)
Antispasmodics	Dicyclomine (Benylol) Hyoscine (Buscopan) Pinaverium (Dicetel)
Tranquilizers	Benzodiazepines: Valium, Ativan, Xanax
Anti-depressants	Tricylclics: desipramine, nortriptyline, amitriptyline, clomipramine (Anafranil) Selective serotonin reuptake inhibitors (SSRIs): fluoxetine (Prozac), paroxetine (Paxil), sertraline (Zoloft), citalopram (Celexa) Serotonin and norepinephrine reuptake inhibitors (SNRIs): bupropion (Wellbutrin), mirtazapine (Remeron), venlafaxine (Effexor), duloxetine (Cymbalta) Atypical antipsychotics: quetiapine (Seroquel)

Source: Newman ’11: 159

F. Celiac disease is a condition in which a wheat protein – gluten – causes damage to the intestinal lining. In addition to wheat, the celiac patient is also intolerant to rye, barley, and possibly oats. This intestinal damage may result in mal-absorption of fats, certain vitamins, and iron and is accompanied by abdominal pain and bloating. At least 2% to 3% of the Caucasian population has celiac disease, and it seems to be most prevalent in Celts (Scots and Irish) and Italians; it is very uncommon in non-Caucasian populations. Celiac disease is relatively easy to treat by rigidly adhering to a gluten-free diet. Celiac sprue is a chronic disease, in which there is a characteristic mucosal lesion of the small intestine and impaired nutrient absorption, which improves on withdrawal of wheat gliadins and related grain proteins from the diet (wheat, oat, barley and rye). Celiac sprue occurs largely in whites and is rare or nonexistent among native Africans, Japanese and Chinese. Its prevalence in the United States is not known accurately, the prevalence in Europe is in the range of 1: 2000 or 3000. Biopsy specimens demonstrate a diffuse enteritis, with marked atrophy or total loss of villi. Clinical diagnosis (1) documentation

of malabsorption, (2) demonstration of the intestinal lesion by small bowel biopsy, and (3) unequivocal improvement in both symptoms and mucosal histology on gluten withdrawal form the diet. Most patients with celiac sprue who adhere to a gluten-free diet remain well indefinitely and ultimately die of unrelated causes. There is however a long-term risk of malignant disease, such as intestinal lymphomas, particularly T-cell lymphomas, gastrointestinal and breast carcinomas.

1. Lactose is a sugar found in dairy products, appearing in high levels in cow's milk, cream, yogurt, and ice cream and in much lower concentrations in cheese. Lactose can be absorbed only if the cells of the intestinal lining possess an enzyme called lactase, which breaks down the lactose into glucose and galactose. These simpler sugars can be absorbed readily. However, it is undeniable that a lactose-intolerant person forced to drink 4 cups (1 L) of milk does experience diarrhea and intestinal distress. Lactose, or milk sugar, is a 12-carbon sugar composed of two slightly different 6-carbon sugars – glucose and galactose. Lactose cannot be absorbed by the human intestine, it must be broken down into glucose and galactose, and then these simpler sugars are absorbed. Fructose is also a 6-carbon sugar, but it looks very different from glucose and galactose and it is much less well absorbed. Lactose intolerance is the result of a disaccharidase deficiency. The disaccharidases are located in the apical cell membrane of the villous absorptive epithelial cells. Congenital lactase deficiency is a rare condition, but acquired lactase deficiency is common, particularly among North American blacks. Incomplete breakdown of the disaccharide lactose into its monosaccharides, glucose and galactose, leads to osmotic diarrhea from the unabsorbed lactose. Bacterial fermentation of the unabsorbed sugars lead to increased hydrogen production, which is readily measured in exhaled air by gas chromatography. When inherited as an enzyme deficiency, malabsorption becomes evident with the initiation of milk feeding. Infants develop explosive, watery, frothy stools and abdominal distention. Malabsorption is promptly corrected when exposure to milk and milk products is terminated. In the adult, lactase insufficiency may become apparent during viral and bacterial enteric infections.

2. Tropical sprue (post-infectious diarrhea) is named because this celiac-like disease occurs almost exclusively in people living in or visiting the tropics. Post-infectious diarrhea however is very typical amongst people who have treated diarrheal illness with antibiotics, causing damage to their gut flora and immune system which continues to expel the invader long after the infection has been treated. The disease may occur in endemic form, and epidemic outbreaks have occurred. Bacterial overgrowth by enterotoxigenic *E. coli* has been implicated. Partly as the result of tissue damage caused by the infection and partly the result of not being able to consume green leafy vegetables wherefore patients, particularly vegans who eat no animal products, frequently have folate or vitamin B_{12} deficiency leading to markedly atypical enlargement of the nuclei of epithelial cells (magloblastic change) reminiscent of changes seen in pernicious anemia. Malabsorption usually becomes apparent in visitors to endemic locales within days or a few week of an acute diarrheal enteric infection and may persist if untreated. The mainstay of treatment for *E. coli* infection Bactrim (Trimethoprim and Sulphamethoxazole). If post-infectious sprue diarrhea persists after completing a course of Bactrim and regaining the ability to consume green leafy vegetables with minimal

flatulence and no indigestion, that is probably because of a vitamin B_{12} deficiency. An increased bacterial load can bind significant amounts of vitamin B_{12} in the gut, preventing its absorption. In people with bacterial overgrowth of the small bowel, antibiotics such as metronidazole (Flagyl) can actually improve vitamin B_{12} status. The effects of most antibiotics on gastrointestinal bacteria are unlikely to have clinically significant effects on vitamin B_{12} levels. B_{12} supplementation, in a multivitamin with adequate folate, is necessary for the treatment of post-infectious diarrhea.

3. Iron deficiency anemia is the most common cause of diarrhea worldwide. In normal subjects, daily iron loss amounts to 1–2 mg and this requires a similar amount to be taken up from the diet. Dietary iron occurs in two forms: haeme (from myoglobin in animal products such as dairy, meat, poultry, and fish) and non-haeme (mostly from dark green leafy plants). American evidence based (irritable bowel syndrome leeches) medicine censures the fact that iron deficiency anemia causes diarrhea, like they censure the vegan diet, for the treatment of atherosclerosis and cancer, that causes iron deficiency anemia, without adequate nutritional guidance and funding pertaining to vegetable sources of complete protein from rice and beans, iron and calcium from green leafy vegetables and phosphorus in mushrooms, soy and mung beans. A vegetable based diet without adequate iron will cause diarrhea from iron deficiency anemia. Calcium and phosphorus make apatite for tooth and bone formation. The literature is obsessed with anemia as blood loss, denying that there is any other way to lose iron than by menstrual and intestinal bleeding in one sentence and admitting that iron and vitamin B12 are lost due to diarrhea in another, but does not mention that the replenishment of dietary iron and vitamin B12 is specifically necessary for the reconstipation of healthy stool. Normal stool may be painful and undesirable in patients with ulcerated intestines or other toxic diseases, such as atherosclerosis and cancer, where diarrhea is healthier and more excretive of toxins, than constipated stool. Intestinal bleeding causes sticky black stool, anemia from blood loss that causes fatigue and other symptoms associated with blood loss. Diagnosis and treatment of anemias of all sorts is impaired because American medicine doesn't like their vegetables enough to get diarrhea, and due to the existence of linguistic incompetence regarding iron deficiency anemia, there is often considerable delay before anemia caused by bleeding ulcers is treated with metronidazole. Stonebreaker herbal tincture cures gallstones and urinary stones overnight.

§351 Sexually Transmitted Diseases

A. Public health was a major part of the public health department at its inception. In the 19th and beginning of the 20th century syphilis was rampant, so was its misdiagnosis, however diagnostic tests were developed and nearly 13% of WWI soldiers tested positive for syphilis or gonorrhea. No truly effective means of controlling syphilis or gonorrhea came before the advent of sulfa drugs in the late 1930s, that were quite toxic, and penicillin in the 1940s. Large doses of mercury often led to serious complications, such as loss of teeth, fissures of the tongue, hemorrhaging of the bowels and severe mentally disabling neurological complications of tertiary syphilis. *Neisseria gonorrhoeae* (Gonorrhea), *Chlamydia trachomatis (*Lymphogranuloma venereum), *Ureaplasma urealyticum* (Nongonococcal urethritis)*, Trichomonas vaginalis* (Trichomas),

Treponema pallidum (Syphilis), *Haemophilus ducreyi* (Chancroid)*, Calymmatobacterium granulomatis (*Granuloma inguinale), *Phthirus pubis* (Louse)*, Sarcoptes scabiei* (Scabies), viral Hepatitis, Herpes simplex virus, Human papillomavirus (venereal warts), HIV and Zika virus are sexually transmitted diseases (STD). Acquired Immune Deficiency Syndrome (AIDS) is a group of unusual diseases that HIV infected persons are vulnerable to. Thirty to 80% of homosexual men test seropositive for hepatitis B.

1. Zika virus is transmitted primarily through the bite of *Aedes aegypti* mosquitoes but Zika virus can also be transmitted through sex without a condom. Most reported sexual transmissions have been from persons with symptomatic Zika virus infections. Concentrations of detectable Zika virus RNA in semen decrease after infection. Zika virus RNA was cultured in semen for three months on average, with the longest period of reported detection 188 days after symptom onset. Zika virus RNA has been detected in the serum of non-pregnant persons up to 11–13 days after symptom onset; in the serum of pregnant women, Zika virus RNA has been detected up to 10 weeks after symptom onset . CDC now recommends that all men with possible Zika virus exposure who are considering attempting conception with their partner, regardless of symptom status, wait to conceive until at least 6 months after symptom onset (if symptomatic) or last possible Zika virus exposure (if asymptomatic). Recommendations for women planning to conceive remain unchanged: women with possible Zika virus exposure are recommended to wait to conceive until at least 8 weeks after symptom onset (if symptomatic) or last possible Zika virus exposure (if asymptomatic). Acyclovir is prescribed for Herpes. Doxycycline 100 mg PO or Tetracycline 500 mg PO are effective treatments for all the bacterial infection caused sexually transmitted diseases - gonococcus, chlamydia, non-gonococcal urethritis and syphilis – except *T. vaginalis* that is treated with metronidazole 400 mg PO. Sexual assault prophylaxis is either Ceftriaxone 250 mg IM + Metronidazle 2 gm po as single dose + Azithromycin 1 gm po once) or Doxycycline 100 mg po bid for 7 days. The once a day antiretroviral to the treatment of HIV patients is called Atripla. There are new medicines to help prevent the spread of HIV to children in utero or during sex.

B. Gonococcal urethritis reached a peak incidence in 1975 and is now declining in frequency while the incidence of nongonococcal urethritis is rising. On a gram-stained smear of urethral scrapings, *Neisseria gonorrhoeae* are gram-negative diplococcic located within the neutrophils. The intracellular diplococcus causes neutrophil, lymphocyte and plasma cell infiltration of the tissues. Concurrent infections with chlamydia and other organisms are common. The urethra is the most common site of infection in all men. In heterosexual men the pharynx is infected in 7%, and in homosexual men, 40% and the rectum in 25%. A single episode of intercourse with an infected female partner carries a transmission risk of 17-20% for the male; however the female partner of an infected male will contract the disease about 80% of the time. In males, the usual symptoms of gonorrhea are urethral discharge and dysuria. There may be only urethral itching. The usual incubation period is 3-10 days but may be any time from 12 hours to 3 months. Without treatment, urethritis will persist for 3-7 weeks, with 95% of men becoming asymptomatic after 3 months. Gonococcal urethritis may be asymptomatic in 40-60% of contacts of partners with known gonorrhea. Spread down the

vas deferens to the epididymis may lead to acute epididymitis. The discharge with gonococcal urethritis is usually yellow or brown. The patient is best examined 1 hour, preferably 4 hours, after last voiding, so that the discharge will not be washed away. A calcium alginate swab is then inserted 2-3 c into the urethra and rotated gently. The gram-stained smear should show evidence of urethritis, with 4 or more leukocytes per high-power field (400x). Cultures of pharyngeal and rectal scrapings are required if there is a history of oral or rectal intercourse. Obtain a swab from the rectal mucosa by anoscopy. A gram-stained smear is positive if gram-negative diplococcic are seen within polymorphonuclear leukocytes. The specificity of gram-stained smear in gonococcal urethritis is 95% and 60% in rectal gonorrhea. Condoms, if properly used, will prevent the spread of *N. gonorrhoeae*.

1. Nonoxynol-9, a vaginal spermicide, has been shown to kill gonococcus and is even more effective used with a contraceptive diaphragm. Antibiotic prophylaxis may be effective but may lead to resistant strains. The growth of plasmid-mediated beta-lactamase-producing *N. gonorrhea* and chromosome mediated penicillin and tetracycline-resistant *N. gonorrhoeae* has led to the use of intramuscular ceftriaxone, or cefotaxime plus probenicid (oral); or cefoxitin, plus probenecid (oral) or spectinomycin in areas where resistance is common. The WHO treatment for gonococcal epididymitis is a single dose of amoxicillin 3 g given intramuscularly; ampicillin 3.5 g given intramuscularly; or aqueous procaine penicillin, 4.8 x 10^6 units given intramuscularly; plus either tetracycline, 500 mg orally 4 times a day for 10 days, or doxycycline, 100 mg orally twice a day for 10 days. The treatment for disseminated gonococcal infection is crystalline penicillin G, 10 million units given intravenously daily for 3 days or until symptoms improve. Then, amoxicillin, 3 g orally daily, or ampicillin, 3.5 g orally daily, is given to complete to 5 to 7 day course. Urethral strictures require urethral dilations or surgical interventions. Treatment regimens for rectal and pharyngeal gonorrhea are the same as for uncomplicated gonococcal infection described above, except that amoxicillin and doxycycline are not effective. Once the infection has been treated properly, the discharge should disappear within 12 hours. In the 10-35% of patient with concurrent infection due to Chlamydia who do not receive a 7 day regimen of tetracycline and doxycycline, there may remain a thin clear urethral discharge. Cure of gonococcal urethritis should be established by gram-stained smear of urethral tissue in 10 days. If the infection has not been cured, spectinomycin is commonly selected, the recommended dose is 2 g given intramuscularly once only. The cure rate is about 95% (Mayer & Berger '88: 262-265). Gonococcal conjunctivitis, disseminated gonococcal infection, endocarditis (2 gm), pharyngitis (+Azithro 1 gm po x 1 or doxy 100 mg po bid x 7 days), urethritis, cervicitis, proctitis (+Azithro 1 gm po x 1 or doxy 100 mg po bid x 7 days), is treated with Ceftriaxone 1gm IM or IV q24h.

C. Urethritis is nongonococcal more than 50% of the time. The most important and potentially dangerous pathogen is *Chlamydia trachomatis*. *C. trachomatis* is a small bacterium and an obligate intracellular parasite of columnar or pseudocolumnar epithelium. Two species of Chlamydia exist: *Chlamydia psittaci*, which causes psittacosis, and *C. trachomatis*, which has 15 serotypes. Serotypes A-C cause hyperendemic blinding trachoma; serotypes D-K cause genital tract infection, and

serotypes L1-L3 cause lymphogranuloma venereum. *C. trachomatis* can be recovered from the urethra in 25-60% of heterosexual men with nongonococcal urethritis, in 4-35% of men with gonorrhea, and in 0-7% of men in sexually transmitted disease clinics without symptoms of urethritis. Asymptomatic infection occurs in 28% of the contacts of women with chlamydial cervical infections. *Chlamydia trachomatis* immunotypes L1, L2 and L3 cause lymphogranuloma venereum. The disease is characterized by a transient genital lesion followed by lymphadenitis and, possibly, rectal strictures. The inguinal and subinguinal lymph nodes may become matted, undergo suppuration and form multiple sinuses. A papule or pustule appears 5-21 days after sexual exposure. Unilateral lymphadenopathy is most common and may be the initial symptom. At the stage of bubo formation, constitutional symptoms are commonly present (e.g. chills, fever, headache, generalized joint pains, nausea and vomiting. Skin rashes are frequent. The white blood count may reach 20,000/μL if the lymph nodes are invaded. Anemia may be present. Proteins (globulin) are elevated. The most specific test in the diagnosis of lymphogranuloma venereum is culture of *C. trachomatis* from an inguinal node aspirate. Lymphogranuloma venereum is treated with antibiotics that are effective in other chlamydial infections. Tetracycline is the drug of choice, 500 mg orally 4 times daily for 2 weeks. Doxycycline 100 mg bid x 7 days or Azithro 1 gm po singe dose in pregnancy (Gilbert et al '14: 23). Alternatives include erythromycin, 500 mg orally 4 times daily, and sulfamethoxazole, 1 g orally twice daily. Treatment with any of these medications should continue for at least 2 weeks. Aspiration of fluctuant nodes is indicated. Draining sinuses can be excised. Rectal stenosis may require surgery. The prognosis is excellent if the disease is treated promptly. The late complications are genital elephantitis and rectal stricture.

1. *Ureaplasma urealyticum* may be the cause of nongonococcal urethritis in 20-50% of cases. Urethral cultures from 40% of men with a history of 3-5 sexual partners will yield *U. urealyticum* whether or not they have urethritis. In men with *C. trachomatis*-negative cultures and *U. urealyticum*-positive cultures, the urethritis responds poorly to sulfonamides but well to aminocyclitols (e.g. spectinomycin)(to which *U. urealyticum* but not *C. trachomatis* is sensitive). Some of the 14 different serotypes of *U. urealyticum* may be more pathogenic than others. 20-30% of men with acute urethritis are negative for *N. gonorrhoeae*, *C. trachomatis* and *U. urealyticum*. Some of these men respond to antibiotic treatment, but persistence and recurrence of infection are common. Most nongonococcal urethritis responds promptly to tetracycline. Give tetracycline, 500 mg orally 4 times a day for 7 days, or minocycline or doxycycline, 100 mg twice a day for 7 days; or erythromycin, 500 mg 4 times a day for 7 days. Examine and treat sexual partners with the same regimen. Of the 3 species of trichomonads that infect humans, only *Trichomonas vaginalis* causes clinical disease. There is consensus that *T. vaginalis* is sexually transmitted in almost all instances. *T. vaginalis* has been isolated from 14-60% of male partners of infected women and in 67-100% of female partners of infected males. Most infections due to *T. vaginalis* in men are asymptomatic, and some feel that men serve primarily as vectors for transmission of symptomatic disease to women Most trichomonad infections respond promptly to Metronidazole, 2 g orally as a single dose, should be given to patient and partner whether they are symptomatic or not.

D. Syphilis is caused by *Treponema pallidum*, a spirochete, which gains access through the intact or abraded skin or mucous membranes, usually by sexual contact. The patient usually presents with a painless penile sore (chancre) 2-4 weeks after sexual exposure. The syphilitic (hard) chancre is relatively deep, has indurated edges and a clean base, and is not tender on pressure. Without treatment, the lesion will heal spontaneously and slowly. The diagnosis is made by finding the spirochetes on Dark-field examination of scrapings of the base of the chancre or by fluorescent antibody techniques. The serologic tests may remain negative for 1-3 weeks after the appearance of the chancre. The quickest and least expensive examination, the fluorescent treponema antibody-absorption test (FTS-ABS) is also the most specific and sensitive. All penile lesions should be considered syphilis until proved otherwise. A differential diagnosis is with chancroid, lymphogranuloma venereum, granuloma inguinale, balanitides of varying cause, carcinoma, scabies, psoriasis, lichen planus, leukoplakia, erythroplasia, and infection due to herpes simplex virus. Urologic complications are rare and occur in the tertiary form of the disease. If exposure has occurred, give benzathine penicillin G, 2.4 million units intramuscularly in a single dose. Patients with early syphilis (primary, secondary, or latent of less than 1 year's duration) should receive benzathine penicillin G, 2.4 million units intramuscularly in a single dose. Patients allergic to penicillin should receive doxycycline 100 mg po bid x 14 days, tetracycline hydrochloride, 500 mg orally 4 times daily for 15 days, or erythromycin, 500 mg orally 4 times daily for 15 days. The prognosis is excellent, relapse is rare. If it occurs, more intensive penicillin therapy is required.

1. Primary syphilis manifests as a hard, painless ulcer, a chancre of the vulva, vagina, cervix or penis. If untreated 50% develop secondary infection and 50% develop latent syphilis. Secondary syphilis develops 3 weeks to 6 months after the chancre. Manifestatoins inclue a maculopapular palmar/plantar rash and condyloma lata (gray white vulvar patches). Latent syphilis has positive serology withotu clinical manifestations. Tertiary syphilis causes CNS (paresis, tubes dorsalis, optic atrophy), aortic aneurysms, and bone gummas. Diagnosis is by nontreponemal tests (VDRL) and RPR) that is confirmed with treponemal test (FTA-ABS or microhemagglutination – *T. pallidum*). In the first year of syphilis Benzathine penicillin G (Bicillin L-A) 2.4 million U IM x 1 or Doxycycline (Monodox, Periostat, Vibramycin) 100 mg PO bid x 14 days or Tetracycline (Achromycin, Panmycin, Sumycin, Tetracap) 500 mg PO qid x 14 days. Late syphilis after one year is treated with Benzathine penicillin G 2.4 million U IM q weeks x 3 or Doxycycline 100 mg PO bid x 14 d (4 wks) or Tetracycline 500 mg PO qid x 14 d (4 wks). Pregnant patients with penicillin allergy should be desensitized (Wright et al :03: 223-224). Penicillin is safer than tetracyclines because it causes permanent yellowing of child teeth under the age of 8. Epinephrine or hydrocortisone may be needed to treat the penicillin allergy.

2. Chancroid is a sexually transmitted disease caused by *Haemophilus ducreyi*. A papule is the first lesion of chancroid, usually seen a few days after sexual exposure. One or more painful, dirty-appearing chancroid ulcers then appear. These are deep with flat, rugged erythematous borders that extend into the dermis and subcutaneous tissue of the surrounding skin. Chancroid ulcers often have purulent secretions. About 50% of

patients will have fever, malaise, and headache. A gram-stained smear reveals *H. ducreyi* in 50% of cases, biopsy is always diagnostic. Response to tetracycline is excellent. The dose of 500 mg orally 4 times daily for 10 days. Erythromycin, 500 mg orally 4 times daily is also effective, as is trimethroprim-sulfamethoxazole, one 480mg tablet orally twice daily for ten days. Ceftriaxone 250 mg IM single dose or Azithro 1 mg po single dose. Cleanliness is important, washing the genitalia carefully with green soap and water immediately after intercourse has been shown to be effective. Granuloma inguinale (Donovanosis) is a sexually transmitted chronic infection of the skin and subcutaneous tissue of the genitalia, peritoneum, and inguinal area. It has an incubation period of 2-3 months. The infective agent, *Calymmatobacterium granulomatis*, is related to *Klebsiella pneumoniae*. A papule is the first sign of granuloma inguinale. Untreated it forms an ulcer protruding above the level of the surrounding skin. Identification of Donovan bodies, bipolar staining rods, in monocyte on a stained smear makes the diagnosis. The use of a condom does not prevent perigenital spread. Antibiotics are effective, complications few and the prognosis is good. Doxycycline 100 mg po bid x 3-4 weeks, erythromycin 500 mg po qid x 3 wks or Azithromycin 1 gm po q wk x 3wks.

E. Genital herpes is of great concern. The increasing prevalence of infection in men and women, the risk of transmission to sexual partners, the high rates of morbidity and even death associated with infections in infants, the possible association with cervical cancer, and the absence of curative therapy have made its knowledge imperative. Herpes simplex is a double stranded DNA virus that may cause persistent or latent infections. Most genital herpes infections are due to type 2 virus, although infection due to type 1 herpes virus, which is commonly associated with oral infections, has been reported in 10-25% of cases of genital herpes. Herpes simplex is seen in 5% of patients seeking help at clinics for sexually transmitted disease. In college students, herpes simplex virus infections are 10 times more common than gonorrhea or syphilis. Although it is not inevitable that the sexual partners of an infected patient will also become infected, partners are at risk even when the infection is asymptomatic. 50-70% of herpes type 2 infections are asymptomatic. Herpes simplex virus types 1 and 2 produce primary genital lesions of equal severity. The first episode of disease is much more severe in persons without prior oral herpes. The incubation period is 2-10 days. Approximately 2% of patients with primary genital herpes develop severe sacral or autonomic nervous dysfunction resulting in urinary retention. The lesions are tender to touch. Adenopathy is usually bilateral, and the lymph nodes are mildly tender, nonfixed and slightly firm. Dysuria is present in 44% of men. Herpes simplex virus can be isolated from the urethra in most patients. Tzanch and Papanicolaou smears of lesions will demonstrate intranuclear inclusions in 50-60% of culture-positive cases. Innumofluorescent techniques will reveal 57% of culture-positive cases. No test is completely reliable to differentiate type 1 from type 2 infections. Acyclovir is the first drug to show efficacy in the treatment of genital herpes. Topical, intravenous and oral forms are effective for first-episode genital herpes. Oral acyclovir, 200 mg 5 times daily for 5-10 days, and intravenous acyclovir appear more effective than topical therapy in the treatment of primary genital herpes. Acyclovir decreases the duration of viral shedding, the time of crusting of lesions, and the time to healing of lesions, during which there is pain or itching. Only the oral and intravenous forms decrease dysuria, vaginal discharge,

systemic symptoms and the development of new lesions. The mortality rate of herpetic encephalitis is reduced from >70% to 19% with acyclovir. Bell's palsy is cured 85% of the time with placebo, 96% with prednisolone and 93% with prednisolone and acyclovir.

1. Herpes Simplex Virus causes small painful vesicles to form. Herpes Simplex I causes vesicles to form in the mouth and on the lips. Herpes Simplex II causes vesicles to form on the anogenital region at random times for the rest of the patient's life and is transmitted as a sexual disease. Vesicles ulcerate to form shallow, tender lesions. Initial episode is the most severe often with fever, myalgias, inguinal adenopathy, headache, and aseptic meningitis. Ocular manifestations are blepharitis, keratitis, and kerotoconjunctivitis, meningitis, encephalitis, Bell's palsy, esophagitis (especially in HIV), and disseminated disease. Recurrent episodes precede prodomal period with pain. Diagnosis is by history, physical exam and direct fluorescent antibodies or viral cultures to confirm the diagnosis. Primary HSV is treated with Acyclovir (Zovirax) 400 mg PO tid x 7-10 days of 200 g PO 5x/d x 7-10 days, Famciclovir (Famvir) 250 mg PO tid x 7-10 days and Valacyclovir (Valtrex) 1 g PO bid x 7-10 days. Recurrent HSV is treated with the same dose of Acyclovir, but only 125 g of Famiciclovir and 500 mg of Valancyclovir. Suppressive therapy if there are more than 6 occurrences in a year is 400 g Acyclovir, 250 mg Famiciclovir, and 250 mg Valacyclovir PO bid.

F. Condylomata acuminata infection by Human pappilomavirus (HPV), after a single contact with an infected partner results in a 65% transmission rate. Following a 6-week to 3- month incubation period, infection by HPV causes soft, flesh growths on the vulva, vagina, cervix, urethral meatus, perineum and anus. They may occasionally also be found on the tongue or oral cavity. The growths are termed condyloma acuminata or venereal warts. The diagnosis of condyloma acuminate is made based on physical examination but may be confirmed though biopsy of the warts. Management options include chemical cautery, and immunologic treatments. Patient-applied products include Podofilox (Condylox) 0.5% gel apply 2 x day bid x 3 days or Imiquimod (Aldara) 5% cream 3x/wk x 16 wks. Clinician applied therapy involves podophyllin 10-25% every week, Treatments that are administered by a health-care provider include application of podophyllin 10-25% every week, trichloroacetic acid (TCA) weekly, cryosurgery, surgical excision, laser surgery, or intralesional injections. Lesions exceeding 2 cm respond best to cryotherapy, cautery or laser treatment. The safety of these medicines during pregnancy is unknown. Molluscum contagiosum is caused by Poxvirus, flesh-colored, dome-shaped papules with central umbilication. Diagnosis is by inspection. They are usually self-limited but mechanical destruction by curettage, cryotherapy, laser can be used for cosmesis. Cantharidin (blistering agent) can also be used.

G. Pediculosis pubic is caused by *Phthirus pubis* (louse). Colonization by the pubic lice causes inflammation and vulvar pruritus. Diagnosis is by visualizing the lice in a microscopic exam with mineral oil. Treatment is with Lindane (Kwell) 1% shampoo x 4 mins (not recommended in pregnancy), Permethrin (Elimite, Nix) 1% cream for 10 minutes, Purethrins with piperonyl butoxide x 10 minutes. Launder clothes in hot water and treat sexual partners. Scabies is caused by *Sarcoptes scabiei* (parasite) it is transmitted by contact and causes pruritus over the entire body. Papules and burrows

may be visualized. It is diagnosed by inspection and microscopy. Treatment is Permethrin 5% cream over entire body, wash off in 8-14 hours, Lindane 1% lotion over entire body, wash off in 8 hours, Ivermectin (Stromectol) 200μg/kg PO repeat in 2 weeks. Launder in hot water, dry all cloths, linens and treat sexual partners.

H. Acquired Immune Deficiency Syndrome (AIDS) is a chronic, life-threatening condition caused by the human immunodeficiency virus (HIV). HIV/AIDS was first detected in the US in a Haitian immigrant in 1981, random retests of African blood samples dating back to 1959 have tested positive. Unknown a quarter of a century ago, HIV/AIDS is now the leading cause of death and lost years of productive life for adults aged 15–59 years worldwide. Official development assistance and other forms of global health investment are on the rise. Most of the increased spending is for HIV/AIDS. The Global Funds also gives countries the chance to derive extra public health benefits from the new funds. The opportunity exists to invest these resources so as to save millions of threatened lives through treatment, reinforce comprehensive HIV/AIDS control and strengthen some of the world's most fragile health systems. The objective of treating 3 million people in developing countries with antiretroviral drugs by the end of 2005 is a step on the way to the goal of universal access to antiretroviral therapy and HIV/AIDS care for all who need it. Although reported to be incurable there are personal reports of newly infected people who manage to completely recover by evading capture by bad medicine. Two Haitian doctors have managed to control the epidemic in the nation through border controls, testing and anti-viral drugs, so that the national number of HIV infected people has declined from 3% to 2%.

1. The advent of the HIV/AIDS pandemic has reversed the gains in life expectancy made in sub-Saharan Africa, which reached a peak of 49.2 years during the late 1980s and which is projected to drop to just under 46 years in the period 2000–2005. Overall, life expectancy at birth in the African Region was 48 years in 2002; it would have been 54 years in the absence of HIV/AIDS. In the countries of southern Africa life expectancy would have been 56 years instead of 43 years. In the most infected areas, at the height of the crisis, before the antiretrovirals were distributed, such as South Africa, life expectancy was reported to be as low as 30. The HIV/AIDS epidemic is reported by the World Health Organization Report of 2004 to have killed more than 20 million people. Today, an estimated 34–46 million others are living with HIV/AIDS. Two-thirds of the total live in Africa, where about one in 12 adults is infected, most of those in southern Africa where as many as 40 percent of the population is infected, and one-fifth in Asia. Totaling CIA world fact book vital statistics reveals a total of 26.5 million HIV infected Africans with 2.3 million fatalities in 2004. Globally in 2003, 3 million people died and 5 million others became infected. Almost 6 million people need treatment. Four million children have been infected since the virus first appeared. Of the 5 million people who became infected with the virus in 2003, 700 000 were children, almost entirely as the result of transmission during pregnancy and childbirth, or from breastfeeding.

2. The first cases of what would later become known as AIDS were reported in the United States in June of 1981. Since then, 1.7 million people in the U.S. are estimated to have been infected with HIV, including more than 580,000 who have already died and

more than 1.1 million estimated to be living with the disease today. There were an estimated 56,300 new HIV infections in the U.S. in 2006. In 2009 it was reported by D.C. health officials that at least 3 percent of the people living in the nation's capital are infected. The report says that the number of HIV and AIDS cases in D.C. jumped 22 percent from the nearly 12,500 reported in 2006. Almost 1 in 10 residents between ages 40 and 49 are living with HIV, and black men had the highest infection rate at almost 7 percent. The report says that the virus is most often transmitted by men having sex with men, followed by heterosexual transmission and injection drug use. Subsequently that number has risen as high as 5%.

3. HIV (Human Immunodeficiency Virus) refers to two closely related viruses that cause AIDS (Acquired Immune Deficiency Syndrome) in separate geographical regions, is part of a class of retroviruses known as lentiviruses traditionally associated with chronic arthritis and anemia. Lentiviruses are retroviruses that cause slowly progressive often fatal disease. HIV interferes with the body's ability to fight off viruses, bacteria and fungi that cause diseases such as pneumonia and meningitis, by damaging the immune system. The virus and the infection itself are known as HIV. HIV tests detect antibodies. HIV attaches itself to the T lymphocytes, that turn the immune system on and off, with a protein called DF4 on their surface, which is the actual hookup point for HIV. Once inside a T cell, the virus releases its genetic template (RNA) along with a chemical that allows it to be transcribed into the cell's own DNA. All offspring of the altered T cell thus contain the virus's genetic code. The T cell also may become a factory for new infectious HIV, which lyse it as they burst out.

4. HIV is transmitted through the exchange of blood during sexual intercourse, needle sharing or blood transfusion. HIV interferes with the body's ability to fight off viruses, bacteria and fungi that cause diseases such as pneumonia and meningitis, by damaging the immune system. The virus and the infection itself are known as HIV. HIV tests detect antibodies. Acquired immune-deficiency syndrome (AIDS) is the name given to the later stages of an HIV infection. Healthy people have between 500 and 1,500 CD4 cells in a milliliter of blood if the number is less than 200 CD4 cells or if the CD4 percentage is less than 14%, the person has AIDS. A person's viral load is also considered important in determining the danger of infection posed by AIDS. Since the development anti-retroviral drugs in 1993 AIDS mortalities and new infections have gone down. People have defended themselves by a number of methods. Practicing safe sex and abstinence and adopting needle exchange programs so IV drug users are not forced by necessity to share needles. Blood donation outfits now test all donated blood for HIV infection to prevent transmitting the virus in a blood transfusion.

5. Globally, unprotected sexual intercourse between men and women is the predominant mode of transmission of the virus. Other important modes of transmission include unprotected penetrative sex between men, injecting drug use, and unsafe injections and blood transfusions. The most explosive growth of the epidemic occurred in the mid-1990s, especially in Africa. The trends in HIV prevalence among pregnant women attending the same antenatal clinics since 1997 show that the epidemics in the countries of southern Africa are much larger than elsewhere in sub-Saharan Africa – and that the

gaps appear to be widening. In eastern Africa HIV prevalence is now less than half that reported in southern Africa and there is evidence of a modest decline. In western Africa prevalence is now roughly one-fifth of that in southern Africa and no rapid growth is occurring. The most dramatic effect of the HIV/AIDS epidemic has been on adult mortality (18). In the worst-affected countries of eastern and southern Africa, the probability of a 15-year-old dying before reaching 60 years of age has risen sharply – from 10–30% in the mid-1980s to 30–60% at the start of the new millennium. In community-based studies in eastern Africa, mortality among adults infected with HIV was 10–20 times higher than in non-infected individuals.

6. Two to fifteen years may pass between initial infection and onset of the AIDS syndrome. Acquired immune-deficiency syndrome (AIDS) is the name given to the later stages of an HIV infection. Six to twelve weeks after HIV penetrates the body's natural defenses and programs the white blood cells the first symptom to appear is flu-like glandular fever with swollen glands in the neck and armpits. Blood test will usually become positive at this time. HIV AIDS symptoms begin when the immune system starts to break down. Several glands in the neck and armpits may swell and remain swollen for more than three months. This is known as persistent generalized lymphadenopathy (PGL). As the HIV disease progresses, the person starts showing up other AIDS symptoms. A simple boil or warts may spread all over the body. The mouth may become infected by thrush (thick white coating), or may develop some other problem. Dentists are often the first to be in a position to make the diagnosis. People may develop severe shingles (painful blisters in a band of red skin), or herpes. They may feel overwhelmingly tired all the time, have high temperatures, drenching night sweats, lose more than 10% of their body weight, and have diarrhea lasting more than a month. The final stage is AIDS. Most of the immune system is intact and the body can deal with most infections, but one or two more unusual infections become almost impossible for the body to get rid of without medical help, usually intensive antibiotics.

7. Acquired immunodeficiency syndrome (AIDS) has as its basis acquired immuno-incompetence. The retrovirus (human T cell leukemia virus, lymphotropic virus type 3, or human immunodeficiency virus (HIV) appears to be transmitted by sexual contact, contaminated syringes, or blood transfusion. About 5% of the population is reported to be infected in Washington DC. Most American patients are homosexuals with multiple partners, abusers of intravenous drugs, hemophiliacs receiving factor VIII concentrate before it was synthesized, or recipients of multiple transfusions. Vertical transmission from mother to fetus has been reported. Normal, nonsexual, physical contact, even in a household, will not spread disease. The prodromal syndrome includes fatigue, weight loss, fever and diarrhea. The physician may find generalized lymphadenopathy, multiple purple "bruises" on the legs (Kaposi's sarcoma), or recurring infections. Be alert for the chronic cough of *Pneumocystis carinii* pneumonia. Serum antibody to HIV was found in 95% of patients with AIDS, 87% of those with lymphadenopathy syndrome and than 1% of controls.

8. The immune system fights a long, ferocious, but ultimately losing battle against the AIDS virus. Healthy people have between 500 and 1,500 CD4 cells in a milliliter of

blood if the number is less than 200 CD4 cells or if the CD4 percentage is less than 14%, the person has AIDS. A person's viral load is also considered important in determining the danger of infection posed by AIDS. In late stages of the infection, victims lose and replace about 2 billion CD4 lymphocyte cells a day, while new virus particles appear at a rate between 100 million and 680 million a day. Other viral disease, such as leukemia, flu, or hepatitis may also trigger such high viral loads, but for a relatively brief time. 9 out 10 people who test positive will develop further problems. The San Francisco study showed that without use of the latest therapies: 50% with HIV develop AIDS in ten years, 70% with HIV develop AIDS in fourteen years, and of those with AIDS, 94% are dead in five years. No antibodies have yet been found in a human being that are effective in the long term against HIV. That is why a vaccine is so difficult to find. Attempts have even been made to flood the bloodstream with small pieces of cell wall (CD4) so the viruses are unable to touch living CD4 white cells.

9. According to a study in 14th International AIDS Conference, average annual cost of treating HIV-positive patients in the United States can vary from about $34,000 to $14,000, depending on the stage of the virus. A WHO study found that a combination of universal voluntary HIV testing and immediate antiretroviral treatment (ART) following diagnosis of HIV infection could reduce HIV cases in a severe generalized epidemic by 95 percent within 10 years. The newest and most effective combination AIDS drug is efavirenz/emtricitabine/ tenofovir (Atripla) that promises to totally eliminate viral loads but comes with the side effect of hepatoxicity and hepadependence. The NIH is promoting a pre-exposure prophylaxis, known as PrEP. The mint family (Lamiaceae) produces a wide variety of constituents with medicinal properties. Several family members have been reported to have antiviral activity, including lemon balm (*Melissa officinalis L.*), sage (*Salvia spp.*), peppermint (*Mentha x piperita L.*), hyssop (*Hyssopus officinalis L.*), basil (Ocimum spp.) and self-heal (*Prunella vulgaris L.*). Aqueous *P. vulgaris* extracts inhibited HIV-1 infectivity, primarily through inhibition of early, post-virion binding events. The ability of aqueous extracts to inhibit early events within the HIV life cycle suggests that these extracts (or purified constituents) responsible for the antiviral activity are promising microbicides and/or antivirals against HIV-1.

Eight Classes of Retroviral Medicine

Class	Drugs	Notes
Nucleoside analogue reverse transcriptase inhibitors (NRTIs)	zidovudine (Retrovir), lamivudine (Epivir), didanosine (Videx), stavudine (Zerit), abacavir (Ziagen), (Epcicom) (Trizivir) emtricitabine (Emtriva) (Truvada combination)	Inhibit the replication of an HIV enzyme called reverse transcriptase; side effect of zidovudine is bone marrow suppression, which causes a decrease in the number of red and white blood cells, 5 percent of people treated with abacavir experience rash, fever, fatigue, nausea, vomiting, diarrhea and abdominal pain, didanosine caused

		fatal liver disease. Symptoms usually appear within the first six weeks of treatment and generally disappear when the drug is discontinued.
Protease inhibitors (PIs)	saquinavir (Invirase), ritonavir (Norvir)(Kaletra, Aluvia) indinavir (Crixivan), nelfinavir (Viracept), amprenavir (Agenerase), lopinavir/ritonavir (Kaletra), atazanavir (Reyataz), tipranavir (Aptivus), Darunavir (Prezista) combination	PIs interrupt HIV replication at a later stage in its life cycle by interfering with an enzyme known as HIV protease. HIV particles become structurally disorganized and noninfectious. Darunavir is for people who haven't responded to treatment with other drugs. Darunavir is used with ritonavir and other anti-HIV medications. side effects are nausea, diarrhea and other digestive tract problems
Non-nucleoside reverse transcriptase inhibitors (NNRTIs)	nevirapine (Viramune), delavirdine (Rescriptor), efavirenz (Sustiva), etravirine (Intelence)	Bind directly to the enzyme reverse transcriptase; side effect rash and aggravation of mood disorders.
Nucleotide reverse transcriptase inhibitors (NtRTIs) "nuke" family	tenofovir (Viread) (Truvada)	Inhibits both HIV and hepatitis B more quickly than NRTIs, side effects, nausea, vomiting, diarrhea and gas, HBV resurgence if discontinued.
Fusion inhibitors	enfuvirtide (Fuzeon)	Combination; Injection to suppress resistant strains of HIV
Integrase inhibitors	raltegravir (Isentress)	Combination; blocks replication of the HIV integrase enzyme; side effects include diarrhea, nausea, headache and fever.
Chemokine co-receptor inhibitors	maraviroc (Selzentry)	Highly effective treatment for a particular type of HIV infection called CCR5-tropic HIV-1; Side effects may include liver and cardiovascular problems, as well as cough, fever, upper respiratory tract infections, rash and abdominal pain.
Combination	efavirenz/emtricitabine/tenofovir (Atripla), emtricitabine-tenofovir (Truvada), abacavir/lamivudine (Epzicom)	Hepatoxicity and hepatic dependence noted for Truvada (2004) and Atripla (2006). Highest marks go to Atripla, the newest drug, that promises to totally eliminate viral loads.

	zidovudine/lamivudine/abacavir (Trizivir), lopinavir/ritonavir (Kaletra, Aluvia) zidovudine/lamivudine (Combivir)	
Pre-exposure prophylaxis	PrEP	N/a

Source: Hospitals & Asylums HA-24-4-11

10. The spermicide nonxynol-9 is inhibitory to HIV, and if used in combination with condoms, may decrease transmission of the virus. There is no therapeutic intervention to date that has permanently reverse the immunodeficiency (except in a few bone marrow transplant recipients who ceased to be HIV positive). Patients often succumb to aggressive Kaposi's sarcoma or other runaway infections, such as *P. carinii* pneumonia. The overall mortality rate in the first 1500 cases was close to 40%. The newest and most effective combination AIDS drug is efavirenz/emtricitabine/ tenofovir (Atripla) that promises to totally eliminate viral loads but comes with considerable hepatoxicity and hepadependence that can be mitigated with Pegalated interferon alpha-2B injections (Pegasys). Zidovudine (ZDV) was reported to reduce HIV transmission by 66% between 1991 and 2006 combination antiretroviral therapy (ART) has resulted in a drop in Maternal To Child Transmission (MTCT) rates to below 2%.

Intrapartum Antiretroviral Therapy

Regimen	Maternal therapy	Neonatal therapy
ZDV	2 mg/kg IV bolus, then 1 mg/kg/hr until delivery	2 mg/kg PO q6h x 6 wks
Nevirapine	200 mg PO x 1 at onset of labor	2 mg/kg PO at 48-72 hrs of live
ZDV/nevirapine	ZDV, 2mg/kg IV bolus then 1 mg/kg/hr until delivery; nevirapine, 200 mg PO x 1 at onset of labor	ZDV, 2 mg/kg PO q6h x 6 wks; mevirapine, 2 mg/kg PO at 48-72 hrs of life
ZDV/lamivudine	ZDV, 600 mg PO at onset of labor, then 300 mg PO q12h until delivery 3TC, 150 mg PO at onset of labor, then 150 mg PO q12h until delivery	ZDV 4 mg/kg PO q12 Lamivudine, 2 mg/kg PO q12h for 7 d

Source: Wright, Wyatt, Lin & Goodenberger '03 Pg. 83

11. In the United States an estimated 7000 pregnancies are complicated by HIV. HIV is a single-stranded RNA virus. Transmission from mother to fetus can occur by exposure of the infant to the maternal birth canal and through breast milk. 40-80% of maternal to child transmission occur intrapartum. Zidovudine (ZDV) was reported to reduce HIV transmission by 66% between 1991 and 2006 combination antiretroviral therapy (ART) has resulted in a drop in Maternal To Child Transmission (MTCT) rates to below 2%. The clinical scenario is that antepartum ZDV is administered 100 mg 5 x daly, intrapartum ZDV is administered 2 mg/kg IV over 1 hr. then 1 mg/kg/hr until delivery. Neonatal ZDV 2 mg/kg q6h x 6 weeks beginning 8-12 hours after birth. Postpartum the antiviral regimen used antepartum is instituted. HIV drugs mothers should avoid are Efavirenz (Sustiva) that causes anencephaly, anopthalmia, and cleft palate and Amprenavir (Agenerase) that causes increased propylene glycol. Antiretroviral therapies that are considered safe for pregnant mothers are taken one drug from column A and one combination from column B.

Antiretroviral Therapies Considered Safe for Pregnant Mothers

Column A	Column B
Nelfinavir (Viracept)	Didanosine (Videx) and Zidovudine (Retrovir)
Indinavir (Crixivan)	Lamivudine (Epivir, Epivir-HBV) and Zidovudine (Retrovir)
Ritonavir (Norvir)	Stavudine (Zerit) and Lamivudine (Epivir, Epivir-HBV)
Saquinavir (Fortovase, Invirase)	Stavudine (Zerit) and Didanosine (Videx)

Source: Wright, Wyatt, Lin & Goodenberger '03: Pg. 80

12. Pregnant women with HIV take HIV medicines to reduce the risk of mother-to-child transmission of HIV and to protect their own health. An estimated 530,000 children were infected with HIV in 2006, predominantly through mother-to-child transmission (MTCT). The use of antiretroviral therapies to reduce mother-to-child transmission of HIV (MTCT) is an important advance in preventing HIV infections in children. Zidovudine (ZDV) was reported to reduce HIV transmission by 66% between 1991 and 2006. Where mothers were routinely receiving ZDV in the last trimester of pregnancy and their babies were receiving ZDV in the first week of life, the addition of a nevirapine (NVP) dose to mother compared to mother and baby NVP dosing showed similar reductions in transmission. In well resourced settings, the dual approach of starting ongoing combination antiretroviral therapy (ART) in pregnancy for those women who qualify for it, and using ART through the pregnancy and stopping post-partum for those with higher CD4 counts, combined with the avoidance of breastfeeding, has become the routine management in pregnancy. This has resulted in a drop in MTCT rates to below 2%. The 2006 WHO guidelines recommend that women with CD4 counts less than 200/mm3 or Stage 3 or 4 clinical disease start and continue ART. In addition, the

guidelines recommend starting ongoing ART in women with CD4 counts between 200 and 350/mm3 where this is feasible in the services.

13. Persistent generalized lymphadenopathy (PGL), swollen lymph nodes is usually the first AIDS symptom that develops and indicates that a person should begin taking antiretroviral therapy if they have not done so already. There are many causes for PGL, swollen lymph nodes, so antibiotics are used to treat bacterial infections, and Cidofivir (Vistide), the anti-herpes for AIDS, substitute for Acyclovir (Zovirax), are the first line of defense. The most common reason for swollen lymph nodes in the general population is the common cold. Otherwise it is necessary to diagnose and treat the cause of the lymphatic flare up. Coronavirus and Rhinovirus, are associated with the swollen lymph nodes of the common cold for which there are a number of OTC remedies such as Diphenhydramine (Benylin, Benadryl), Chlorpheniramine (Telachlor, Chlo-Amine, Chlor-Trimeton, Aller-Chlor), Brompheniramine (Bromphen, Nasahist B, Dimetane Extentabs), Ipratropium intranasal (Atrovent). Flu-like symptoms were formerly effectively treated overnight with OTC Theraflu but the FDA now approves Allegra (Sanofi-Aventis), Children's Allegra (fexofenadine) and Allegra-D (fexofenadine and pseudoephedrine).

Common AIDS Symptoms and Medicine

Pathogen	**Symptoms**	**Drug Monograph**
persistent generalized lymphadenopathy (PGL)	Rapid enlargement of a previously stable lymph node or a group of nodes	Begin or intensify antiretroviral therapy, causes vary, use antibiotics, Cidofivir (Vistide) is the anti-herpes for AIDS substitute for Acyclovir (Zovirax), that may be improved with Foscarnet Sodium (Foscavir) injection
Coronavirus, Rhinovirus, Influenza A & B, Parainfluenza, Respiratory syncytial virus	Swollen lymph nodes, cold and flu-like symptoms lasting 4 days to a week, bronchiolitis, pneumonia	Cold remedies: Diphenhydramine (Benylin, Benadryl), Chlorpheniramine (Telachlor, Chlo-Amine, Chlor-Trimeton, Aller-Chlor), Brompheniramine (Bromphen, Nasahist B, Dimetane Extentabs) Bed rest for fevers. Flu vaccine ineffective. OTC Theraflu, Allegra (Sanofi-Aventis) and Children's Allegra (fexofenadine) and Allegra-D (fexofenadine and pseudoephedrine); Prescription Oseltamivir (Tamiflu) and Zanamivir (Relenza). Antibiotics for pneumonia, ampicillin

		(Principen), azithromycin (Zithromax), levofloxacin (Levaquin). Avoid asthma inhalers that contain corticosteroids, that suppress the immune system. Fatal adverse events with salmeterol inhalers. Smoke jimson weed for asthma and mullein for bronchitis.
Adenovirus, Norovirus, Echovirus and Rotavirus acquired from children	Upper and lower respiratory tract infections (URI, LRI), conjunctivitis, diarrhea	Rotovirus vaccine (Rotarix GlaxoSmithKline GSK) (Rotateq Merck & Co.), LigoCyte phase II intranasal norovirus, White rice water diet. Imodium (Loperamide), Immune Globulin IV for severe cases
Salmonellosis *Salmonella* spp bacteria acquired by ingesting contaminated food and water	Severe diarrhea, fever, chills, abdominal pain and, occasionally, vomiting, contagious when shed in bile	Hydration, white rice water diet, imodium (Loperamide), trimethoprim-sulfamethoxazole (Septra), metronidazole (Flagyl ER) 10 days max
Candidiasis *Candida albicans* acquired from antibiotic resistance	Inflammation of the mouth or genitals and thick white coating on the mucous, called thrush, usually found in children.	Antimycotics, antifungal drugs: topical clotrimazole (Fungoid Solution, Gyne-Lotrimin, Lotrimin, Lotrisone, Mycelex), topical nystatin (Mycostatin, Mykacet, Nystat-Rx, Nystop, Pedi-Dri), fluconazole (Diflucan), and topical ketoconazole (Extina, Nizoral, Nizoral A-D, Xolegel). Take metronidazole (Flagyl ER) to avoid antibiotic resistant Candidiasis
Cryptosporidiosis *Cryptosporidium* spp. Protozoal parasite acquired from soil, bird or bat droppings	Intestinal and bowel infection causes severe diarrhea, cramps, malnutrition and weight loss in AIDS patients	White rice water diet, Primary: nitazoxanide (Alinia) Alternates: metronidazole (Flagyl ER), Trimethoprim-sulfamethoxazole (Septra)
Cryptococcal meningitis *Cryptococcus neoformans*	Fever, hallucinations, headache, nausea and vomiting, sensitivity to light, stiff neck	Antimycotics: fluconazole (Diflucan), flucytosin (Ancobon), amphotericin B IV (Amphotec, Abelcet, AmBisome), Paromomycin Sulfate (Humatin)
Tuberculosis (TB) *Mycobacterium*	Only 10% develop pulmonary TB involving	Isoniazid (Rifamate, Rifater), rifampicin (Rifadin, Rimactane,

tuberculosis acquired from cough or sneeze droplets	fever, dry cough, weight loss and abnormalities, 10% of these develop TB pleuritis that infects the lining between the lung and abdominal cavity and causes chest pain. TB kills two out of three with untreated symptoms, death rate is 5% with treatment	Rifamate, Rifater), pyrazinamide (Daraprim, Rifater), and ethambutol (Myambutol) for two months, then isoniazid and rifampicin alone for four months. Cured at six months (2 to 3% relapse). For latent tuberculosis, standard treatment is six to nine months of isoniazid. If the organism is fully sensitive, isoniazid, rifampicin, and pyrazinamide for two months, combination Rifater (sanofi-aventis) followed by isoniazid and rifampicin for four months, ethambutol need not be used. Hepatoxic
Toxoplasmosis *Toxoplasma gondii* Spread by cat feces	Enlarged lymph nodes, headache, mild fever, muscle pain, sore throat, in AIDS patients, retinal inflammation and seizures	Combination - Antibiotic: sulfadiazine ie. Trimethoprim-sulfamethoxazole (Septra) and Antimalarial : pyrimethamine (Daraprim) and Antidote: leucovorin (Wellcovorin) Alternate: Atovaquone (Mepron)
Varicella-zoster virus	Chicken pox and shingles	Measles, Mumps, Rubella and Varicella vaccine (MMRV, ProQuad, Merck & Co., Inc.) or Varicella vaccine (VARIVAX, Merck & Co.); Cidofivir (Vistide), Acyclovir (Zovirax), Valtrex (Valacyclovir)
Cytomegalovirus (CMV) herpes virus acquired from bodily fluids	After long latency causes damage to the eyes, digestive tract, lungs or other organs, tumorigenic	Cidofivir (Vistide), Acyclovir (Zovirax), Foscarnet Sodium (Foscavir) injection, topical interferon alpha-2B for eyes and epidermal eruptions
Kaposi's sarcoma human herpesvirus-8 (HHV-8)	Bluish-red or purple bumps on the skin, caused by tumor of the blood vessel walls, may involve organs, in lung maybe bloody sputum, shortness of breath	topical interferon alpha-2B, Cidofivir (Vistide), Acyclovir (Zovira), Foscarnet Sodium (Foscavir) injection, intense AIDS drugs, Antineoplastic: Cisplatin (Platinol)
Lymphomas	Begin with painless swelling of the lymph nodes in neck, armpit or	Topical or pegylated interferon alpha-2B, Cidofivir (Vistide), Acyclovir (Zovirax), Foscarnet

	groin	Sodium (Foscavir) injection, Antineoplastic: Cisplatin (Platinol)

Source: Hospitals & Asylums HA-24-4-11

14. Gastrointestinal problems and diarrhea are probably the most dangerous common manifestation of HIV/AIDS. Adenovirus, Norovirus, Echovirus and Rotavirus acquired from children are the most common viral causes of upper and lower respiratory tract infections (URI, LRI), conjunctivitis, diarrhea. There is a Rotovirus vaccine (Rotarix GlaxoSmithKline GSK) (Rotateq Merck & Co.) and LigoCyte is entering phase II of an intranasal norovirus vaccine clinical trial. Home treatment for diarrhea, that tends to suppress appetite, is white rice water diet, the objective is to eat white rice boiled for the proper time in 3 parts instead of 2 parts water, and drink the excess water to keep hydrated. Imodium (Loperamide) is an effective diarrhea remedy available without prescription. Immune Globulin IV can be administered for severe cases of viral diarrhea. It here that AIDS patients need a strong warning that antibiotics cause gastroenteritis in general and a particular condition called pseudomembranous colitis, known as antibiotic associated colitis, in particular, resulting from the proliferation of antibiotic resistant *Clostridium difficile* bacteria. Metronidazole (Flagyl ER) is an antibiotic and antiamoebic that treats antibiotic associated colitis as well as antibiotic associated Candidiasis, and does not disturb the gut, it is however carcinogenic and not very effective against viruses or funguses, although it causes the least antibiotic resistance. The most highly recommended broad spectrum antibiotic for AIDS patients against bacterial infection, while protecting the gut are sulfaminides such as trimethoprim-sulfamethoxazole (Septra). Salmonellosis symptoms include severe diarrhea, fever, chills, abdominal pain and, occasionally, vomiting. It is caused by *Salmonella* spp bacteria acquired by ingesting contaminated food and water. Like all diarrheas salmonella is treated with hydration, white rice, and imodium (Loperamide), and because it has a bacterial cause trimethoprim-sulfamethoxazole (Septra) or metronidazole (Flagyl ER) 10 days max should be effective where other antibiotics only inflame the gut. Cryptosporidiosis occurs when contaminated food or water is ingested and the *Cryptosporidium* spp. protozoal parasite, acquired from soil, bird or bat droppings, that grows in the intestines and bile ducts, leading to severe, chronic diarrhea in people with AIDS. A white rice water diet, is needed. The primary treatment for Cryptosporidiosis is nitazoxanide (Alinia) and alternatively metronidazole (Flagyl ER) or Trimethoprim-sulfamethoxazole (Septra).

15. Candidiasis is a yeast infection that causes inflammation of the mouth or genitals and a thick white coating on the mucous, known as thrush. AIDS is often diagnosed by dentists noting the oral condition. *Candida albicans* the yeast causing Candidiasis is often acquired as the result of antibiotic resistance that metronidazole (Flagyl ER) is very effective at suppressing, and is the drug of choice for the treatment of mouth infections, to prevent the otherwise nearly inevitable antibiotic resistant Candidiasis. For the treatment of serious Candidiasis antimycotics, antifungal drugs, such as topical clotrimazole (Fungoid Solution, Gyne-Lotrimin, Lotrimin, Lotrisone, Mycelex), topical nystatin (Mycostatin, Mykacet, Nystat-Rx, Nystop, Pedi-Dri), topical ketoconazole

(Extina, Nizoral, Nizoral A-D, Xolegel) and oral fluconazole (Diflucan), are used. Cryptococcal meningitis is a common central nervous system infection, caused by a fungus *Cryptococcus neoformans* that is present in soil, and may also be associated with bird or bat droppings. It's symptoms are fever, hallucinations, headache, nausea and vomiting, sensitivity to light and stiff neck. Cryptococcal meningitis is treated with antimycotics: fluconazole (Diflucan), flucytosin (Ancobon), amphotericin B IV (Amphotec, Abelcet, AmBisome), and Paromomycin Sulfate (Humatin). AIDS doesn't appear to infect the nerve cells but can cause neurological symptoms such as confusion, forgetfulness, depression, anxiety, trouble walking and AIDS dementia complex, which leads to behavioral changes and diminished mental functioning.

16. Tuberculosis (TB) is the most common opportunistic infection associated with HIV, in developing nations, and a leading cause of death among people living with AIDS. Only 10% of infected population develops symptoms. Pulmonary TB involves fever, dry cough, weight loss and abnormalities, 10% of these develop TB pleuritis that infects the lining between the lung and abdominal cavity and causes chest pain. TB kills two out of three with untreated symptoms, death rate is 5% with treatment. The DOTS treatment prescribed by the world health organization is a combination of Isoniazid (Rifamate, Rifater), rifampicin (Rifadin, Rimactane, Rifamate, Rifater), pyrazinamide (Rifater), and ethambutol (Myambutol) for two months, then isoniazid and rifampicin alone for four months. TB is cured at six months with only a 2 to 3% relapse rate. For latent tuberculosis, standard treatment is six to nine months of isoniazid. If the organism is fully sensitive, isoniazid, rifampicin, and pyrazinamide for two months, combination Rifater (Sanofi-Aventis) followed by isoniazid and rifampicin for four months, ethambutol need not be used. Antimalarials are hepatoxic. Toxoplasmosis is a potentially deadly infection caused by *Toxoplasma gondii*, a parasite spread primarily by infected cats who pass the parasites in their stools, and the parasites may then spread to other animals. The treatment for Toxoplasmosis involves a combination of Antibiotic: sulfadiazine ie. Trimethoprim-sulfamethoxazole (Septra) or Atovaquone (Mepron) and the Antimalarial: pyrimethamine (Daraprim) with Antidote: leucovorin (Wellcovorin). Varicella-zoster virus causes chicken pox in children and shingles in elders and AIDS patients. There is a Measles, Mumps, Rubella and Varicella vaccine (MMRV, ProQuad, Merck & Co., Inc.) or Varicella vaccine (VARIVAX, Merck & Co.). Shingles can also be treated with Cidofivir (Vistide), Acyclovir (Zovirax), Valtrex (Valacyclovir). Cytomegalovirus (CMV) is a common herpes virus, that is transmitted in body fluids such as saliva, blood, urine, semen and breast milk; after long period of latency the virus resurfaces causing damage to the eyes, digestive tract, lungs or other organs and is tumorigenic. CMV is treated with topical interferon alpha-2B for eyes and epidermal eruptions, Cidofivir (Vistide), the AIDS substitute for Acyclovir (Zovirax), and Foscarnet Sodium (Foscavir) injection if resistant. Primary prophylaxis for CMV is Valgancicovir 900 mg po bod with food x 14-21 days for mild cases Ganciclovir 5 mg/kg IV q 12h x 14-21 days or Foscarnet (60 mg/kg IV q8h or 90 mg/kg q12h) x 14-21 days. Post treatment suppression Valganciclovir 900 mg po once day until CD4> 100 x 6 months.

17. Cancers common to HIV/AIDS are Kaposi's sarcoma and lymphoma. Kaposi's sarcoma is a tumor of the blood vessel walls caused by human herpesvirus-8 (HHV-8).

Although rare in people not infected with HIV, it's common in HIV-positive people. Kaposi's sarcoma usually appears as pink, red or purple lesions on the skin and mouth. In people with darker skin, the lesions may look dark brown or black. Kaposi's sarcoma can also affect the internal organs, including the digestive tract and lungs. The initial treatment is to intensify AIDS drugs, apply topical interferon alpha-2B on epidermal eruptions, Acyclovir (Zovira), then Cidofivir (Vistide) and then Foscarnet Sodium (Foscavir) injection, before taking toxic antineoplastics. Lymphomas usually begin in the lymph nodes with a painless swelling of the lymph nodes in the neck, armpit or groin. Lymphoma occurs when B or T cells acquire changes that allow them to grow uncontrollably. The abnormal cells accumulate in the lymphatic system. There are two types of lymphoma: Hodgkin and non-Hodgkin lymphoma. The majority of Hodgkin lymphomas are classical Hodgkin lymphomas, which consist of characteristic cells called Reed-Sternberg cells. Another much more rare type of Hodgkin lymphoma is nodular lymphocyte-predominant Hodgkin lymphoma. The most common are B cell cancers called diffuse large B cell lymphoma and follicular lymphoma. Other B cell non-Hodgkin lymphomas include Burkitt lymphoma, immunoblastic large cell lymphoma, precursor B-lymphoblastic lymphoma, and mantle cell lymphoma. T cell non-Hodgkin lymphomas include mycosis fungoides, anaplastic large cell lymphoma, and precursor T-lymphoblastic lymphoma. To treat cancer intensify AIDS drugs, take Cidofivir (Vistide) and then Foscarnet Sodium (Foscavir) and pegylated interferon alpha-2B (Pegasys) injections. The first resort intravenous antineoplastic therapy, that can be used alone or in combination to treat most cancers, is Cisplatin (Platinol), that contains the precious metal platinum. Localized Kaposi's sarcoma, Castleman's disease and body cavity lymphoma lesions respond to radiotherapy laser surgery or intralesional chemotherapy. Castleman's disease responds to ganciclovir and valganciclovir.

§352 Endocrinology

A. The endocrine system is the system of ductless glands, each of which secretes different types of hormones directly into the bloodstream to maintain homeostasis. The endocrine system is in contrast to the exocrine system, (e.g. salivary glands) which secretes its chemicals using ducts into the digestive system. The word endocrine derives from the Greek words "endo" meaning inside, within, and "crinis" for secrete. The endocrine system is an information signal system like the nervous system, yet its effects and mechanism are classifiably different. The endocrine system's effects are slow to initiate, and prolonged in their response, lasting from a few hours up to weeks. The nervous system sends information very quickly, and responses are generally short lived. Hormones are substances (chemical mediators) released from endocrine tissue into the bloodstream where they travel to target tissue and generate a response. Hormones regulate various human functions, including metabolism, growth and development, tissue function, sleep, and mood. The field of study dealing with the endocrine system and its disorders is endocrinology, a branch of internal medicine. Features of endocrine glands are, in general, their ductless nature, their vascularity, and usually the presence of intracellular vacuoles or granules storing their hormones. In contrast, exocrine glands, such as salivary glands, sweat glands, and glands within the gastrointestinal tract, tend to be much less vascular and have ducts or a hollow lumen. In addition to the specialized

endocrine organs, many other organs that are part of other body systems, such as the kidney, liver, heart and gonads, have secondary endocrine functions. For example the kidney secretes endocrine hormones such as erythropoietin and renin. The endocrine system is made of a series of glands that produce chemicals called hormones. A number of glands that signal each other in sequence are usually referred to as an axis, for example, the hypothalamic-pituitary-adrenal axis.

1. Chemically, the hormones fall into three general categories. The first comprises hormones derived from single amino acids. They are the amines, such as norepinephrine, epinephrine and dopamine, which derive from the amino acid tyrosine, and the thyroid hormones, 3, 5, 3' – triiodothyroninr (T_3) and 3, 5, 3', 5' – tetraiodothyronine (thyroxine, T4) which derive from the combination of two iodinated tyrosine amino acid residues. The second category is composed of peptides and proteins. These can be as small as thryotropin-releasing hormone (three amino acids) and as large and complex as growth hormone and follicle-stimulating horone, which have about 200 amino acid residues and molecular weights in the range of 25,000-30,000. The third category comprises the steroid hormones, which are derivatives of cholesterol and can be grouped into two types: (1) those with an intact steroid nucleus such as the gonadal and adrenal steroids and (2) those with a broken steroid nucleus (the B ring) such as vitamin D and its metabolites. The classical hormones involved in the process of growth are GH, thyroid hormones, insulin, glycocorticoids, androgens and estrogens.

2. Hormones produced by the gonads (androgens, estrogen, progestogens) and the anterior pituitary gland (luteinizing hormone [LH], follicle-stimulating hormone [FSH], growth hormone [GH], and prolactin) interact to regulate the growth and structural integrity of the reproductive organs, the production of gametes, the patterns of sexual behavior, the phenotypic differences between the sexes, and the continuation of the species (through their effects on ovulation, spermatogenesis, pregnancy, and lactation). Plasma levels of calcium and phosphate ions are controlled by parathyroid hormone (PTH) from the parathyroid glands. Leptin is a hormone produced by white adipose tissue that acts on the brain to decrease food intake and increase energy expenditure.
3. Once a hormone is released into the bloodstream it may circulate freely, if its water soluble, or it may be bound to a carrier protein. In general, amines, peptides, and proteins circulate in free form, whereas steroids and thyroid hormones are bound to transport proteins. A well-known exception to this rule is provided by the insulin-like growth factors, which, despite being polypeptides, circulate tightly attached to specific binding proteins, such as thyroid hormone-binding globulin (TBG), testosteroine-binding globulin (TeBG), and cortisol-binding globulin (CBG). Only a small portion of the circulating hormones are removed be target tissues, the bulk of the metabolic clearance rate of hormones, as measured by the volume of plasma cleared of the hormone per unit time, is done by the liver and kidneys, only a small fraction is excreted.

4. The pituitary gland is often called the master gland of the body, and is controlled by the brain, specifically the area known as the hypothalamus. The brain is the controller of the nervous system, but it is also one of the most important endocrine glands. Specialized nerve cells in certain parts of the brain, notably the hypothalamus, synthesize hormones

which are transported along the axon to the nerve terminal. Here they are released into the portal blood system, which carries them to the pituitary gland, just beneath the hypthalamus. In some cases, the axon of the neuroendocrine cells projects down to the pituitary cell itself. These hormones control, for example, salt and water balance, sexual function and behavior, lactation and the body's response to stress. The principal neurohormones known to be synthesized by the brain are : (1) corticotrophin-releasing hormone (CRF; CRH); (2) dopamine (prolactin-inhibiting hormone; PIF); (3) growth-hormone-releasing hormone (GRH; somatocrinin); (4) gonadotrophin-releasing hormone (GnRH; LHRH); (5) somatostatin (growth-hormone-inhibiting hormone; GHIH); (6) thyrotrophin-releasing hormone (TRH); (7) oxytocin; (8) vasopressin.

B. Diseases of the endocrine system are common, including conditions such as diabetes mellitus, thyroid disease, provide obese people with a diagnosis they can use to obtain disability insurance with. Endocrine disease is characterized by disregulated hormone release (a productive pituitary adenoma), inappropriate response to signaling (hypothyroidism), lack of a gland (diabetes mellitus type 1, diminished erythropoiesis in chronic renal failure, or structural enlargement in a critical site such as the thyroid (toxic multinodular goitre). Hypofunction of endocrine glands can occur as a result of loss of reserve, hyposecretion, agenesis, atrophy, or active destruction. Hyperfunction can occur as a result of hypersecretion, loss of suppression, hyperplastic or neoplastic change, or hyperstimulation. Endocrinopathies are classified as primary, secondary, or tertiary. Primary endocrine disease inhibits the action of downstream glands. Secondary endocrine disease is indicative of a problem with the pituitary gland. Tertiary endocrine disease is associated with dysfunction of the hypothalamus and its releasing hormones. As the thyroid, and hormones have been implicated in signaling distant tissues to proliferate, for example, the estrogen receptor has been shown to be involved in certain breast cancers. Endocrine, paracrine, and autocrine signaling have all been implicated in proliferation, one of the required steps of oncogenesis.

1. Endocrine disorders can result from hormone deficiency, hormone excess, or hormone resistance. With some notable exceptions (e.g., calcitonin), hormone deficiency always causes disease. Hormone deficiency is usually the result of a destructive process occurring in the gland in which the hormone is produced. Thus, infection by viruses or bacteria infarction due to impaired blood supply, physical compression by tumor growth, or attack by cellular or humoral immune mechanisms all may lead to impaired hormone production in most endocrine glands. Alternatively, hormone deficiency states can result from genetic defects in hormone formation such as gene deletion or mutation, failure to cleave a peptide hormone precursor to the active hormone, or a specific enzymatic defect in the formation of thyroid or steroid hormones. Hormone excess usually results in disease. The hormone may be overproduced by the gland that normally secretes it or by a tissue that is not normally an endocrine organ. Malignancies are often involved in each of these types of hormone excess. Some tumors of endocrine glands (e.g., pituitary, adrenal) are functional and secrete the appropriate hormone for the gland but in an unregulated manner. Other mechanisms of hormone excess include the effects of anti-receptor antibodies stimulating a receptor instead of blocking its activation, as in the common form of hyperthyroidism, and the ingestion of exogenous hormones, as in the

glucocorticoid excess resulting from its therapeutic use. Hormone resistance as a mechanism of disease has now been described for almost all hormones. In these disorders the hormone is present in normal or increased, amounts, but the expected actions of the hormones do not occur. In some cases because of a mutation, a structurally abnormal peptide hormone is present, causing the resistance (e.g., insulin, PTH). In other instances there are antibodies to the hormone or hormone receptor (e.g., insulin and its receptor). Finally, hormone resistance may also occur as the result of primary receptor defects (e.g., androgen and vitamin D receptors) or defects in the post-receptor mechanisms of hormone action (e.g., insulin, PTH). In general, hormone deficiency can be treated by hormone administration, but this can be dangerous because it leads to hormone excess. Hormone excess has come to be treated with specific anti-hormonal therapy in cancer treatment. Hormone resistance such as found in adult onset diabetes can be treated with certain medicines, if diet and exercise are not enough.

C. There are many causes of hypopituitarism, which can involve either hypothalamic or pituitary problems. The deficiencies can be variable for the different anterior pituitary hormones. The symptoms of hypopituitarism are slow in onset and are reflected in deficiencies in the target organs of the anterior pituitary. Hypogonadism, hypothyroidism, hypoadrenalism, and growth impairment (in children) may be present. People with panhypopituitarism tend to have sallow complexions because of the ACTH deficiency, and they become particularly sensitive to the actions of insulin because of the decreased secretion of the insulin antagonists, GH and cortisol. They are prone to develop hypoglycemia, particularly when stressed. Hypogonadism is manifested by amenorrhea in women, impotence in men, and loss of libido in both men and women. Some of the clinical manifestations of hypothyroidism are cold, dry skin, constipation, hoarseness and bradycardia. The myxedema (non-pitting edema) associated with severe hypothyroidism is rare. Adrenal insufficiency caused by the ACTH deficiency can result in weakness, mild postural hypotension, hypoglycemia, and loss in pubic and axillary hair.

1. The only symptom associated with the PRL deficiency is the incapacity for postpartum lactation. Hyperprolactinemia PRL secreting tumors account for approximately 70% of all anterior pituitary tumors. Finely wrinkled skin is characteristic of a deficiency of both gonadotropin and GH. The GH deficiency can also lead to fasting hypoglycemia in adults and children. In children, growth is impaired and the relative increase in adipose tissue and decrease in muscle mass may produce a "chubby" appearance. The symptoms of the endocrine deficiencies resulting from pituitary malfunction are not as severe as they are in primary thyroid, adrenal and gonadal deficiencies. Pituitary apoplexy results from acute hemorrhagic infarction of the pituitary gland, due to tumor, trauma, bleeding disorder or postpartum necrosis (Sheehan's syndrome). Sheehan's syndrome occurs when excessive blood is lost during and following delivery, resulting in ischemia of the enlarged pituitary of pregnancy. Damage to the pituitary can result in impaired secretion of some or all of the anterior pituitary hormones. The severity of the loss is variable, and most individuals show relatively normal secretin of the posterior pituitary hormones. Empty sella syndrome occurs when the subarachnoid space extends into the sella turcica, thereby partially filling it with cerebrospinal fluid. This compresses the pituitary and

enlarges the sella. The flattened pituitary may continue to function, sometimes even normally. It may be congenital or acquired and is relatively common and represents a major cause of sellar enlargement.

2. A deficiency in antidiuretic hormone (ADH) production by the posterior pituitary gland results in diabetes insipidus. People with diabetes insipidus are unable to concentrate urine normally and therefore excrete a large volume of urine. These individuals can have urinary flow rates as high as 25 L/day. Thirst increases as a result of the dehydration caused by the high urinary flow. People with neurogenic diabetes insipidus have high urine volume and a low urinary osmolality. If ADH is administered to people with this condition, they respond with a decrease in urinary volume and an increase in urinary osmolality. Those with nephrogenic diabetes insipidus have normal ADH production but lack a normal renal ADH response. If ADH is administered, the urinary flow rate does not decrease. Those with psychogenic diabetes insipidus are compulsive water drinkers. If water is withheld, the ADH secretion increases and urinary flow decreases while osmolality increases. Individuals with this disorder respond to treatment with ADH.

3. Many disorders can produce inappropriately high ADH concentrations relative to plasma osmolality. Some neoplasms produce ADH and release it into plasma, particularly pulmonary neoplasms, but also including some nonmalignant tumors. The syndrome of inappropriate secretion of antidiuretic hormone (SIADH) is associated with pulmonary tuberculosis and Grave's disease. In Graves' disease (the most prevalent form of hyperthyroidism) the thyroid is stimulated by abnormal antibodies that are agonists to thyroid-stimulating hormone (TSH). In SIADH, falling serum osmolality does not inhibit ADH secretion because control of ADH secretion is no longer linked to the normal regulatory mechanisms. A person with SIADH has a normal water consumption, water is retained because of inappropriately high ADH levels. The urine osmolality is inappropriately high (the free water clearance decreases). If water is restricted in an individual with this condition, serum sodium and osmolality will return to normal.

3. Common symptoms of hypothyroidism in adults are decreased BMR, hypothermia and cold intolerance. The skin tends to be dry and cool because of decreased sweating, decreased sebaceous gland secretion, and cutaneous vasoconstriction. There is insufficient adenosine triphosphate (ATP) for normal sweat formation., These people tend to feel cold in a warm room. There are neurologic symptoms as well. Adults with hypothyroidism tend to become dull and lethargic, their speech rate slows, and their reflex time is prolonged. They are prone to depression and will frequently sleep excessively. The term myxedema madness describes the psychiatric problems that can result. The patients tend to demonstrate a generalized non-pitting edema called myxedema. The skin thickens and coarsens, hair becomes thin, coarse, and brittle and lacks luster, facial features thicken, the tongue enlarges and there is noticeable periorbital edema. Gastrointestinal disturbances are common, menstrual irregularities, bradycardia, decreased myocardial contractility, and hence reduced cardiac output, ECG is reduced and there may be pericardial effusion as a result of the interstitial edema, may occur. Hypothyroidism can be caused by the destruction of gland due to surgery, irradiation,

autoimmune disease (Hashimoto's thyroiditis), cancer or thyroiditis; inhibition of thyroid hormone synthesis due to dietary iodine deficiency, enzyme defects for hormonogenesis, or antithyroid drugs; hypothalamic or pituitary disorders or resistance to thyroid hormone. Treatment must address the cause. Hypothyroidism can be easily treated using thyroid hormone medicine levothyroxine(i.e., Synthroid, Levoxyl, or Levothroid).

D. Hypothyroidism in children is different from hypothyroidism in adults because thyroid hormones are important for normal development and maturation. Untreated hypothyroidism in children results in mental retardation and growth stunting. hypothermia in adults. Hypothyroidism can be easily treated using thyroid hormone medicine Synthroid® and thyroid extract (or L-thyroxine). Symptoms of hyperthyroidism include nervousness, heat intolerance, palpitations, muscle weakness, increased defecation frequency, increased appetite, moist, warm skin, bruit over thyroid, goiter, tremor, fatigue, pretibial myxedema (Graves' disease), and eye problems (Graves' disease). Radioactive iodine taken by mouth, is absorbed by the thyroid gland, where it causes the gland to shrink and symptoms to subside, usually within three to six months. Anti-thyroid medications such as propylthiouracil and methimazole (Tapazole) gradually reduce symptoms of hyperthyroidism by preventing the thyroid gland from producing excess amounts of hormones. Symptoms usually begin to improve in six to 12 weeks, but treatment with anti-thyroid medications typically continues at least a year and often longer. Thyroidectomy is rarely used.

1. Patients with primary hyperparathyroidism have high serum calcium levels and, in most cases, low serum phosphate levels. Hormone replacement therapy may help bones retain calcium. Bisphosphonates also prevent the loss of calcium from bones and may lessen osteoporosis caused by hyperparathyroidism. Calcimimetics, sold as cinacalcet (Sensipar) mimic calcium circulating in the blood, tricking the parathyroid glands into releasing less parathyroid hormone, approved by the FDA to treat hyperparathyroidism caused by chronic kidney disease or parathyroid cancer. Some doctors may prescribe it to treat primary hyperparathyroidism, particularly if surgery hasn't successfully cured the disorder or a person isn't a good candidate for surgery. The antibiotic mithramycin (plicamycin) is sometimes used in the treatment of hypercalcemia of malignancy because it inhibits bone resorption. Hypoparathyroidism is associated with low serum calcium levels and high serum phosphate levels. The disorder is frequently treated with a high-calcium diet, vitamin D (calcitriol), and occasionaly thiazide diuretics to decrease renal calcium clearance. Thiazide diuretics increase calcium reabsorption in the thick ascending limb of the loop of Henle. Acute hypocalcemia can be treated with intravascular calcium gluconate infusion. Adrenal insufficiency results in a lack of essential hormones, and therefore treatment focuses on replacing or substituting those hormones. Cortisol is replaced orally with tablets taken once or twice a day. Aldosterone is replaced with oral doses of a mineralocorticoid, called fludrocortisone acetate, to maintain the right levels of salt and fluids in the body. Adrenocortical hormone excess is termed Cushing's syndrome, pharmacologic use of exogenous corticosteroids is now the most common cause of Cushing's syndrome. Increased cortisol section causes a tendency to gain weight, with a characteristic centripetal fat distribution and a "buffalo hump". The face will appear round (fat deposition), and the cheeks may be reddened.

Medications to control excessive production of cortisol include ketoconazole (Nizoral), mitotane (Lysodren) and metyrapone (Metopirone). The Food and Drug Administration has also approved the use of mifepristone (Korlym) for people with Cushing syndrome who have type 2 diabetes or glucose intolerance. Mifepristone does not decrease cortisol production, but it blocks the effect of cortisol on your tissues. Spironolactone is the most effective drug for controlling the effects of hyperaldosteronism, though it may interfere with the progression of puberty. Newer drugs that possess greater specificity for the mineralocorticoid receptor than spironolactone does are becoming available.

2. Thyrotoxicosis results when tissues are exposed to excessive quantities of thyroid hormones. Symptoms of hyperthyroidism include nervousness, heat intolerance, palpitations, muscle weakness, increased defecation frequency, increased appetite, moist, warm skin, bruit over thyroid, goiter, tremor, fatigue, pretibial myxedema (Graves' disease), and eye problems (Grave's disease). The most prevalent form of hyperthyroidism is Graves' disease. This is an autoimmune disorder in which it become sensitized to antigens known as thyroid-stimulating immunoglobulins (TSIs). There is strong familial predisposition for the disorder, and women have 7 to 10 times the incidence of men. Some symptoms of hyperthyroidism result, including lid retraction (resulting in a "wide-eyed" stare), tachycardia and tremor. Eye changes exophthalmos) are common in Graves' disease. The most common observations are lid lag (upper lid is slow to follow the movement of the gaze downward), upper lid retraction, stare, extraocular muscular weakness, diplopia, periorbital edema, and proptosis. Proptosis may become so severe that the eyelids cannot close and corneal ulceration results. Dermopathy (pretibial myxedema) may be associated with Graves' disease. Between 2% and 10% of the patients have myxedema in the pretibial area (pretibial myxedema) andor feet. In these regions, the skin thickens and forms "piglike" plaques. Other forms of thyrotoxicosis include toxic multinodular goiter, toxic adenoma, and sometimes Hashimoto's thyroiditis. Subacute thyroiditis is an acute inflammation of the thyroid that probably the result of viral infection. The symptoms generally include fever and tenderness of the gland. Symptoms of hyperthyroidism may be present. Although excessive thyroid hormones may be released early in the inflammation, transient hypothyroidis may follow. Although approximately 10% o patients have permanent hypothyroidism, more typically the thyroid disorder resolves spontaneously. Hashimoto's thyroiditis is a common cause of acquired hypothyroidism. The gland becomes inflamed and lymphocytes infiltrate the gland. Structural damage of the gland occurs, hypothyroidism develops, serum T_4 and T_3 levels fall, and TSH levels rise. The patient usually has a goiter and most typically is either euthyroid or hypothyroid. Hashimoto's thyroiditis can sometimes be part of a syndrome involving multiple autoimmune endocrine disorders that can include the adrenals, pancreas, parathyroids and ovaries (Schmidt's syndrome). Excessive levels of thyroid hormones can produce osteoporosis. Radioactive iodine taken by mouth, is absorbed by the thyroid gland, where it causes the gland to shrink and symptoms to subside, usually within three to six months. **A**nti-thyroid medications such as propylthiouracil and methimazole (Tapazole), gradually reduce symptoms of hyperthyroidism by preventing the thyroid gland from producing excess amounts of hormones. Symptoms usually begin to improve in six to 12 weeks, but

treatment with anti-thyroid medications typically continues at least a year and often longer. Thyroidectomy is rarely used.

E. When the pituitary-adrenal system is suppressed by exogenous administration of corticosteroids, both the corticotropes and the adrenal cortex (zona fasciculate and zona reticularis) atrophy. If steroid administration is withheld, acute adrenal insufficiency will result, which can be unpleasant and even life threatening. It takes months to restore normal function of the corticotropes after long-term glucocorticoid treatment. Adrenocortical insufficiency (Addison's disease) is primary adrenal insufficiency; typically both mineralocorticoids and glucocorticoids are deficient. The most prevalent cause of Addyson's disease is autoimmune destruction ofhte adreanal cortex, and tuberculosis is the second most common cause of the disorder. Because of the cortisol deficiency, ACTH secretion increases. ACTH can cause skin darkening, particularly in skin creases, scars and gums. The loss of mineralocorticoids results in contraction of extracellular volume, producing circulatory hypovolemia and therefore a drop in blood pressure. Because the loss of cortisol decreases the vasopressive response to catecholamines, peripheral resistance drops, thereby adding to the tendency toward hypotension. Hypotension predisposes people to circulatory shock. These people are also prone to have hypoglycemia when stressed or fasting. The hyperglycemic actions of other hormones, such as glucagon, epinephrine and growth hormone, generally will prevent hypoglycemia at other times.

1. The loss of cortisol impairs the ability to increase free water clearance in response to a water load and hence rid the body of the excess water. Patients with this condition will exhibit hyperkalemic acidosis. Because cortisol is important for muscle function, muscle weakness occurs in cortisol deficiency. The loss of cortisol results in anemia, decreased GI motility and secretion, and decreased iron and vitamin B_{12} absorption. The appetite will decrease because of the cortisol deficiency, and this decreased appetite coupled with the GI dysfunction will predispose these persons to weight loss. The patients often show disturbances in mood and behavior and are more susceptible to depression. Adrenal insufficiency results in a lack of essential hormones, and therefore treatment focuses on replacing or substituting those hormones. Cortisol is replaced orally with tablets taken once or twice a day. Aldosterone is replaced with oral doses of a mineralocorticoid, called fludrocortisone acetate, that are taken once a day. Fludrocortisone helps to maintain the right levels of salt and fluids in the body.

2. Adrenocortical hormone excess is termed Cushing's syndrome. Pharmacologic use of exogenous corticosteroids is now the most common cause of Cushing's syndrome. The next most prevalent cause is ACTH-secreting tumors such as functional pituitary adenoma or functional adrenal tumor. If the disorder is primary or if it is a result of corticosteroid treatment, ACTH secretion will be suppressed and increased skin pigmentation will not occur. However, if the hypersecretion of the adrenal is a result of an ACTH-secreting nonpituitary tumor, ACTH levels sometimes become high enough to increase skin pigmentation. Increased cortisol section causes a tendency to gain weight, with a characteristic centripetal fat distribution and a "buffalo hump". The face will appear round (fat deposition), and the cheeks may be reddened, in part becasuse of the

polycythemia. The limbs will be thin as a result of skeletal muscle wasting (from increased proteolysis), and muscle weakness will be evident (from muscle proteolysis and hypokalemia). The abdominal fat accumulation, coupled with atrophy of the abdominal muscles and thinning of the skin, will produce large, protruding abdomen. Purple abdominal striae are seen as a result of the damage to the skin by the prolonged proteolysis, increased intra-abdominal fat, and loss of abdominal muscle tone. Capillary fragility is seen as a result of damage to the connective tissue supporting the capillaries. Patients are likely to show signs of osteoporosis and poor wound healing. They have metabolic disturbances that include glucose intolerance, hyperglycemia and insulin resistance. Prolonged hypercortisolism can lead to manifestations of diabetes mellitus. Mineralocorticoid activities of the glucocorticoids and the possible elevation of aldosterone secretion produce salt retention and subsequent water retention, resulting in hypertension and osteoporosis. Medications to control excessive production of cortisol include ketoconazole (Nizoral), mitotane (Lysodren) and metyrapone (Metopirone). The Food and Drug Administration has also approved the use of mifepristone (Korlym) for people with Cushing syndrome who have type 2 diabetes or glucose intolerance. Mifepristone does not decrease cortisol production, but it blocks the effect of cortisol on tissues.

F. Excessive androgen secretion in women can produce hirsutism, male pattern baldness and clitoral enlargement (adrenogenital syndrome). Primary hyperaldosteronism is called Conn's syndrome. It frequently occurs as a result of aldosterone-secreting tumors. Excessive mineralocorticoid secretion results in potassium depletion, sodium retention, muscle weakness, hypertension, hypokalemic alkalosis and polyuria. Edema is not uncommon. Any enzyme blockage that decreases cortisol synthesis will increase ACTH secretion and produce adrenal hyperplasia. The most common form of congenital adrenal hyperplasia occurs as a result of a deficiency of the enzyme 21-hydroxylase (CYP21). These individuals cannot produce normal quantities of cortisol, deoxycortisol, DIC, corticosterone, or aldosterone. Because of impaired cortisol production and resultant elevated ACTH levels, steroidogenesis is stimulated, increasing the synthesis of those products formed before the blockage. Because this includes the adrenal androgens, a female fetus will be masculinized. Because they are unable to produce the mineralcorticoids, aldosterone, DOC and corticosterone, patients with this disorder have difficulty retaining salt and maintaining extracellular volume. Consequently, they are likely to be hypotensive. If the blockage is at the next step, 11β-hydroxylate (CYP11B), DOC will be formed and the levels of DOC will accumulate. Because DOC is a mineralocorticoid and the levels become high, these individuals tend to retain salt and water and become hypertensive. The elevated androgen levels can cause masculinization of a female fetus. If there is a deficiency of 17α-hydroxylase, neither cortisol nor sex hormones are produced. The inability to produce normal androgen levels during fetal development can result in a female phenotype for both males and females. A complete deficiency of 3β-hydroxysteroid dehydrogenase (3β-HSD) is fatal. An incomplete deficiency results in the inability to produce adequate quantities of mineralocorticoids, glucocorticoids, and strong androgens or estrogens. The adrenal produces large quantities of the weak androgen DHEA. This can result in some masculinization of a female fetus and incomplete masculinization of a male fetus. Spironolactone is the most

effective drug for controlling the effects of hyperaldosteronism, though it may interfere with the progression of puberty. Newer drugs that possess greater specificity for the mineralocorticoid receptor than spironolactone does are becoming available. Alternative medications for patients in whom aldosterone antagonists are contraindicated include amiloride and triamterene, as well as calcium channel antagonists and alpha-adrenergic antagonists (especially $alpha_1$ -specific agents such as prazosin and doxazosin); in patients with angiotensin II–responsive disease, angiotensin-converting enzyme (ACE) inhibitors and angiotensin II receptor blockers (ARBs) are indicated.

1. Although not truly a pathologic disorder in most women, premenstrual syndrome (PMS) produces minor discomfort in many women and major discomfort I some women. A multitude of symptoms is associated with PMS, characterized as being manifested cyclically during the luteal phase of the cycle. The symptoms subside at or during menstruation. These symptoms can include irritability, depression, bloating, weight gain, breast tenderness and headaches. Dysmenorrhea is painful menstruation. Primary dysmenorrhea is a common problem in ovulatory women, it is thought to result from ischemia caused by periodic uterine contractions. The uterine contractions result from uterine prostaglandin production. Pain can be projected to the back and legs and can be accompanied by nausea and diarrhea. Prostaglandin synthetase inhibitors provide relief for some women. Birth control pills administered to prevent ovulation can reduce the discomfort. Secondary dysmenorrhea results from uterine problems such as endometriosis or congenital anomalies. Turner's syndrome (gonadal dysgenesis) is the most common cause of congenital hypogonadism. In about 50% of cases, it results from the complete absence of the second X chromosome so that the karyotype of the individual is 45, XO. The germ cells do not develop, and the gonads consist of a connective tissue-filled streak. The major characteristics these individuals express include short stature, a characteristic webbed neck, low-set ears, a shield-shaped chest, short foruth metacarpals, and sexual infantilism, resulting from gonadal dysgenesis. Internal and external genitalia are typically female. Chronically anovulatory women with high circulating androgen, estrogen and LH levels often have the disorder called polycystic ovarian syndrome. The continuous gonadotropin secretion leads to ovarian enlargement, and the ovaries typically show a thickened capsule and numerous follicles, many of which are undergoing atresia. FSH levels are low, which inhibits granulosa cell function, and the high intrafollicular androgen level inhibits follicular maturation. A significant portion of the high circulating estrogen levels is estrone formed from peripheral aromatization of anrostenedione. These high androgen levels can produce hirsutism and acne. Hirsutism is the abnormal formation of coarse sexual hair in regions atypical for a woman, such as the face, back, and chest. The exact cause of polycystic ovarian syndreom is not well understood, but the primary defect appears to be inappropriate signals between the hypothalamic-pituitary axis and the ovary. Diabetogenicity of pregnancy occurs during the last half of pregnancy, when hPL levels are highest, maternal energy metabolism shifts from an anabolic state in which nutrients are stored, to a catabolic state, sometimes described as accelerated starvation, in which maternal energy metabolism shifts toward fat utilization with glucose sparing. A maternal glucose use for energy decreases, lipolysis increases and fatty acids become major energy sources. The peripheral response to insulin decreases and pancreatic insulin secretion increases. Beta cell hyperplasia occurs in

pregnancy. Pregnancy aggravates existing diabetes mellitus, or diabetes mellitus can develop for the first time in pregnancy. If the diabetes resolves spontaneously with delivery, the condition is referred to as gestational diabetes. Other hormones contributing to the diabetogenicity of pregnancy are estrogens and progestins, because both of these hormones decrease insulin sensitivity.

2. Although spermproduction typically begins to decline after age 50 years, many men can maintain reproductive function and spermatogenesis throughout life. Kallmann's syndrome is primary isolated gonadotropin deficiency. This genetic disorder is often associated with anosmia, or the loss of smell. People affected with this disorder have undescended testes (cryptorchism). Although there is normal embryonic development of the wolffian duct-derived structures, penis development is deficient and microphallus results. These effects probably result from the fact that early fetal development of the internal genitalia is controlled by testicular androgens that are regulated by placental hCG rather than fetal LH. The inability of the fetus to secrete normal quantities of LH has an impact on testicular function later in development, when androgens regulate growth of the external genitalia. The severity of the impairment of LH secretion is variable, as is the severity of the reproductive problems associated with the disorder.

3. Men with an extra X chromosome have the genetic disorder called Klinefelter's syndrome. Although there are multiple permutations of the disorder, the most common form results in a 47, XXY karyotype. Individuals with this syndrome are phenotypically male because of the presence of the Y chromosome, but they typically have small testes and decreased germ cells. The testosterone levels are low to normal, and estradiol and gonadotropin levels are high. Male pseudohermaphroditism can result because, although the karyotype is 46, XY, the wolffian duct does not develop because androgen actin is deficient and the müllerian duct regresses because testes and therefore MIS are present. Consequently, there are no functional internal genitalia. The external genitalia typically develop as female, therapy giving the individuals a female phenotype. People with severe AIS have labia, a clitoris, and a short vagina because these structures do not develop from the müllerian ducts. Pubic and axillary hair is absent or sparse because the development of sexual hair is androgen dependent. Menstruation does not occur, and serum androgen levels are high or normal. When androgen production rises at puberty, estradiol production increases, both from the testes and from peripheral aromatization of androgens. Plasma androgen and LH levels are high because the receptor deficiency impairs feedback inhibition of LH secretion. The testes typically remain in the abdomen because androgens stimulate testicular descent. There is deep concern regarding the finance of male-to-female transgender (MTF) hormone treatment and MTF surgery by Medicaid. Although other components may have anti-cancer properties, the estrogen component of the MTF hormone treatment causes unhealthy levels of coagulation, almost invariably after a year, and it is better to terminate the estrogen than to become dependent on warfarin (Coumadin). MTF surgery is even more hypocritical and must not be funded by Medicaid because so many transgender people have pre-cancerous, extra, malformed gonads in their abdomen, whose discovery and surgical removal is medically necessary to prevent cancer and should be funded by Medicaid.

§353 Cancer

A. Cancer is responsible for about 20% of all deaths in industrialized countries and 10% in developing countries. Globally, there were 17.0 million new cancer cases and 9.5 million cancer deaths worldwide in 2018. The global cancer burden doubled in the last 30 years of the 20th century due to the aging population. In the United States about one in three people will at some time have an unwelcome diagnosis of cancer. Every day, around 1,500 Americans die of the disease. More than 1.6 million new cancer cases are diagnosed each year in the United States, and more than 550,000 die. Diagnosis are expected to rise to 2.3 million new cancer diagnoses per year by 2030. With the eradication of infection and malnutrition as major causes of mortality, cancer has become more prominent as a life-threatening illness in children and the aging populace. Cancer has one biological property in common – the territorial expansion of a mutant clone. In the United States there is an increasing trend for cancers related to excess body weight and physical inactivity, including those for cancers of the female breast, uterus, kidney, liver, and pancreas.

1. Of those 9.5 million people who will die of cancer this year, it has been estimated that up to 5 million could have been saved just through healthy eating, and especially avoiding sugar and flour, but also all animal products and most proteins. Metastatic cancer patients are often crippled and unable to exercise. Before dying most cancer patients are reported to undergo massive weight loss. Cancer patients suffer a form of nausea called cachexia and chemotherapy makes it worse. It is of vital importance that cancer patients metabolize enough calories to maintain their weight. Animal products are nutritious and delicious but constipate the excretory system. Remission from many types of cancer have been reported from a vegan diet that includes only fresh organic fruits, vegetables, and whole grains. A vegetarian diet includes dairy and possibly eggs. Vegans can make a complete protein with rice and beans. Iron from dark green leafy vegetables. Calcium phosphorus apatite with calcium from green leafy and cruciferous vegetables and phosphorus only from mushrooms, soy and mung beans. Much larger quantities of fruits, vegetables and whole grains are needed to provide the vegan with the same number of calories provided by meals that include meat, eggs, dairy, flour and sugar. The cancer diet priority is to maintain a healthy reserve of body fat. The cancer diet treatment is to get adequate calories to maintain a reserve of body fat with a vegan diet from organic sources.

B. American's **risk of dying from cancer** has been steadily declining since the early 1990s, for both sexes and all races. From 1993 to 2003, a drop of 1.6 percent per year, double the decline of 0.8 percent per year in women. Somewhat paradoxically, however, the overall incidence of cancer diagnosis has been stable over this period and rates of diagnosis have actually increased for women. The 2020 Annual report to the nation on the status of cancer stated: Overall cancer death rates ranged from 125 to 195 deaths per 100,000 standard population. Overall, cancer death rates decreased 1.5% on average per year during 2001 through 2017, decreasing more rapidly among males −1.8% than among females −1.4%. Overall cancer death rates decreased during 2013 through 2017 in every racial/ethnic group, decreasing the most among black persons −2.0% and the least among

AI/AN persons −0.6%. The overall cancer death rate was highest among black persons. During 2013 through 2017, cancer death rates decreased in all states, decreasing 4.3% in Alaska and ≥2% per year in 6 additional states and the District of Columbia.

Estimated Number of New Cancer Cases and Death, by site, US, 2020

	Estimated New Cases			Estimated Deaths		
	Both sexes	Male	Female	Both sexes	Male	Female
All sites	1,806,590	893,660	912,930	606,520	321,160	285,360
Oral cavity & pharynx	53,260	38,380	14,880	10,750	7,760	2,990
Tongue	17,660	12,960	4,700	2,830	1,980	850
Mouth	14,320	8,430	5,890	2,660	1,690	970
Pharynx	17,950	14,630	3,320	3,640	2,820	820
Other oral cavity	3,330	2,360	970	1,620	1,270	350
Digestive System	333,680	187,620	146,060	167,790	97,560	70,230
Esophagus	18,440	14,350	4,090	16,170	13,100	3,070
Stomach	27,600	16,980	10,620	11,010	6,650	4,360
Small intestine	11,110	6,000	5,110	1,700	940	760
Colon	104,610	52,340	52,270	53,.200	28,630	24,570
Rectum	43,340	25,960	17,380			
Anus, anal canal & ano-rectrum	8,590	2,690	5,900	1,350	540	810
Liver & intra-hepatic bile duct	42,810	30,170	12,640	30,160	20,020	10,140
Gallbladder & other biliary	11,980	5,600	6,380	4,090	1,700	2,390
Pancreas	57,600	30,400	27,200	47,050	24,640	22,410
Other digestive organs	7,600	3,130	4,470	3,060	1,340	1,720
Respiratory system	247,270	130,340	116,930	140,730	76,370	64,360
Larynx	12,370	9,820	2,550	3,750	3,000	750
Lung & bronchus	228,820	116,300	112,520	135,720	72,500	63,220
Other respiratory organs	6,080	4,220	1,860	1,260	870	390
Bones & Joints	3,600	2,120	1,480	1,720	1,000	720
Soft tissue including heart	13,130	7,470	5,660	5,350	2,870	2,480
Skin (excluding	108,420	65,350	43,070	11,480	8,030	3,450

basal and squamous)						
Melanoma of the skin	100,350	60,190	40,160	6,850	4,610	2,240
Other non-epithelial skin	8,070	5,160	2,910	4,.630	3,420	1,210
Breast	279,100	2,620	276,480	42,690	520	42,170
Genital system	317,260	203,740	113,520	67,830	34,210	33,620
Uterine cervix	13,800		13,800	4,290		4,290
Uterine corpus	65,620		65,620	12,590		12,590
Ovary	21,750		21,750	13,940		13,940
Vulva	6,120		6,120	1,350		1,350
Vagina & other genital, female	6,230		6,230	1,450		1,450
Prostate	191,930	191,930		33,330	33,330	
Testis	9,610	9,610		440	440	
Penis & other genital, male	2,200	2,200		440	440	
Urinary system	159,120	110,230	48,890	33,820	23,540	10,280
Urinary bladder	81,400	62,100	19,300	17,980	13,050	4,930
Kidney & renal pelvis	73,750	45,520	28,230	14,830	9,860	4,970
Ureter & other urinary organs	3,970	2,610	1,360	1,010	630	380
Eye & orbit	3,400	1,890	1,510	390	210	180
Brain & other nervous system	23,890	13,590	10,300	18,020	10,190	7,830
Endocrine system	55,670	14,160	41,510	3,260	1,600	1,660
Thyroid	52,890	12,720	40,170	2,180	1,040	1,140
Other endocrine	2,780	1,440	1,340	1,080	560	520
Lymphoma	85,720	47,070	38,650	20,910	12,030	8,880
Hodgkin lymphoma	8,480	4,690	3,790	970	570	400
Non-Hodgkin lymphoma	77,240	42,380	34,860	19,940	11,460	8,480
Myeloma	32,270	17,530	14,740	12,830	7,190	5,640
Leukemia	60,530	35,470	25,060	23,100	13,420	9,680
Acute lymphocytic leukemia	6,150	3,470	2,680	1,520	860	660
Chronic lymphocytic leukemia	21,040	12,930	8,110	4,060	2,330	1,730
Acute myeloid	19,940	11,090	8,850	11,180	6,470	4,710

leukemia						
Chronic myeloid leukemia	8,450	4,970	3,480	1,130	670	460
Other leukemia	4,950	3,010	1,940	5,210	3,090	2,120
Other unspecified sites	30,270	16,080	14,190	45,850	24,660	21,190

Source: American Cancer Society. Cancer Facts and Figures. 2020 pg. 4 Rounded to the nearest 10; cases exclude basal cell and squamous cell skin cancer and in situ carcinoma except urinary bladder. About 48,530 cases of female breast ductal carcinoma in situ and 95,710 cases of melanoma in situ will be diagnosed in 2020. Deaths for colon and rectal cancers are combined because a large number of deaths from rectal cancer are misclassified as colon.

1. Overall, cancer incidence rates decreased 0.6% on average per year during 2012 through 2016, but trends differed by sex, racial/ethnic group, and cancer type. Among males, the decrease in cancer incidence rates since 2001 stabilized in 2013 and among non- Hispanic white males but decreased in other racial/ethnic groups. Overall the rate of cancer diagnosis in males declined from nearly 600 per 100,000 in 2001 to 500 per 100,000 in 2017. Rates increased for 5 of the 17 most common cancers, were stable for 7 cancers (including prostate), and decreased for 5 cancers (including lung and bronchus [lung] and colorectal). Among females, cancer incidence rates increased during 2012 to 2016 in all racial/ethnic groups, increasing on average 0.2% per year; rates increased for 8 of the 18 most common cancers (including breast), were stable for 6 cancers (including colorectal), and decreased for 4 cancers (including lung). Historical declines in cigarette smoking have been reflected by declines in incidence of and mortality from several tobacco- related cancers, including lung, larynx, and bladder, which have greatly affected the overall incidence and death rates. Although the decrease in lung cancer was substantial, it continues to be the leading cause of cancer death, accounting for about one- quarter of all cancer deaths. Furthermore, these gains are being offset by increasing incidence trends for cancers related to excess body weight and physical inactivity, including those for cancers of the female breast, uterus, kidney, liver, and pancreas. In the US, an estimated 40 out of 100 men and 39 out of 100 women will develop cancer during their lifetime. While it may seem alarming that overall incidence of **child cancer** increased an average of 0.9% per year for adolescents and adolescents and young adults (AYAs) and 0.8% for children per year during 2012 through 2016; Child cancer death rates decreased an average of 1.0% per year among AYAs and an average of 1.4% per year among children during 2013-2017.

2. Cancer is a disease where damaged cells of the patient's body mutate so that they do not undergo programmed cell death, but their growth is no longer controlled and their metabolism is altered. Usually DNA damage, if too severe to repair, leads to programmed cell death, but if the programmed cell death pathway is damaged, then the cell cannot prevent itself from becoming a cancer cell. Carcinogens, including those elaborated by chronic infection, certain toxins, and radiation, may increase the risk of getting cancer by

altering cellular metabolism or damaging DNA directly in cells, which interferes with biological processes, and induces the uncontrolled, malignant division, ultimately leading to the formation of tumors and the metastatic spread of tumors throughout the body. Most cancers arise from chronic infections that were untreated due to drug resistance. *E. coli* and Aspergillus species in particular are known to elaborate carcinogenic toxins. Treat aspergillosis with $1 hydrocortisone creme. Treat *E. coli* induced diarrhea or dementia, with a course of metronidazole and a lifetime of bottled water for drinking and cooking. Pneumonia, meningitis and sinusitis often require ampicillin. Viruses have been implicated in causing several forms of fungoid growth. Fungus is so underestimated there is question as to whether the mutated white blood cells used to diagnose leukemia are not really white common water mold cells in the human bloodstream. Apply clotrimazole (athlete's foot creme) to the feet and hydrocortisone to other affected parts of the anatomy.

3. The only really good news in chemotherapy is that there is 95% cure rate for some leukemias and lymphomas with $20,000 Gleevec (Imatinib). Surgeons have a 95% cure rate with throat cancer. Radiation therapy is a form of laser surgery, that often proclaims similarly high cure rates for certain types of cancer. but is invariably fatal for patients whose cancer was caused by radiation, and requires better diagnostic screening to exclude people whose cancer was caused by radiation from radiation treatment. Lung cancer comes with a 2 year prognosis. An asbestos fiber(s) in the lung increases lung cancer risk a hundredfold in smokers, dividing lung cancer and mesothelioma death statistics into oblivion. Mastectomies do not improve survival rates and decrease reason for women to live. The term carcinogen refers to any substance, bacteria, virus, fungus, parasite, toxin, nucleotide or radiation that is directly involved in the promotion of cancer in the increase of its propagation. Radioactive emissions such as gamma rays and alpha particles are generally considered carcinogenic. Common examples of carcinogens are inhaled asbestos, certain dioxins and tobacco smoke.

C. More than 900 chemicals have been determined to be capable of inducing cancer in humans or animals after prolonged or excessive exposure by numerous agencies involved in the identification of carcinogens such as the International Agency for Research on Cancer (IARC), National Toxicology Program (NTP), Environmental Protection Agency (EPA) monitored by the American Cancer Society list of Known and Probable Human Carcinogens. There are many well-known examples of chemicals that can cause cancer in humans. The fumes of the metals cadmium, nickel, and chromium are known to cause lung cancer. Vinyl chloride causes liver sarcomas. Exposure to arsenic increases the risk of skin and lung cancer and Hodgkin's lymphoma. Leukemia can result from chemically induced changes in bone marrow from exposure to benzene and cyclophosphamide, among other toxicants. Other chemicals, including benzo[a]pyrene and ethylene dibromide, are considered by authoritative scientific organizations to be probably carcinogenic in humans because they are potent carcinogens in animals. Chemically-induced cancer generally develops many years after exposure to a toxic agent. A latency period of as much as thirty years has been observed between exposure to asbestos, for example, and incidence of lung cancer. New research continues to find additional human carcinogens. During the decades ending in 1980, 1990, 2000, and 2010, respectively,

there were 23, 27, 24, and 25 agents classified as carcinogenic to humans for the first time, and 11 more were so classified in Volume 100. Some designations of new carcinogens were not based on conclusions found first in the Monographs but reflected the expansion of the IARC program to include additional types of agent already known to be carcinogenic. For example, tobacco smoking and alcoholic beverages were evaluated for the first time during 1986–1988, biological agents during 1994–1997, and ionizing radiation during 2000–2001, many decades after these agents had been recognized as human carcinogens. The diversity of carcinogenic agents that have been identified more recently puts these "bursts" of new classifications in perspective. New carcinogenic agents from Volumes 90–99 have included 10 additional human papillomavirus types, estrogen– progestogen menopausal therapy, benzo[*a*]pyrene, indoor coal emissions, ethanol in alcoholic beverages, 1,3-butadiene, dyes metabolized to benzidine, 4,4′-methylenebis(2-chloroaniline), and *ortho*-toluidine. Except for indoor coal emissions and ethanol, which had not been evaluated before, these agents had been classified as probably carcinogenic or possibly carcinogenic, indicating that continued research on suspected carcinogens can lead to a more definitive classification.

Cancer sites by carcinogen

Cancer site	Probable Carcinogen	Possible Carcinogen
Lip, oral cavity and pharynx		
Lip		Hydrochlorothiazide, Solar radiation
Oral cavity	Alcoholic beverages, Betel quid with tobacco, Betel quid without tobacco, Human papillomavirus type 16, tobacco smokeless, tobacco smoking	Human papillomavirus type 18
Salivary gland	X-radiation, gamma-radiation	Radioiodines, including iodine-131
Tonsil	Human papillomavirus type 16	
Pharynx	Alcoholic beverages, Betel quid wit tobacco, Human papillomavirus type 16, Tobacco smoking	Asbestos (all forms), Opium (consumption of), Printing processes, Tobacco smoke, secondhand
Nasopharynx	Epstein-Barr virus, Formaldehyde, Salted fish, Chinese-style, Tobacco smoking, Wood dust	
Digestive tract, upper	Acetaldehyde associated with consumption of alcoholic beverages	
Digestive organs		

Esophagus	Acetaldehyde associated with consumption of alcoholic beverages, Alcoholic beverages, Betel quid with tobacco, Tobacco, smokeless, Tobacco smoking, X-radiation, gamma-radiation	Dry cleaning, Mate drinking, hot, Opium (consumption of), Pickled vegetables (traditional Asian), Rubber production industry, Very hot beverages (squamous cell carcinoma)
Stomach	*Helicobacter pylori*, Rubber production industry, Tobacco smoking, X-radiation, gamma-radiation	Asbestos (all forms), Epstein-Barr virus, Lead compounds, inorganic, Nitrate or nitrite (ingested) under conditions that result in endogenous nitrosation, Opium (consumption of), Pickled vegetables (traditioanal Asian), Processed meat (consumption of), Salted fish, Chinese-style
Colon and rectum	Alcoholic beverages, Processed meat (consumption of), Tobacco smoking, X-radiation, gamma-radiation	Asbestos (all forms), Night shift work, Red meat (consumption of), *Schistosoma japonicum*
Anus	Human immunodeficiency virus type 1, Human papillomavirus type 16	Human papillomavirus types 18, 33
Liver and bile duct	Aflatoxins, Alcoholic beverages, *Clonorchis sinensis,* 1,2-Dichloropropane, Estrogen-progestogen contraceptives, Hepatitis B virus, Hepatitis C virus, *Opisthorchis viverrini*, Plutonium, Thorium-232 and its decay products, Tobacco smoking (in smokers and in smokers' children), Vinyl Chloride	Androgenic (anabolic) steroids, Arsenic and inorganic arsenic compounds, Betel quid without tobacco, DDT, Dichloromethane ethylene chkoride), Human immunodeficiency virus type 1, *Schistosoma japonicum*, Trichloroethylene, X-radiation, gamma-radiation
Gall bladder	Thorium-232 and its decay products	
Pancreas	Tobacco, smokeless, Tobacco smoking	Alcoholic beverages, Opium (consumption of), Red meat (consumption of), Thorium-232 and its decay products
Digestive tract, unspecified		Radio-iodines, including Iodine-131
Respiratory organs		
Nasal cavity and	Isopropyl alcohol production,	Carpentry and joinery,

paranasal sinus	Leather dust, Nickel compounds, Radium-226 and its decay products, Radium-228 and its decay products, Tobacco smoking, Wood dust	Chromium (VI) compounds, Formaldehyde, Textile manufacturing
Larynx	Acid mists, strong inorganic, Alcoholic beverages, Asbestos (all forms), Opium (consumption of), Tobacco smoking	Human papillomavirus type 16, Rubber production industry, Sulfur mustard, Tobacco smoke, secondhand
Lung	Acheson process, occupational exposures associated, with, Aluminum production, Arsenic and inorganic arsenic compounds, Asbestos (all forms), Beryllium and beryllium compounds, Bis (chloromethyl) ether; chloromethyl methyl ether (technical grade(), Cadmium and cadmium compounds, Chromium (VI) compounds, Coal, indoor emissions from household combustion, Coal gassification, Coal-tar pitch, Coke production, Engine exhaust, diesel, Haematite mining (underground), Iron and steel founding, MOPP (vincristine-prednisone-nitrogen mustard-procarbazine mixture), Nickel compounds, Opium (consumption of), Outdoor air pollution, Painting, Particulate matter in outdoor air pollution, Plutonium, Radon-222 and its decay products, Rubber production industry, Silica dust, crystaline, Soot, Sulfur mustard, Tobacco smoke, secondhand, Tobacco smoking, Welding fumes, X-radiation, gamma-radiation	Acid mists, strong inorganic, Art glass, glass containers and pressed ware (manufacture of), Benzene, Biomass fuel primarily wood), indoor emissions from household combustion of, Bitumens occupational exposure to oxidized bitumens and their emissions during roofing, Carbon electrode manufacture, alpha-Chlorinated toluenes and benzoyl chloride (combined exposures), Cobalt metal with tungsten carbide, Creosotes, Diazinon, Fibrous silicon carbide, Frying, emissions from high temperature, Hydrazine, Insecticides, non-arsenical, occupational exposures in spraying and application, Printing processes, 2,3,7,8-Tetrachlorodibenzo-para-dioxin
Bone, skin and mesothelium, endothelium and soft tissue		
Bone	Plutonium, Radium-224 and its decay products, Radium-226 and its decay products, Radium-228 and its	Radioiodines, including iodine-131

	decay products, X-radiation, gamma-radiation	
Skin (melanoma)	Solar radiation, Ultraviolet-emitting tanning devices, Polychlorinated biphenyls	
Skin (other malignant neoplasms)	Arsenic and inorganic arsenic compounds, Azathioprine, Coal-tar distillation, Coal-tar pitch, Cyclosporine, Methoxsalen plus ultraviolet A, Mineral oils, untreated or mildly treated, Shale oils, Solar radiation, Soot, X-radiation, gamma-radiation	Creosotes, Human immunodeficiency virus type 1, Human papillomavirus types 5 and 8 (in patients with *epidermodysplasia verruciformis*), Hydrochlorothiazide, Merkel cell polyomavirus (MCV), Nitrogen mustard, Petroleum refining, occupational exposures, Ultraviolet-emitting tanning devices
Mesothelium (pleura and peritoneum)	Asbestos (all forms) Erionite, Fluoro-edenite, Painting	
Endothelium (Kaposi sarcoma)	Human immunodeficiency virus type 1, Kaposi sarcoma herpes virus	
Soft tissue		Polychlorophenols or their sodium salts (combined exposures), Radioiodines, includinmg iodine-131, 2,3,7,8-Tetrachlorodibenzo-para-dioxin
Breast and female genital organs		
Breast	Alcoholic beverages, Diethylstilbestrol, Estrogen-progestogen contraceptives, estrogen-progestogen menopausal therapy, X-radiation gamma-radiation	Dieldrin, Digoxin, Estrogen menopausal therapy, Ethylene oxide, Night shift work, Polychlorinated biphenyls, Tobacco smoking
Vulva	Human papillomavirus type 16	Human immunodeficiency virus type 1, Human papillomavirus types 18, 33
Vagina	Diethylstilbestrol (exposure in utero), Human papillomavirus type 16	Human immunodeficiency virus type 1

Uterine cervix	Diethylstilbestrol (exposure in utero), Estrogen-progestogen contraceptives, Human-immunodeficiency virus type 1, Human papillomavirus types 16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59	Human papillomavirus types 26, 53, 66, 67, 68, 70, 73, 82
Endometrium	Estrogen menopausal therapy, Estrogen-progestogen menopausal therapy, Tamoxifen	Diethylstilbestrol
Ovary	Asbestos (all forms), Estrogen menopausal therapy, Tobacco smoking	Talc-based body powder (perineal use), X-radiation, gamma-radiation
Make Genital Organs		
Penis	Human papillomavirus type 16	Human immunodeficiency virus type 1, Human papillomavirus type 18
Prostate		Androgenic (anabolic) steroids), Arsenic and inorganic arsenic compounds, Cadmium and cadmium compounds, Firefighters, occupational exposure, Malathion, Night shift work, Red meat (consumption of), Rubber production industry, Thorium-232 and its decay products, X-radiation, gamma-radiation
Testis		DDT, Diethylstilbestrol (exposure in utero), *N*-*N*-Dimethylformamide, Firefighters, occupational exposure, Perfluorooctanoic acid
Urinary Tract		
Kidney	Tobacco smoking, Trichloroethylene, X-radiation, gamma-radiation	Arsenic and inorganic arsenic compounds, Cadmium and cadmium compounds, Perfluoroactanoic acid, Printing processes, Welding fumes

Renal pelvis and ureter	Aristolochic acid, plants containing, Phenacetin, Phenacetin, analgesic mixtures containing, Tobacco smoking	Aristolochic acid
Urinary bladder	Aluminum production, 4-Aminobiphenyl, Arsenic and inorganic arsenic compounds, Auramine production, Benzidine, Chlornaphazine, Cyclophosphamide, Magenta production, 2-Naphthylamine, Opium (consumption of), Painting, Rubber production industry, *Schistosoma haematobium*, Tobacco smoking, ortho-Toluidine, X-radiation, gamma-radiation	4-Chloro-ortho-toluidine, Coal-tar pitch, Dry cleaning, Engine exhaust, diesel, Hairdressers and barbers, occupational exposure, 2-Mercaptobenzothiazole, Pioglitazone, Printing processes, Soot, Tetrachloroethylene, Textile manufacturing
Central Nervous System		
Eye	Human immunodeficiency virus type 1, Ultraviolet emissions from welding, Ultraviolet-emitting tanning devices	Solar radiation
Brain and central nervous system	X-radiation, gamma-radiation, Vinyl chloride	Radio-frequency electromagnetic fields (including from wireless phones)
Endocrine glands		
Thyroid	Radio-iodines, including Iodine-131, X-radiation, gamma-radiation	
Lymphoid, hematopoietic, and related tissue		
Leukemia and/or lymphoma	Azathiprine, Benzene, Busulfan, 1,3-Butadiene, Chlorambucil, Cyclophosphamide, Cyclosporine, Epstein-Barr virus, Etoposide with cisplatin and bleomycin, Fission products, including Strontium-90, Formaldehyde, *Helicobacter pylori*, Hepatitis C virus, Human immunodeficiency virus type 1, Human T-cell lymphotropic virus type 1, Kaposi sarcoma herpes	Benzene, Bishloroethyl nitrosourea (BCNU), Chloramphenicol, DDT, Diazinon, Dichloromethane (Methylene-chloride), Ethykene oxide, Etoposide, Firefighters, occupational exposure, Glyphosate, Hepatitis B virus, Magnetic fields, extremely low frequency (childhood

	virus, Lindane, Melphalan, MOPP (vincristine-prednisone-nitrogen mustard-procarbazine mixture), Pentachlorophenol, Phosphorus-32, Rubber production industry, Semustine (methyl-CCNU), Thiotepa, Thorium-232 and its decay products, Tobacco smoking, Treosulfan, X-radiation, gamma-radiation	leukemia), Malaria (caused by infection *Plasmodium falciparum* in holoendemic areas), Malathion, Mitoxantrone, Nitrogen mustard, Painting (childhood leukemia from maternal exposure), Petroleum refining, occupational exposures, Polychlorinated biphenyls, Polychlorophenols or their sodium salts (combined exposures), Radio-iodines, including Iodine-131, Radon-222 and its decay products, Styrne, Teniposide, 2,3,7,8-Tetrachlorodibenzo-para-dioxin, Tobacco smoking (childhood leukemia in smokers' children), Trichloroethylene,
Multiple or unspecified sites		
Multiple sites (unspecified)	Cyclosporine, Fission products, including strontium-90, X-radiation, gamma-radiation (exposure in utero)	Chlorophenoxy herbicides, Plutonium
All cancer sites (combined)	2,3,7,8-Tetrachlorodibenzo-para-dioxin	

Source: International Agency for Research on Cancer. 9 October 2020

1. It is estimated that tobacco was responsible for about 19 percent of all American cancers, obesity was responsible for another 5 percent in men and 11 percent in women, infection perhaps 10 percent, reproductive and sexual behavior about 7 percent, occupational hazards about 5 percent, geophysical factors such as sunlight 3 percent, physical inactivity 3 percent, alcohol 6 percent, pollution 2 percent, medicine and medical practices 1 percent and food additives and industrial products less than 1 percent each. The American Cancer Society stresses, at least 42 percent of newly diagnosed cancers in the US – about 750,000 cases in 2020 – are potentially avoidable behavioral causes, including the 19 percent of all cancers that are caused by smoking and the 18 percent of cancers are caused by a combination of excess body weight, alcohol consumption, poor nutrition, and physical inactivity. Certain cancers caused by infectious agents, such as human papillomavirus (HPV), hepatitis B virus (HBV), hepatitis C virus (HCV), and *Helicobacter pylori* (*H. pylori*), could be prevented through behavioral changes or vaccination to avoid the infection, or treatment of the infection. Many of the

more than 5 million skin cancer cases that are diagnosed annually could be prevented by protecting skin from excessive sun exposure and not using indoor tanning devices. It is estimated: Around 15 percent of the total cancer burden worldwide can be linked to persistent infection with common viruses such as HPV, HBV, HCV, EBV, HHV8 and HTLV-1. Dioxin, from red meat, fish, and dairy products, may be responsible for 12 percent of human cancers in industrialized societies. Adding all of this comes to 69 percent. 31 percent other potentially treatable occupational and accidental overexposure to carcinogens including the sun (6%), radiation, bacterial and fungal infections. Persons whose cancer was caused by radiation exposure, such as from the laser of a defective CD ROM or DVD drive, must not be treated with invariably lethal dose radiation treatment. Radiation treatment is also known to cause secondary cancers years later, that should probably not be treated with more radiation. Some sort of radiation test must be devised to determine whether a person is radioactive or their cancer was caused by radiation, to make radiation therapy safer.

2. General symptoms caused by many different types of cancer are (1) persistent tiredness for no obvious reason, (2) progressive loss of weight for no obvious reason, (3) progressive paleness of the tongue or fingernail beds, especially if accompanying fatigue, can signify anemia from blood loss, (4) persistent loss of appetite, (5) fracture of a bone without any obvious trauma. Cancer of the colon and rectum exhibit (1) persistent diarrhea, (2) blood in the stool can be bright red to dark brown or black if aged, (3) stools that are narrower than normal, (4) loss of weight for no apparent reason, (5) a feeling that one has not emptied one's bowel completely, (6) general discomfort in the stomach area, such as bloating, fullness or cramps, or gas pains. Cancer of the breast exhibits (1) a lump or bump or even a feeling of thickening in the breast or in the armpit, (2) a change in the texture of the nipple or the pink tissue (often brown in women who have had children) called the areola, which immediately surrounds the nipple, (3) any discharge from the nipple, and (4) any change in the shape of one breast. Cancer of the lung exhibits (1) a persistent cough not associated with a cold or the flu, (2) persistent chest pain, which may or may not be related to coughing, (3) persistent hoarseness, (4) coughing up blood, (5) shortness of breath for no apparent reason, (6) frequent and persistent respiratory infections, such as bronchitis or pneumonia. Cancer of the stomach exhibits (1) persistent and unexplained abdominal pain or discomfort, including indigestion and heartburn, (2) vomiting, especially vomiting blood. Cancer of the cervix or uterus exhibits (1) bleeding between normal menstrual periods, (2) bleeding after intercourse or after a pelvic examination, (3) a persistent discharge from the vagina Cancer of the pancreas is problematic because it tends not to exhibit early symptoms and particular attention must be paid to (1) persistent pain in the abdomen, particularly if it spreads to the back, (2) a yellow discoloration of the skin and the whites of the eyes, called jaundice. This can be caused by cancer of the pancreas blocking the duct (tube) through which bile normally flows, (3) persistent loss of appetite and (4) persistent nausea.

3. Cancer of the lymph glands (Lymphoma) exhibits (1) painless swelling of the lymph glands in the neck, armpits, or groin, (2) heavy sweating during the night, (3) persistent itching of the skin for no apparent reason, (4) the development of red patches on the skin

and (4) persistent and unexplained nausea and vomiting. Leukemia in adults exhibits (1) enlarged lymph glands, (2) persistent bone pain, (3) a tendency to bleed or bruise easily, (4) a sense of heaviness or fullness under the left ribs, due to enlargement of the spleen, and (5) frequent infections anywhere in the body. Melanoma of the skin exhibits (1) change in the size, shape, or color of a mole, (2) a tendency for a mole to bleed or ooze, or to become tender, painful or itchy, or (3) the appearance of a new mole. Cancer of the bladder exhibits (1) bleeding with urination, with or without pain. Cancer of the testicles exhibits (1) a lump in either of the testicles, (2) persistent pain or discomfort in the testicles, (3) a sudden collection of fluid in the scrotum, (4) enlargement or swelling of either testicle, (5) persistent pain or dull ache in the groin or lower abdomen, or (6) enlargement or tenderness of the breasts resulting from hormonal imbalances caused by certain cancers of the testicle.

4. The etiology of cancer cachexia is complex. Reduced food intake is common in this population and has been reproduced in experimental animals bearing tumors. Some patients develop abnormalities of taste, others complain of early satiety, and may may be depressed. Obstructive lesions of the gastrointestinal tract such as esophageal and gastric tumors can induce pain, nausea and vomiting which understandably decrease nutritional intake. Rarely, gastrointestinal tumors such as diffuse lymphomas or pancreatic cancer will be associated with malabsorption. For the most part, however, cancer patients will lose weight despite apparently appropriate caloric intake. Metabolic abnormalities induced by the presence of the tumor may explain this phenomenon. The common clinical observation that tumor cells grow while host cells atrophy suggests that the cancer cell preferentially uses available energy sources. Much evidence supports the concept of accelerated glucose utilization by the cancer cell and increased levels of gluconeogenesis in patients with cancer cachexia. Abnormal lipid metabolism in cancer is manifested by progressive depletion of body fat through persistent mobilization of free fatty acids as the preferential source of metabolic fuel even if exogenous glucose is provided. The Alterations in protein metabolism may be characterized by both decreased synthesis and increased catabolism of protein in cancer patients with weight loss. Meat proteins subjected to high-temperature pyrolysis (burnt) generate carcinogens, including mutagenic amines, as natural breakdown produces of organic combustion. Fat dripping from barbecued steaks down onto the charcoal is fired back up onto the meat as a chemical cocktail rich in carcinogenic benzo(a)pyrene and other noxious polycylic hydrocarbon. A vegan diet is prescribed cancer patients.

D. The Union Internationale Contre Cancer (IUCC), uses three primary criteria for **staging**- the size of the cancer, spread to neighboring lymph nodes and metastasis to other sites in the body, known as TNM (Tumor, Nodes, Metastases) Staging. The American Joint Committee on Cancer Staging uses a slightly different variation that includes a staging rank of 0-4. Stage 1 – a cancer that measures less than two inches in diameter with no spread to lymph nodes or to distant parts of the body. Stage 2 – a cancer that measures less than two inches in diameter with spread to lymph nodes but not to distant parts of the body. Stage 3 – A cancer of any size with spread to the skin of the breast, or to the muscles of the chest or the chest wall and involvement of lymph nodes, but no spread to distant sites. Stage 4 – any cancer that has spread to distant parts of the

body. Different criteria may be applied for the staging of other types of cancer but they fundamentally all take into account a very commonsense and rational way of assigning a score to the cancer based on how rapidly the cancer has grown and how far it has progressed. The staging system is useful to understand how particular cancers progress but many people with solitary nodules and local disease are denied oral chemotherapy which is reserved for un-resectable patients in the literature, although chemotherapy is a more probable cure for many cancers.

1. Cancer is treated by surgery, radiation and chemotherapy. If tumors are relatively small, detectable, and in convenient sites, then surgeons can remove, them, much as Leonides of Alexandria performed mastectomies for breast cancer in AD 180. That excision alone can eradicate the problem in some cases is not in doubt. But clearly it can and does fail. The real problem in cancer treatment comes from the spread of disease throughout and between tissues. Once a cancer clone has evolved to this stage of territorial exploration, the knife is redundant and the blunter instruments of ionizing radiotherapy and chemotherapy are used (Greaves '00: 239). Surgical treatment can result in a complete cure if the surgeon is able to remove every single cancer cell, this is easiest to achieve if the cancer is completely confined to a single tumor. In many cases, surgery is a very effective way of treating cancer, especially if the cancer is located in an accessible part of the body, so that the surgeon can reach all of the cancer and can safely remove a generous amount of the surrounding normal tissue, just to be certain. Cancer of the breast is often treated this way. Sometimes a cancer may be inoperable because of where it is growing. Tumors that have metastasized widely are also inoperable. Under such circumstances it is impossible to surgically remove all the cancerous tissue. A third condition that can make cancer inoperable is that the patient's general health is not adequate to survive the ordeal of major surgery.

Comprehensive Cancer Treatment

Skin Cancer	Treatment
Squamous cell carcinoma	Excision. Red sap from bloodroot (*Sanguinaria Canadensis*).
Basal cell carcinoma	Excision. topical 5-fluorouracil (5-FU) is effective, 1% to 5% 5-FU cream or gel is applied twice daily for 10 to 21 days or longer until marked erythema and crusting develop in the treated skin; the lesions are then allowed to slough and re-epithelialize.
Malignant melanoma	Lesions that are 1.69 mm or less can be safely excised with margins of 1 cm to 2 cm, whereas thicker lesions should be excised with 3 cm margins. Cytotoxic systemic therapy for patients with disseminated malignant melanoma has been of limited palliative benefit. Dacarbazine (DTIC) is one of the more active single agents. A typical schedule involves 5 days of intravenous treatment each 3 weeks. However, a response rate of only 14% was noted compared with polychemotherapy. The nitrosoureas (BCNU, CCNU or methyl-CCNU) are also active against DMM with regression occurring in 15%. Bleomycin,

	Vincristine, Lomustine, and Dacarbazine (BOLD) with Interferon. Carmustine, Cisplatin, Dacarbazine, and Tamoxifen (Dartmouth Regimen).
Mycosis fungoides	Radioresistant. Corticosteroids are quite helpful, especially for the first two stages . Radiation therapy of the superficial type is very effective for plaque and small tumor lesions; electron beam radiation therapy can be administered to the total body, either early or late in the disease. Systemic chemotherapeutic agents include the alkylating agents cyclophosphamide (Cytoxan), chlorambucil (Leukeran), and nitrogen mustard; the plant alkaloid vincristine (Oncovin); the antimetabolite methotrexate; the antibiotic doxorubicin (Adriamycin); and the antibiotic derivative bleomycin (Blenoxane). Monoclonal antibodies are also being used for therapy
Warts	Trichloracetic acid solution (saturated) or Salicylic acid (10%) in flexible collodion 30.0 may be applied to warts every night for 5 to 7 nights. The dead tissue can then be removed with scissors. Moist warts (condylomata acuminate) are treated with Podophylllum resin in alcohol (25% solution). Apply once to the warts, cautiously. For plantar warts fluorinated corticosteroid-occlusive dressing therapy is applied to the wart(s) at night and covered with Saran Wrap, Handi-Wrap, or Blenderm Tape. Leave on for 12 to 24 to 48 hours and reapply.
Cysts	Surgical excision and suturing
Actinic and seborrheic keratosis	Currettement, followed by a light application of trichloracetic acid, (or doxycycline powder). Flourouracil is useful for the patient with multiple superficial actinic keratoses. Fluroplex 1% cream 30.0 or Efugex 2% solution 10.0 applied to area twice a day, with fingers, for two weeks. A corticosteroid cream may hasten healing. Treatment may need to be repeated in several months or years.
Hemangiomas	Systemic corticosteroids and excision have been used successfully.
Choriocarcinoma Hydatidiform mole, invasive mole)	Patients with invasive mole or choriocarcinoma or metastases require immediate chemotherapy. Single-agent chemotherapy has been most commonly used. Intramuscular methotrexate, 0.4 mg/kg daily for 5 days every 2 weeks, or IV actinomycin D, 10 to 12µg/kg daily for 5 days every 2 weeks as necessary. There is less toxicity with intramuscular methotrexate, 1 mg/kg daily for 4 days, with intramuscular leucovorin, 0.1 mg/kg on alternate days, is associated with a high cure rate and low toxicity. Patients with high-risk tumors are initially treated with combination chemotherapy. The most common regimen used includes intramuscular methotrexate, 0.3 mg/kg, IV actinomycin D, 10µg/kg and chlorambucil, 10 mg orally daily for 5 days, with repeated courses as necessary.

Central Nervous System (CNS) Tumor Type	Treatment
Malignant Glial Tumors	
Astrocytoma (Kernohan Grades I and II) and	Methotrexate (oral) or 5-fluorouracil. Complete resection curative. Incompletely resected tumors irradiated with 50Gy to 55Gy.
Glioblastoma (Kernohan Grades III and IV)	Postoperative radiation to approximately 60 Gy in 1.8 to 2 Gy fractions delivers as a 45 Gy whole brain plus 15 Gy tumor boost, or as 60 Gy to the tumor volume plus a 2 cm to 3 cm margin. BCNU, 60 mg to 80 mg/m^2/ for 3 days (total: 180 mg to 240 mg/m^2) every 6 weeks, or lomustine (CCNU), 110 mg to 130 mg/m^2 orally every 6 weeks or every 6-week combination CCNU, 110 mg/m^2 orally on day 1, procarbazine, 60 mg/m2 for 14 days (days 8 to 21), and vincristine, 2 mg intravenously on days 8 and 29. Treatment for up to 1 year after maximal tumor response is recommended. Cisplatin, 100 mg/m^2 every 3 to 4 weeks, is an alternative therapy. Combination therapy with Gleevec and Hydrea resulted in complete or partial disappearance of the tumor in 20% of patients. Half of the patients survived for at least 19 weeks. Thirty-two percent of patients survived for six months without a worsening of their tumor, and 16% survived for two-years.
Oligodendroglioma	Methotrexate (oral) or 5-fluorouracil. Complete resection curative. Incompletely resected tumors irradiated with 50Gy to 55Gy.
Ependymoma	Radiosensitive tumors. 5 year survival improves from 2% with surgery alone to 50% with surgery plus radiation
Adult Nonglial Malignant Tumors	
Primary CNS lymphoma (microglioma)	Dexamethasone, 10 mg initially, and 4 mg every 6 hours orally or intravenously. For spinal cord compression doses equivalent to dexamethasone, 50 mg per day Oral methotrexate. Oral therapy. PCV combination plus steroids or vincristine, 1.5 mg/m^2 intravenously weekly, doxorubicin (Adriamycin), 75 mg/m^2 intravenously on days 1 and 22, and prednisone, 40 mg/m^2 for 21 days, repeated every 6 weeks (APO) for 1 to 2 years or standard CHOP lymphoma chemotherapy. Additional intrathecal therapy with methotrexate or cytarabine (ara-C) may be needed for CSF seeding.
Malignant meningioma (sarcomatous/angioblastic)	Poorly responsive to surgery alone. Radiation of 50 Gy to 60 Gy. Doxorubicin (Adriamycin) and other "sarcoma regimens".
Malignancies of	

Childhood	
Medulloblastoma	Oral methotrexate. Craniospinal radiation of 45 Gy to 50 Gy to the posterior fossa and cervical cord, 35 Gy to the supratentorium and 35 Gy to 40 Gy to the spinal axis. Vincristine-based combination chemotherapy such as the PCV combination, MOPP with or without prednisone or vincristine, CCNU plus intrathecal methotrexate.
Germinoma (pineal)	Germ cell tumors are radiosensitive; resection may be unnecessary. Radiation to 50 Gy to 60 Gy is reported to produce up to 60% 5 year survival. Standard vinblastine, bleomycin, cisplatin germ cell treatment**.**
Brain stem glioma	Methotrexate (oral) or 5-fluorouracil. Complete resection curative. Incompletely resected tumors irradiated with 40Gy to 45Gy. BCNU, 60 mg to 80 mg/m^2/ for 3 days (total: 180 mg to 240 mg/m^2) every 6 weeks, or lomustine (CCNU), 110 mg to 130 mg/m^2 orally every 6 weeks or every 6-week combination CCNU, 110 mg/m^2 orally on day 1, procarbazine, 60 mg/m2 for 14 days (days 8 to 21), and vincristine, 2 mg intravenously on days 8 and 29. Treatment for up to 1 year after maximal tumor response is recommended. Cisplatin, 100 mg/m^2 every 3 to 4 weeks, is an alternative therapy.
Low-grade tumors: optic glioma, cystic cerebellar astrocytoma, juvenile pilocytic astrocytoma	Benign lesions treated with surgery alone even at recurrence.
Histologically Benign Tumors	
Meningioma	Rarely recur if completely resected. Radiation to incompletely resected lesions.
Schwannoma (acoustic neuroma)	Rarely recur if completely resected. Radiation to incompletely resected lesions.
Pituitary adenoma	Focal radiation alone or surgery with radiation for incompletely resected tumors.
Craniopharyngioma	Resection followed by radiation.
Cancers of the Neck	
Cancer of the Neck and Head	Methotrexate is generally given at 40 mg/m^2 intravenously weekly, and is also available in oral table 2.5 mg once a week. Two commonly used regimens are (1) Cisplatin, 50 mg/m^2 on day 6, methotrexate, 40 mg/m^2 on days 1 and 15; Bleomycin 10 mg on days 1, 8, 15; response rate is 61%. (2) Cisplatin, 100 mg/m^2 on day 1; 5-FU, 1000 mg/m^2 for 4 days, response rate is 70%. Cisplatin and Continuous Infusion Fluorouracil (CF). Docetaxel

	and Carboplatin (AUC=6)(DC). Docetaxel and Cisplatin (DP). Docetaxel, Cisplatin and Fluorouracil (DCF). Docetaxel, Cisplatin and Fluorouracil (TCF). Radiotherapy for head and neck cancer is usually done with either teletherapy, brachytherapy or hyperthermia. In teletherapy, treatment with a linear accelerator (4-6 MeV energy) is preferred. Cobalt-60 units are acceptable if they operate at 80 SSD (source-to-skin distance). A combination of lateral opposed fields, anterior and lateral wedged fields, or isocentric multiple fields is used for the primary tumor site. A single anterior field with a midline block can be used to treat the neck, and lower neck fields should match the primary field at the skin. The accepted dose rate is 180 cGy to 200 cGy per day. The dose to tumor volume for primary treatment is approximately 6600 cGy to 7000 cGy in 6 to 7 weeks. The dose to a tumor bed following resection is 5500 cGy in 5 to 5 ½ weeks for negative margins, 6000 cGy for close margins and 6600 cGy-7000 cGy for positive margins. The maximum dose to the spinal cord should be no more than 4000 cGy when 200 cGy fractions are used. Postoperative radiation should not begin until postoperative healing is satisfactory (about 2 weeks).
Cancer of the Salivary Glands	Treatment of minor salivary gland cancers includes a wide excision. Most would recommend postoperative radiation for patients with high-grade cancers, positive margin, perineural invasion, deep lobe involvement, and regional lymph node metastases, at a minimum dose of 5000 cGy to 5500 cGy or 6600 cGy for positive margins. Primary radiotherapy is reserved for inoperable patients. The best single agents are cisplatin, doxorubicin, 5-FU and methotrexate. Overall responses have been noted in up to 60% of patients.
Lung Cancer	Carboplatin and Etoposide (CE). Cisplatin and Pemetrexed. Docetaxel and Capecitabine (DC). Doecetaxel and Cisplatin (DP). Etoposide and Cisplatin (GC). Irinotecan and Carboplatin (IC). Irinotecan and Cisplatin (IP). Paclitaxel and Carboplatin (PC or TC). Pemetrexed and Carboplatin (PC). Vinorelbine and Cisplatin (VC)
Small cell lung cancer	Chemotherapy for small cell lung cancer is effective, achieving an 80% initial response rate and increasing mean survival from 13 weeks to 13 months. It has been reported that up to 5% are potentially cured. Chemotherapy programs utilized in SCLC generally include three or four drugs selected from known active single agents such as cyclophosphamide, doxorubicin, vincristine, methotrexate, etoposide (VP-16), cisplatin, or a nitrosourea such as moustine (CCNU).
Non-small cell	Chemotherapy for non-small cell carcinoma is disappointing. Response rates vary from 10% to 40%. Potentially curative radiotherapy is customarily administered to a total dose of 55 Gy

	to 60 Gy (5500-6000 rad) in continuous fractionation using megavoltage equipment.
Vascular Neoplasms	
Angiosarcomas	Usually treated with the antiangioenic drugs paclitaxel (Taxol), docetaxel (Docefrez, Taxotere), sorafenib (Nexavar), or bevacizumab (Avastin).
Lymphangiosarcoma	Chemotherapeutic drugs such as paclitaxel, doxorubicin, ifosfamide, and gemcitabine exhibit antitumor activity. Bevacizumab, may be effective in treating lymphangiosarcoma. Investigation of bevacizumab in combination with other chemotherapy agents is underway.
Abdominal cancer	Gastrointestinal: Gemcitabine and Capecitabine (Billiary, Gallbladder). Irinotecan and Cisplatin (IP) (Gastroesophageal). Colon/Colorectal: Capecitabine plus Oxaliplatin (XelOx/CapOx). Fluorouracil, Leucovorina nd Irinotecan (FOLFIRI). High-Dose Fluorouracil and Leucovorin. Irinotecan, Fluourouracil and Leucovorin. Leucovorin, Fluorouracil and Oxaliplatin (FOLFOX4). Leucovorin, Fluorouracil and Oxaliplatin (FOLFOX 6 & 7). Protracted Venous Infusion Flourouracil. Weekly Fluorouracil and Leucovorin.
Esophageal cancer	Docetaxel and Capecitabine (DC). Docetaxel and Cisplatin (DP). Irinotecan and Cisplatin (IP). Chemotherapy regimens utilizing combination of 5-fluorouracil (5-FU) (1000 mg/m^2 per day, IV continuous infusion on days 1 to 4; repeat on days 29 and 32) and cisplatin (75 mg/m^2, IV day 1 and day 29 only), or 5-FU and mitomycin and 3000 cGy of radiation, can be effectively used in the management of patients with esophageal cancer. In one study 17% were shown to have no tumor in the resected esophageal specimens. The median survival of patients achieving pathologic complete remission was 32 months with 67% and 45% at 2 and 3 years after surgery.
Adenocarcinoma of the stomach	Patients who have undergone gastrectomy should receive vitamin B_{12}, 100 µg monthly, to avoid megaloblastic anemia. Single-agent chemotherapy response rates are less than 30%. Doxorubicin (25%), 5-Fluorouracil (21%), Mitomycin-C (30%), Hydroxyurea (19%), BCNU (18%), Chlorambucil (13%), Mechlorethamine (13%), Methyl-CCNU (8%), Cisplatin (22%), Triazinate (15%) and Methotrexate (11%) are indicated for gastric cancer. The most widely applied combination regimen is the FAM program, consisting of 5-fluorouracil, doxorubicin (Adriamycin) and mitomycin-C. A review of 300 patients documented an overall response rate of 35%. The FAP program, consisting of 5-FU, doxorubicin and cisplatin produced a complete response in 12% to 15% of patients, who survived more than 4 years. Docetaxel and Capecitabine (DC). Docetaxel and Cisplatin (DP). Docataxel,

	Cisplatin and Fluorouracil (DCF). Epirubicin, Cisplatin and Capecitabine (ECX). Epirubicin, Cisplatin and Fluorouracil (ECF). Fluorouracil, Doxorubicin and Mitomycin (FAM). Irinotecan and Cisplatin.
Gastrointestinal sarcomas of the small bowel	Single agent doxorubicin, 70 mg/m^2 has a response rate of 15% to 35%. DTIC 1 g. m^2 every 3 weeks has a single agent response rate of 17%. Response rates improved in combination doxorubicin, 70 mg/m^2 and DTIC 1 g. m^2 every 3 weeks but so nausea and vomiting increased. Trials of ifostfamide in previously untreated patients yield response rates of 20% to 40%. A study of a combination doxorubicin, ifosfamide, and DTIC with mesna uroprotection yielded a response rate of 48% with 13% complete response.
Colon cancer	The 1 g/m2/day infusion schedule of 5-FU may be given generally for 7 to 10 days, is limited by stomatitis rather than myelosuppression and has a response rate of 31%. Combination chemotherapy has not been proven to be more effective than 5-FU. Studies of 5-FU plus methyl-CCNU and 5-FU, methyl-CCNU, streptozo in and vincristine demonstrated partial response rates as high as 40%, but this was not confirmed. Sequential methotrexate followed by 5-FU and 5-FU and leucovorin have produced response rates as high as 41%. The first-line treatment for metastatic colorectal cancer appears to be the fluorouracil + folinic acid combination (LV-5FU2 protocol) plus either oxaliplatin (FOLFOX protocol) or irinotecan (FOLFIRI protocol)
Anal cancer	5-FU 1000 mg/m2 per day, as continuous infusion on days 1 to 4, repeat on days 28 to 31; Mitomycin-C, 15 mg/m2 IV bolus on day 1 only; external radiation therapy, 3000 cGy, to primary tumor, pelvic and inguinal nodes on days 1 to 21 at 200 cGy per day, 5 days a week. Tumor response is universal, with at least 80% compete response.
Pancreatic cancer	Fluorouracil, Doxorubicin and Mitomycin (FAM). Gemcitabine and Capecitabine. 5-FU alone is the most appropriate chemotherapy choice for pancreatic cancer. The median survival for all patients treated with radical surgery (Whipple procedure) alone is approximately 11 months. Radiation therapy and 5-fluorouracil (5-FU) may be beneficial. Supervoltage radiation is given in fractions of 200 cGy/ day, five times per week, with a 2-week rest period, before the second 2000 cGy is given for a total dose of 4000 cGy. A 1 month rest period after the completion of radiation is followed by weekly 5-FU (500 mg/m^2) therapy for a total treatment time of 2 years. Patients undergoing this combined modality approach had a median survival of approximately 21 months. The 2 year survival for this combination therapy group is 46%, with about 25% of the patients alive at 5 years with no evidence of disease.

Insulinoma	Diazoxide in doses of 300 mg to 800 mg daiy inhibits release of insulin and also has a peripheral hyperglycemic effect, a benzothiadizine diuretic should be given with diazoxide. Propranolol and glucocorticoids have also been used.
Carcinoid tumors	Medical management of the carcinoid syndrome includes use of alpha-or beta-adrenergic blockers (propranolol, phenoxybenzamine), antiserotonin agents (cyproheptadine), phenothiazines (chlorpromazine), and corticosteroids. Propranolol, a beta-blocking agent, has been reported to decrease the frequency and intensity of carcinoid-related flushing. The doses usually used are 10 mg, three times a day, given orally. Phenoxybenzamine, 20 mg/daily, has also been reported to decreased the frequency ad severity of flushing and diarrhea The phenothiazine chlorpromazine has been known to alleviate carcinoid flushing, the optimal dose used was 25 mg, four times daily. Cyproheptadine (Periactin), 4 mg to 8 mg four times daily. In patients with bronchial carcinoids, prednisone, 10 mg to 20 mg per day. Diphenoxylate hydrochloride (Lomotil), one to two tablets two to four times per day, is useful for controlling the diarrhea associated with both carcinoid and islet cell tumors. A long-acting analogue of somatostatin (Sandostatin, SMS 201-995) is quite effective in aborting a carcinoid crisis, including severe hyptension, among aptietns undergoing surgery, in this setting, intravenous (IV) therapy of 150µg to 300µg is given to stop the crisis. More routine use of SMS 201-995 is self-adminiastered as a subcutaneous injection. Treatment is usually started as 150µg twice a day and then increased to 150µg three times daily. A large majority of patients (77%) have had prompt relief of symptoms associated with the carcinoid syndrome.
Hepatic cancer	For patients with an estimated survival of 1 month or more, the use of single-agent doxorubicin is appropriate. External irradiation (300 cGy/day for 7 days) can result in palliation without severe organ toxicity, and up to 20% of patients will experience tumor shrinkage, while more than 50% will have diminished local symptoms.
Female Cancers	
Breast Cancer	CMF+/-P: Cyclophosphamide,Methotrexate, 5-Fluorouracil, and Prednisone; CMF: Cyclophosphamide, Methotrexate, 5-Fluorouracil; FAC: 5-Flourouracil, Doxorubicin, Cyclophosphamide; AC Doxorubicin, Cyclophosphamide; and PF Phenylalanine mustard, 5-Fluorouracil, Cyclophosphamide, Doxorubicin and Fluorouracil (CAF, FAC). Cyclophosphamide, Methotrexate and Fluorouracil (CMF). Docetaxel and Capecitabine (DC). Docetaxel and Carboplatin (AUC=6)(DC). Docetaxel and Cisplatin (DP). Docetaxel, Doxorubicin and Cyclophosphamide (TAC). Dose Dense Doxorubicin and

	Cyclophosphamide Followed by Paclitaxel. Doxorubicin and Cyclophosphamide. Doxorubicin and Cyclophosphamide followed by Docetaxel. Doxorubicin and Docetaxel. Fluorouracil, Epirubicin and Cyclophosphamide (FEC50)(FEC)(FEC100) (FEC). Gemcitabine and Capecitabine. Ixabepine and Capecitabine. Lapetinib and Capecitabine. Paclitaxel and Gemcitabine. Pemetrexed and Carboplatin (PC)
Cervical cancer	Most advanced tumors are managed entirely by external irradiation, delivering 5500 cGy to 6000 cGy to the whole pelvis over 5 to 6 weeks. Patients treated with cisplatin, 50 mg/m^2 every 3 weeks, reported an overall response rate of 38%. Methotrexate, bleomycin and cisplatin has 89% response rate, doxorubicin may be added for cure in 29%. Docetaxel and Carboplatin (AUC=6) (DC)(Cervical).
Carcinoma of the ovary (serous cystadenocarcinoma, mucinous sytadenocarcinoma, endometrioid, undifferentiated and clear cell carcinoma)	Treatment of early ovarian cancer includes surgery alone, surgery plus pelvic radiation therapy, surgery plus total abdominal radiation therapy, surgery plus intraperiotineal radioisotopies and surgery and surgery followed by chemotherapy. Oral methotrexate 2.5 mg once a week should be prescribed before expensive surgical, radiation or combination intravenous chemotherapy treatments are tried for methotrexate resistance. Docetaxel and Carboplatin (AUC=6)(DC). Docetaxel and Carboplatin (AUC=5)(DC). Docetaxel and Cisplatin (DP). Liposomal Doxorubicin. Pemetrexed and Carboplatin (PC).
Germ cell tumor of the ovary	Germ cell tumors of the ovary comprise only 5% to 10% of the total but are important because of their aggressiveness, their lack of successful management with surgery and radiation therapy, and their high degree of curability with combination chemotherapy. A four drug combination termed Hexa-CAF (hexamethylmelamine, cyclophosphamide, methotrexate, and 5-fluourouracil produced an increase in response rate (75% versus 54%), more complete remissions (33% versus 16%) and significantly longer median survival (29 months versus 17 months) versus single-agent melphalan. Oral methotrexate 2.5 mg once a week might suffice.
Carcinoma of the endometrium (adenocarcinoma in about 67% of patients, 13% are adenosquamous carcinomas. Rarely <1% purely squamous carcinoma. Also rare <1% are clear cell carcinomas	Either hysterectomy or medical management depending on the patient's desire for childbearing. Hysterectomy strongly advised to prevent recurrent cancer. When childbirth is desired, ovulation can be produced with clomiphene. Commonly used agents include hydroxyprogesterone (Delalutin, deoxyprogesterone (Provera, and the oral agent megestrol (Megace), with response rates up to 30%. Tamoxifen also appears to induce progesterone-receptor activity. Doxorubicin (Adriamycin) has shown the most activity, Adriamycin, 60 mg/m^2 IV every 3 weeks, has produced a 37% response rate in 43 patients, 26% of whom had clinically complete regression of disease. Cisplatin also appears to produce a significant response rate (46%) when used at doses of 10 mg/m^2

with a particularly poor prognosis.	IV every 4 weeks. Combination chemotherapy has not been studied extensively and does not seem to show results better than single-agent therapy. Docetaxel and Cisplatin (DP(Urothelial), Docetaxel and Carboplatin (AUC=6)(DC)(Cervical).
Carcinoma of the vulva Ninety percent of the invasive tumors are squamous carcinoma. Three percent of the tumors are basal cell carcinomas. Less commonly seen are adenocarcinoma of the Bartholin duct, Paget's disease, melanoma, and sarcomas.	Herpes simplex type II and human papilloma virus have been identified in vulvar cancers and vulvar condyloma. Topical chemotherapy, usually 5-FU, has been utilized, three 7 day treatment courses of 5% 5-FU given two weeks apart. Topical dinitrochlorobenzene has also been used with similar results
Carcinoma of the vagina	Many carcinomas of the vagina are not surgically resectable. Radiation therapy is the more common management approach. Carcinoma *in situ* and carcinomas limited to the vaginal wall (Stage I) are generally treated with intracavitary or interstitial radiation therapy. Cesium-137 needles are commonly used. When lesions are located high in the vagina, intrauterine tandems and vaginal colpostats are used. Five year survival for Stage I and II carcinomas has generally been reported at 35%.
Gestational Trophoblastic Neoplasm	Etoposide, Methotrexate, Actinomycin, Cyclophosphamide and Vincristine (EMA/CO). Hydroxyurea, Dactinomycin, Vincristine, Leucovorin, Cyclophosphamide, and Doxorubicin (Modified Bagshawe Regimen).
Male Cancers	
Adenocarcinoma of the prostate and transitional cell carcinoma of the respond to chemotherapy protocols for bladder cancer and are unresponsive to hormonal manipulation. Rare tumors include endometroid cancer	Standard therapy for advanced prostatic adenocarcinoma is hormone manipulation, which can be accomplished by orchiectomy or the administration of exogenous hormones such as diethylstilbesterol (DES), 1 mg daily (up to 3 mg) to suppress testosterone levels, antiandrogens (i.e., flutamine or cyproterone acetate), progestins combined with estrogens (megestrol, 40 mg three times daily, with low-dose DES or estinyl), and luteinizing hormone-releasing hormone (LHRH) agonists such as leuprolide. Levels of testosterone will drop to castration levels. Hormonal manipulation will induce remission in approximately 40% to 80% of patients depending on the criteria employed. Complete disappearance of the disease is rare. Surgery and radiation therapy produce 5, 10 and 15 years survival rates for State B

and carcinoma sarcomas; and lymphomas.	disease of 75%, 50% and 30% to 50% for C and D1 disease, survival is 55% and 15% respectively. Seventy-percent survival for interstitial and external radiation is expected at 5 years, while 50% to 30% is reported for 10 and 15 years for Stages B2-C disease. When one excludes disease stabilization as a response category multi-drug chemotherapy has less than 5% response rate. The most frequently employed agents are doxorubicin, given in a dose of 45 mg to 60 mg/m2 every 3 weeks or 20 mg/m2 weekly, cyclophosphamide, 5-fluourouracil and cisplatin with doxorubicin. Prednisone, initially in a dose of 40 mg daily progressively decreased by 5 mg weekly, can improve quality of life by increasing appetite and weight and decreasing bone pain. Docetaxel and Capecitabine (DC). Docetaxel and Estamustine. Doxetaxel and Prednisone (DP). Gemcitabine and Capecitabine. Mitoxantrone and Prednisone (MP). Taxanes and Estramustine.
Squamous cell (epidermoid) *carcinoma in situ* of the penis, erythroplasia of Queyrat and soft-tissue sarcomas	Soft-tissue sarcomas requires a total penectomy but no lymph node dissection. Therapy for carcinoma *in situ* is complete local incision. For erythroplasia of Queyrat, topical 5-fluourouracil twice daily has been effective; radiation therapy has not. Locally invasive penile lesions with clinically enlarged inguinal nodes are observed in 75% of cases at presentation, and after removal of the primary tumor, such nodes will have metastatic involvement. The 5 year survival rate for Stage 3 is more than 50%. Methotrexate, bleomycin, and cisplatin all have response rates in the 10% to 30% range; long-term complete remission is uncommon. Combinations have not been proven more effective. Laser therapy has been curative for some superficial lesions.
Germ cell tumors of the testicles	Germ cell tumors are the most curable malignancy. Cisplatin-based chemotherapy has results in the cure of 70% of 80% of patients with metastatic disease. For patients failing to achieve a complete remission or relapsing from complete remission, Etoposide (VP-16), 100 mg/m2 IV for 5 days, plus cisplatin 20 mg/m2 IV for 5 days is the standard treatment, that only cures 15% to 25% of those relapsing from complete remission. Bleomycin, Etoposide and Cisplatin (BEP). Cisplatin and Ifosfamide with either Vinblastine or Etoposide (VIP). Etoposide and Cisplatin.
Kidney and Bladder Cancer	
Renal cell carcinoma (hypernephroma) Uncommon tumors include adult Wilms' , and soft-tissue sarcomas	Early diagnosis is mandatory, and therapy with irradiation and corticosteroids can prevent a major decrease in quality of life. Hypercalcemia is usually a terminal event and may be controlled for a limited time with hydration, mithramycin and rarely, by a prostaglandin inhibitor. Radical nephrectomy with lymph node dissection is the only appropriate therapy for locoregional renal cell carcinoma. If there is invasion of the renal vein and inferior

	vena cava, urologists may consider tumor embolectomy to remove all residual disease. Partial nephrectomy is performed in selected cases presenting with a grade I renal cell carcinoma and patients with a single kidney. When synchronistic or metachronous tumors occur bilaterally, renal transplantation can be considered. Pre-operative or postoperative radiation therapy has limited value. Chemotherapy is also ineffective, with transient tumor regression occurring in less than 5% to 10%. The most commonly used agents are vinblastine and a nitrosourea. Progestins produce tumor regression in less than 2% to 8% of cases and should never be employed as surgical adjuvants. Alpha-interferon induces responses in 13% to 20% of cases; however responses have been atrial and of limited duration.
Transitional (epidermoid) cell carcinoma of the bladder, over 90% of urothelial tumors, squamous cell (6%-8%), adenocarcinoma and urachal carcinoma (2%), clear cell, and mixed varieties. Embryonal rhabdomyosarcoma tends to occur in children.	Therapy for superficial lesions (Stages 0, A and sometimes B1) is endoscopic resection and fulguration with cystoscopy repeated every 3 months. When lesions recur frequently or are diffuse, the standard therapy is thiophosphoramide (thiotepa) 60 mg/60 ml normal saline IV for 2 hours, weekly for 6 consecutive weeks. Approximately 30% to 40% of patients will respond, particularly those with low-grade lesions, but severe myelosuppression may occur. BCG 120 mg/50 ml of normal saline has also been found to be extremely efficacious when given weekly for 6 weeks, resulting in 60% of cases achieving complete remission. Other agents include mitomycin-C, 20 mg to 60 mg/20 ml to 40 ml, and doxorubicin 20 mg to 60 mg; however both of these agents cause severe bladder irritation. Radical cystectomy is considered for diffuse or recurrent Tis lesions, a procedure resulting in a 5 year survival rate of more than 90%. Standard therapy for Stages B-C disease is radical cystectomy with resection of local pelvic nodes. Overall 5 year survival rates for Stages B-C range from 30% to 50% in patients presenting with papillary low-grade lesions, survival is 60% to 75%. When surgery is medically contraindicated, supervoltage irradiation, 6000 cGy to 7000 cGy in 6 to 8 weeks, can produce 5 year survival rates of approximately 20% to 30% or higher for B1-2 and C disease. The most active single chemotherapeutic agents are cisplatin and methotrexate, and to a lesser extent, doxorubicin, vinblastine and mitomycin-C. Single agents induce response in 15% to 30% of cases; few responses are complete. Combination chemotherapy programs have reported complete remission in 16% to 40% of cases, and partial response in an additional 15% to 30%. Most combinations employ cisplatin and doxorubicin, frequently with cyclophosphamide (CISCA), cisplatin and methotrexate together and with vinblastine (CMV) and doxorubicin (M-VAC). Such regiments seem to be efficacious against transitional cell carcinoma but not for Tis, squamous cell, or adenocarcinoma.

	Long-term remission has been reported in patients with metastatic disease. CMV induces a 28% complete remission rate leading to a 1 month median survival for patients with complete remission; a few are surviving more than 2 years. M-VAC has induced complete remission in 39% of patients with 58% surviving 22 to 47 months or more. Intravesical Doxorubicin. Intravesical BCG. Intravesical Gemcitabine. Intravesical Mitomycin. Methotrexate, Vinblastine, Doxorubicin, and Cisplatin (MVAC).
Myeloma	Chemotherapy in the form of alkylating agents induces remission in 50 to 70% of patients, but the median survival is still a dismal 3 years. Autologous and allogenic bone marrow transplantation after intensive chemotherapy offers the promise of cure. High serum levels of cytokine IL-6 is associated with a poor prognosis. Bortezomib and Dexamethasone (BD). Liposomal Doxorubicin and Bortezomib. Melphalan and Prednisone (MP). Melphalan, Prednisone and Thalidomide (MPT). Thalidomide and Dexamethasone (TD). Vincristine, Doxorubicin and Dexamethasone (VAD).
Multiple Myeloma and Plasma Cell Dyscracias	Oral Thalidomide, with dexamethasome, a corticosteroid. Others: Bortezomib, Carfilzomib, Clafen (Cyclophosphamide), Cyclophosphamide, Cytoxan (Cyclophosphamide), Doxil (Doxorubicin Hydrochloride Liposome), Doxorubicin Hydrochloride Liposome, Dox-SL (Doxorubicin Hydrochloride Liposome), Evacet (Doxorubicin Hydrochloride Liposome), Kyprolis (Carfilzomib), Lenalidomide, LipoDox (Doxorubicin Hydrochloride Liposome), Mozobil (Plerixafor), Neosar (Cyclophosphamide), Plerixafor Pomalidomide (Pomalyst), Pomalyst, Revlimid (Lenalidomide), Synovir (Thalidomide), Thalidomide, Thalomid (Thalidomide), Velcade (Bortezomib), Zoledronic Acid Zometa (Zoledronic Acid).
Waldenström macroglobulinemia	Fludara (fludarabine) and Leustatin (cladribine) first to try. Cytoxan (cyclophosphamide) may be added. Other commonly used chemotherapy drugs are Luekeran (chlorambucil) and prednisone, usually given together, or Adriamycin (doxorubicin). Rituxan (rituximab). Campath (alemtuzumab) has also been an effective treatment, as has Velcade (bortezomib).
Langerhans' cell histiocytoses	Oral methotrexate (20 mg/m^2) weekly for 6 months or Oral thalidomide 50 mg to 200 mg nightly, with prednisone are taken for low risk disease or vinblastine IV and prednisone for patients with more complicated cases requiring radiation and surgery.
Acute Leukemias	
Acute lymphoblastic leukemia (ALL)	Abitrexate (Methotrexate), Adriamycin PFS (Doxorubicin Hydrochloride), Adriamycin RDF (Doxorubicin Hydrochloride), Arranon (Nelarabine), Asparaginase Erwinia chrysanthemi, Cerubidine (Daunorubicin Hydrochloride), Clafen (Cyclophosphamide), Clofarabine, Clofarex (Clofarabine), Clolar

	(Clofarabine), Cyclophosphamide, Cytarabine, Cytosar-U (Cytarabine), Cytoxan (Cyclophosphamide), Dasatinib, Daunorubicin Hydrochloride, Doxorubicin Hydrochloride, Erwinaze Asparaginase Erwinia Chrysanthemi), Folex (Methotrexate), Folex PFS (Methotrexate), Gleevec (Imatinib Mesylate), Iclusig (Ponatinib Hydrochloride), Imatinib Mesylate, Marqibo (Vincristine Sulfate Liposome), Methotrexate, Methotrexate LPF (Methorexate), Mexate (Methotrexate), Mexate-AQ (Methotrexate), Nelarabine, Neosar (Cyclophosphamide), Oncaspar (Pegaspargase), Pegaspargase, Ponatinib Hydrochloride, Rubidomycin (Daunorubicin Hydrochloride), Sprycel (Dasatinib), Tarabine PFS (Cytarabine), Vincasar PFS (Vincristine Sulfate), Vincristine Sulfate, Vincristine Sulfate Liposome, Hyper-fractionated Cyclophosphamide, Vincrisine, Doxorubicin, and Dexamethasone Alternating with Methotrexate and Cytarabine (Hyper-CVAD). Prednisone, Asparaginase, Vincristine, Daunorubicin, Cyclophosphamide, Cytarabine, Thioguanine, Mercaptopurine and Methotrexate (Hoelzer Regimen). Prednisone, Vincristine, Daunorubicin, and Asparaginase (PVDA).
Acute myeloblastic leukemia (AML)	Adriamycin PFS (Doxorubicin Hydrochloride), Adriamycin RDF (Doxorubicin Hydrochloride), Arsenic Trioxide, Cerubidine (Daunorubicin Hydrochloride), Clafen (Cyclophosphamide), Cyclophosphamide, Cytarabine, Cytosar-U (Cytarabine), Cytoxan (Cyclophosphamide), Daunorubicin Hydrochloride, Doxorubicin Hydrochloride, Neosar (Cyclophosphamide), Rubidomycin (Daunorubicin Hydrochloride), Tarabine PFS (Cytarabine), Trisenox (Arsenic Trioxide), Vincasar PFS (Vincristine Sulfate), Vincristine Sulfate, combination; ADE. Cytarabine and Daunorubicin (7 plus 3). Cytarabine and Idarubicin (7+3). Fludarabine, Cytarabine and Filgrastim (FLAG). High-Dose Cytarabine (HIDAC). High-Dose Cytarabine (HDAC) Plus Danorubicin.
Myelodysplastic syndromes	
Chronic myeloid leukemia (CML)	Bosulif (Bosutinib), Bosutinib, Clafen (Cyclophosphamide), Cyclophosphamide, Cytarabine, Cytosar-U (Cytarabine) Cytoxan (Cyclophosphamide), Dasatinib, Gleevec (Imatinib Mesylate), Iclusig (Ponatinib Hydrochloride), Imatinib Mesylate, Neosar (Cyclophosphamide), Nilotinib, Omacetaxine Mepesuccinate, Ponatinib Hydrochloride, Sprycel (Dasatinib), Synribo (Omacetaxine Mepesuccinate), Tarabine PFS (Cytarabine), Tasigna (Nilotinib)
Chronic lymphocytic leukemia (CLL)	Alemtuzumab, Ambochlorin (Chlorambucil), Amboclorin (Chlorambucil), Arzerra (Ofatumumab), Bendamustine Hydrochloride, Campath (Alemtuzumab), ChlorambucilClafen

	(Cyclophosphamide), Cyclophosphamide, Cytoxan (Cyclophosphamide), Fludara (Fludarabine Phosphate), Fludarabine Phosphate, Leukeran (Chlorambucil), Linfolizin (Chlorambucil), Neosar (Cyclophosphamide), Ofatumumab Treanda (Bendamustine Hydrochloride), combinations Chlorambucil-Prednisone CVP. Cyclophosphamide, Fludarabine, and Rituximab (CFR, FCR). Cyclophosphamide, Vincristine and Prednisone. Lymphomas.
Meningeal Leukemia	Cytarabine, Cytosar-U (Cytarabine),Tarabine PFS (Cytarabine), Methotrexate
Hairy cell leukemia	Cladribine (2-chlorodeoxyadenosine, 2-CdA), Pentostatin
Polycythemia vera	Anagrelide (Agrylin), Ruxolitinib (Jakafi)
Lymphoma	
Hodgkin's lymphoma	Adcetris (Brentuximab Vedotin), Adriamycin PFS (Doxorubicin Hydrochloride), Adriamycin RDF (Doxorubicin Hydrochloride), Ambochlorin (Chlorambucil), Amboclorin (Chlorambucil), Blenoxane (Bleomycin), Bleomycin, Brentuximab Vedotin, Chlorambucil, Clafen (Cyclophosphamide), Cyclophosphamide, Cytoxan (Cyclophosphamide), Dacarbazine, Doxorubicin Hydrochloride, DTIC-Dome (Dacarbazine), Leukeran (Chlorambucil), Linfolizin (Chlorambucil), Lomustine, Matulane (Procarbazine Hydrochloride), Neosar (Cyclophosphamide), Procarbazine Hydrochloride, Velban (Vinblastine Sulfate), Velsar (Vinblastine Sulfate), Vinblastine Sulfate, Vincasar PFS (Vincristine Sulfate), Vincristine Sulfate, combinations; ABVD, ABVE, ABVE-PC, BEACOPP, COPP, ICE, MOPP, STANFORD and VAMP. Bleomycin, Etoposide, Doxorubicin, Cyclophosphamide, Vincristine, Procarbazine, and Prednisone (BEACOPP baseline and escalated). Doxorubicin, Bleomycin, Vinblastine and Dacarbazine (ABVD). Mechlorethamine, Vincristine, Procarbazine and Prednisone (MOPP). MOPP/ABVD and Selected MOPP/ABV(D) Hybrid Regimens. Mechlorethamine, Doxorubicin, Vinblastine, Vincristine, Bleomycin, Etoposide and Prednisone (Stanford V).
Non-Hodgkin's lymphoma	Abitrexate (Methotrexate), Adcetris (Brentuximab Vedotin), Adriamycin PFS (Doxorubicin Hydrochloride), Adriamycin RDF (Doxorubicin Hydrochloride), Ambochlorin (Chlorambucil), Amboclorin (Chlorambucil), Arranon (Nelarabine), Bendamustine Hydrochloride, Bexxar (Tositumomab and Iodine I 131 Tositumomab), Blenoxane (Bleomycin), Bleomycin, Bortezomib, Brentuximab Vedotin, Chlorambucil, Clafen (Cyclophosphamide), Cyclophosphamide, Cytoxan (Cyclophosphamide), Denileukin Diftitox, DepoCyt (Liposomal Cytarabine), Doxorubicin Hydrochloride, DTIC-Dome (Dacarbazine), Folex (Methotrexate), Folex PFS (Methotrexate), Folotyn (Pralatrexate), Ibritumomab Tiuxetan, Intron A

	(Recombinant Interferon Alfa-2b), Istodax (Romidepsin), Leukeran (Chlorambucil), Linfolizin (Chlorambucil), Liposomal Cytarabine, Matulane (Procarbazine Hydrochloride), Methotrexate, Methotrexate LPF (Methotrexate), Mexate (Methotrexate), Mexate-AQ (Methotrexate), Mozobil (Plerixafor), Nelarabine, Neosar (Cyclophosphamide), Ontak (Denileukin Diftitox), Plerixafor, Pralatrexate, Recombinant Interferon Alfa-2b, Rituxan (Rituximab), Rituximab, Romidepsin, Tositumomab and Iodine I 131 Tositumomab, Treanda (Bendamustine Hydrochloride), Velban (Vinblastine Sulfate), Velcade (Bortezomib), Velsar (Vinblastine Sulfate), Vinblastine Sulfate, Vincasar PFS (Vincristine Sulfate), Vincristine Sulfate, Vorinostat, Zevalin (Ibritumomab Tiuxetan), Zolinza (Vorinostat) and combinations CHOP, COPP, CVP, EPOCH, ICE, R-CHOP. Cyclophosphamide, Doxorubicin, Vincristine and Prednisone (CHOP). Dexamethasone, Cytarabine and Cisplatin (DHAP). Etoposide, Prednisone, Vincristine, Cyclophosphamide and Doxorubicin (EPOCH). Etoposide, Methylprednisolone, Cytarabine and Cisplatin (ESHAP). Hyper-fractionated Cyclophosphamide, Vincristine, Doxorubicin, and Dexamethasone Alternating with Methotrexate and Cytarabine (Hyper-CVAD). Rituximab Plus Cyclophosphamide, Doxoribicin, Vincristine and Prednisone (R-CHOP)
Soft-tissue and bone sarcomas	Mesna uroprotection, Doxorubicin, Ifosfamide and Dacarbazine (MAID).
Osteosarcoma	The most active single agent in OS include doxorubicin, 60 mg to 90 mg/m^2 (21% response rate); methotrexate 8g to 12 g/m^2 with leukovorin rescue (30% to 40%); cisplatin, 100 mg/m^2 (25%) and ifosfamide, 5 g to 10 g/m^2. Cyclophosphamide, melphalan, mitomycin C and dacarbazine (DTIC) all have response rates of about 15%. Between 20% and 40% of patients with OS who undergo resection of pulmonary metastases are cured. Chondrosarcoma, fibrosarcoma, malignant giant cell tumors of bone, and malignant fibrous histiocytoma (MFH) are less responsive to chemotherapy and are generally treated as soft-tissue sarcomas. Cisplatin, Doxorubicin, and High-Dose Methotrexate. Doxorubicin and Cisplatin. Doxorubicin, Cisplatin, High-Dose Methotrexate and Ifosfamide.
Ewing's sarcoma	Initial treatment consists of vincristine, actinomycin D, cyclophosphamide and doxorubicin (VACA). Doxorubicin is the most effective single agent. Although higher and lower dose schedules exist, doses used in the Intergroup Ewing Sarcoma Study were vincristine, 1.5 mg/m^2/week, weeks 1 to 6 and 8 to 13; actinomycin D, 0.15 mg/kg daily, days 1 to 5 every 12 weeks; cyclophosphamide, 500 mg/m^2/week; and doxorubicin, 30 mg/m^2 daily, says 1 to 3 every 3 weeks. Radiotherapy of about 6000 cGy

	to the primary (begun during the fourth or fifth cycle of chemotherapy controls local disease in most patients.
Soft-tissue sarcomas	Wide re-excision after local failure should be followed by 6600 cGy radiotherapy. Local control rate (90+%) and overall disease-free survival (60%) in limb-sparing surgery are similar to that after amputation or radical resection. The local failure rate where radiotherapy was not used was 30%. An initial dose of 5000 cGy in 200 cGy fractions should be delivered to the entire compartment and surgical field with at least a 5 cm margin. A boost to a shrinking field to the tumor bed with an additional 1000 cGy and 600 cGy more to the scar is also indicated, with sparing of one third of the circumference of the extremity, at least 2 cm to 4 cm on the forearm, or thigh, to prevent lymphedema. Despite advances in surgery and radiation therapy 40% to 60% of patients with high-grade tumors die of metastatic disease despite primary control. Single-agent doxorubicin has a response rate of 15% to 35%. A dose-response relationship has been observed with higher response rates at doses greater than 50 mg/m^2 every 3 weeks. Doxorubicn may be less cardiotoxic when administered by continuous infusion over 4 days. DTIC has a single agent response rate of 17%. An improved response rate of the combination of DTIC and doxorubicin has been noted. However nausea and vomiting is increased. Phase II trials of ifosfamide in previously treated patients yield response rates of 20% to 40%. A phase I and II study of combination of doxorubicin, ifosfamide and DTIC with mesna uroprotection in 56 patients yielded a response rate of 48% with 13% complete response. Cyclophosphamide, Vincristine, Doxorubicin and Dacarbazine (CYVADIC). Gemcitabine and Docetaxel (GD). Ifosfamide, Carboplatin and Etoposide (ICE).
Rhabdomyosarcoma (malignancy of the striated muscle)	Variations of the vincristine, actinomycin D, cyclophosphamide, and doxorubicin (VACA) chemotherapy regiment are used. Mesna, Doxorubicin, Ifosfamide and Dacarbazine (MAID).
Gastrointestinal sarcomas are generally leiomyosarcomas smooth muscle tumors	Response rates to chemotherapy appear equivalent to that of soft-tissue sarcomas in other locations. Mesna, Doxorubicin, Ifosfamide and Dacarbazine (MAID).
Gynecologic sarcomas	Total abdominal hysterectomy and bilateral salpingo-oophorectomy is the treatment of choice for localized disease. Pre- or post operative radiotherapy decreases the local recurrence rate but does not affect survival and frequently precludes delivery of adequate doses of chemotherapy. Mesna, Doxorubicin, Ifosfamide and Dacarbazine (MAID).
Kaposi's sarcoma	Interferon-alfa was the first drug specifically approved for the

	treatment of Kaposi's. It is of particular interest because of its antiproliferative, antiviral (anti-HIV), antiangiogenic, and immune-modulating properties. Etoposide (VP-16) has been evaluated as both an oral and an intravenous treatment for KS. As an oral agent, VP-16 has been evaluated primarily in patients who have undergone prior treatment with multiple cytotoxic agents. When VP-16 is given intravenously (150 mg/m^2 on days 1 to 3 every 4 weeks), high response rates (78%) have been reported in patients without prior treatment and with good prognosis (no history of opportunistic infection and no constitutional symptoms). In patients with KS of poor prognosis, bleomycin given intramuscularly (5 mg/day for 3 days) or as a 4-day continuous infusion (6 mg/m^2/day) produced a 48% partial response rate. Results of a small, single-institution study in which bleomycin was given as a 72-hour infusion (20 mg/m^2/day) to 17 patients indicated a partial response rate of 65%. Bleomycin toxicity appears to be acceptable, with neutropenia an infrequent complication. Doxorubicin (also known by its trade name Adriamycin) is a component of the most widely used combination regimen for HIV-associated KS. In one trial, however, weekly treatment with doxorubicin (25 mg/m^2) in patients with AIDS-related KS achieved a partial response rate of only 10%. Alternating vincristine and vinblastine weekly achieves a response rate of 33%. Toxicity includes vincristine-induced neurotoxicity (which limits its usefulness as a single agent) and vinblastine-induced myelosuppression. Paclitaxel A partial response was reported in 13 of 20 patients (65%), with 5 of 6 patients with known pulmonary KS responding, as well as 6 previously treated patients with nonpulmonary KS achieving a partial response. In a second trial, of the 30 evaluable patients, 16 (53%) achieved a partial response. The time to response was short (median of three cycles of treatment). Dramatic improvement in symptomatic lymphedema was noted in 25 of 26 patients. Therapy was well tolerated. Two liposomal agents are currently approved for the treatment of KS: liposome-encapsulated daunorubicin (DaunoXome) and liposome-encapsulated doxorubicin (Doxil).
Endocrine cancers	
Thyroid cancer (papillary (80%), follicular (15%), Hürthle cell (6%), medullary (50% familiar), anaplstic (7%) and other such as soft-tissue sarcomas,	The preferred initial therapy for metastatic thyroid cancer is Radioactive iodine (RAI) in full therapeutic doses. In preparation for therapy, thyroid replacement with T4 or T3 is discontinued, and after 4 to 6 weeks elapse and a hypothyroid state has been induced, tracer is administered to establish that the metastatic tumor does indeed concentrate RAU significantly. A 40% cure rate of patients with metastatic disease has been observed with RAI. The primary treatment of thyroid cancer is surgery. More extensive surgery is associated with better survival rates.

lymphomas, epidermoid carcinoma occur rarely as primary tumors of the thyroid, but the thyroid can serve as a site of metastasis from other sites).	Excellent control rates in the neck have been found using 200 cGy/fraction, five times a week, for 5 weeks, and doxorubicin 10mg/m2 IV, 90 minutes before the first RT treatment and weekly thereafter. The optimal regimen is probably the combination of cisplatin (40 mg/m2) and doxorubicin (60 mg/m2) given every 3 weeks; in a randomized trial involving 84 evaluable patients, this combination yielded a somewhat higher response rate (26%) than doxorubicin alone (17%) and, perhaps more significantly, produced a number of patients with complete responses (12%) several of whom survived for more than 2 years.
Adrenocortical tumors and pheochromocytomas	The initial treatment of choice for adrenocortical tumors is surgical excision. Patients with Cushing's syndrome form an adrenal tumor should be assumed to have a suppressed pituitary-adrenal axis and patients will need long-term glucorticoid replacement. Perioperative coverage is provided by hydrocortisone, 100 mg IV every 8 hours, on the day of operation. The daily dose is tapered gradually over the next 5 days to maintenance levels of cortisone acetate, 25 mg orally every morning and 12.5 orally every night. Patients with residual functional disease after surgery or who have recurrent or metastatic disease not amenable to surgical resection should be treated with mitotane (o,p'-DDD). The usual starting dose is 8 g to 10 g daily, although many patients discontinue to the side-effects. About 70% respond with decreased steroid secretion and in about 30% to 40% tumor size is reduced significantly. Nonresponders can be treated with teyrapone (750 mg orally every 4 hours) or aminoglutethamide (250 mg orally every 6 hours initially, with stepwise dose increase to a total of 2g/day or until dose-limiting side-effects occur). The cornerstone of treatment of pheochromcytoma is surgical resection. Seven to ten days before operation phenoxybenzamine, 10 mg to 20 mg three or four times a day, or prazonsin, 2 mg to 5 mg orally twice a day, is instituted to induce alpha-adrenergic blockade. Beta blockade may also be required if arrhythmias are present during surgery. Metyrosin, 0.25 g to 1 g orally four times a day, can block catecholamine biosynthesis and is a useful adjunct. The combination of cyclophosphamide, 750 mg/m2 IV on day 1; vincristine, 1.4 mg/m2 IV on day 1; and dacarbazine, 600 mg/,2 IV on days 1 and 2, given in 3 to 4 week treatment cycles has produced impressive anti-tumor effects in both tumor shrinkage and blood pressure control.
Pancreatic endocrine tumors (Insulinomas, vipomas)	Eighty percent of insulinomas are benign and are cured by surgical resection. Surgical resection is curative of vipomas. In acute severe Zollinger-Ellison syndrome, that arises from gastrinomas, continuous nasogastric suction should be started, fluid and electrolyte status should be monitored and replaced, as

	needed. IV H-2 blockers (e.g. cimetidine or ranitidine) should be started promptly, supplemented with anticholinergics. If acid secretion is kept at less than 20 mEq/hour, ulcer disease can usually be controlled. Ranitidine, 50 mg three to four times daily, will control most patients with Zollinger-Ellison syndrome. Some patients may require 50 mg IV four times daily. Once the patient is stabilized surgery can be performed. Resection of all functional tumor, defined as return of gastrin levels to normal with negative stimulatory tests, is possible in approximately 20% of patients. Long term therapy options for patients with Zollinger-Ellison syndrome include continued management with cimetidine or ranitidine and anticholinergics; elective total gastrectomy, and resection of the primary tumor. The majority of glucagon-producing tumors are malignant and most patients will have metastases at the time of diagnosis. Single agent chemotherapy activity, major tumor shrinkage, has been seen in 15% of those treated with doxorubicin, streptozocin, 5-fluourouracil (5-FU), etoposide (VP-16), and cyclophosphamide. In addition alpha-interferon has been shown to cause reduction in hormone production and in fewer patients, tumor masses. In general combination chemotherapy regimens have been based on streptozocin. In carcinoid tumors no advantage was seen in combination therapy. In islet cell tumors response improved from 36% from streptozocin alone to 63% for 5-FU and streptozocin. If is reasonable to treat symptomatic patients and/or those with clearly progressing tumor with streptozocin, 500 mg/m2 IV and 5-FU, 400 mg/m2 IV, daily for 5 days, each cycle repeated in 5 weeks.
Carcinoid	Medical management of the carcinoid syndrome includes use of alpha-or beta adrenergic blockers (propranolol, phenoxybenzamine), antiserotonin agents (cyproheptadine), phenothiazines (chlorpromazine) and corticosteroids. Propranolol, a beta-blocking agent, has been reported to decrease the frequency and intensity of carcinoid-related flushing. The doses usually used are 10 mg, three times a day, given orally. Phenoxybenzamine, 20 mg/daily, has also been reported to decrease the frequency and severity of flushing and diarrhea. Cyproheptadine (Perictin), 4 mg to 8 mg four times daily, is useful in select patients. In patients with bronchial carcinoid, prednisone, 10 mg to 20 mg per day, has been of benefit. Diphenoxylate hydrochloride (lomotil) one to two tablets two to four times per day, is useful in controlling diarrhea. If the tumor is malignant and has metastasized beyond the possibility of a surgical cure, medical management includes dietary changes such a smaller more frequent meals or increased carbohydrates, IV if needed, if hyperglycemia is severe. Diazoxide in doses of 300 mg

	to 800 mg daily inhibits release of insulin and also has a peripheral hyperglycemic effect; a benzothiadizine diuretic should be given with diazoxide. Propranolol and glucocorticoids have also been used.
Solid Tumors	Docetaxel and Capecitabine (DC). Docetaxel and Carboplatin (AUC=6)(DC). Docetaxel and Cisplatin (DP). Gemicitibine and Capecitabine. Irinotecan and Cisplatin (IP). Pemetrexed and Carboplatin (PC).
Tumors of Unknown Origin	Docetaxel and Cisplatin (DP)

Source: FDA, Hamilton '90: Table 39-1; Pg. 333, Solimando & Waddell '12, NCI '20

2. In theory even a single cancer cell remaining in the body after surgery may be sufficient for the cancer to start growing again. It is therefore very common to follow surgical treatment of cancer with some other type of treatment that is designed to kill any remaining cancer cells. The two most widely used nonsurgical treatments involve the use of X-rays and chemicals to kill cancer cells. The problem faced by nonsurgical treatment of cancer is to find a way to selectively kill cancer cells that kills cancer cells effectively and never kills or harms normal cells. A very effective way of interfering with the ability of cancer cells to divide is to damage their DNA. Another way of interfering with DNA is to actually block the copying process. In order to damage DNA molecules and stop cancer cells from proliferating patients with cancer are exposed to agents that are known to damage DNA, such as X-rays or chemicals, or sometimes both. The treatment of cancer with X-rays is called radiation therapy and the treatment of cancer with chemicals is called chemotherapy. For those with cancer, with immediate survival at stake, the benefits of cancer treatment far outweigh the slightly increased risk of another type of cancer in ten or twenty years.

3. Chemotherapy has been shown to greatly increase the cure of certain types of cancers. The most striking chemotherapeutic advances – drugs such as cisplatin, bleomycin and etoposide (and methotrexate) – have made testicular cancer, the most common malignancy in young men, also the most treatable. Today's anti-cancer drugs can produce cures even of the far advanced testicular cancer, remissions for prostate cancer and prolonged remissions and cures for bladder cancer patients In 1941 hormone therapy was introduced for advanced prostrate cancer. In the 1960s actinomycin D became a standard. Some 40 percent to 50 percent of patients responded while 10 percent achieved complete remission. By the mid-1970s the vinblastine and bleomycin were combined, increasing the proportion of patients who experienced response and remission. Clinical trials of cisplatin began in the early 1970s. In 1977 it was reported that a combination of cisplatin, vinblastine and bleomycin together with surgery after chemotherapy could achieve complete remissions in up to 85 percent of patients. For patients with a durable complete remission, doctors could eventually "cure" 70 to 80 percent of testicular cancer patients. In the 1970s and 1980s researchers developed a combination – methotrexate, vinblastine, adriamycin and cisplatin (MVAC) that would result in two-thirds of bladder cancer patients achieving remission. However, it produced only short term results and only 10 percent of bladder cancer patients were disease-free after five years. During the

1980s and 90s, less-toxic but equally effective drugs were studied. For testicular cancer, etoposide, replaced vinblastine and the regiment most often prescribed for for testicular cancer today is etoposide and cisplatin with or without bleomycin. For bladder cancer, emcitabine + cisplatin was shown to be as effective as MVAC. Androgen-blocking Casodex and flutamide are now keystones in treating metastatic prostate cancer and chemotherapeutic combinations are showing early promise in hormone-resistant disease. In children drugs have boosted the cure rate of pediatric Wilm's tumor to 80 percent.

4. The immediate side-effect of these chemotherapeutic and radioactive agents on normal cells of the body that are also dividing is a far more serious problem. Cells are continually being replaced as they are lost from the surface of the skin and from the intestine and lungs and uterus and other places. Cells in the bone marrow are constantly dividing in order to make new red and white blood cells that have a very short life span in the bloodstream and must be continually replaced. When a person is treated for cancer with radiation therapy or chemotherapy these dividing bone marrow cells get into the same difficulty that cancer cells do, and many of them die. As a result fewer new red cells are made and that is why treatment for cancer often makes people feel very weak and tired Similarly, the depletion of white cells compromises the immune system, and patients on chemotherapy or radiation therapy are much more prone to all sorts of infections. Although injury to the bone marrow is one of the more serious complications of cancer treatment any cells that are usually dividing are at risk. For example, the normal process of replacing cells in the intestines is interfered with and intestinal problems like nausea, vomiting, and diarrhea are common complications of chemotherapy. Another common complication is that the growth of cells in the hair follicles is affected resulting in a loss of hair. Chemicals used in cancer chemotherapy damage DNA or interfere with making new DNA. Those that damage DNA are alkylating agents, nitrosoureas, Cisplatin, bleomycin, Adriamycin, danorubicin, dactinomycin, plicamycin and mitomycin. Those that interfere with making new DNA are arabinosylcytosine (AraC), Hyrodyurea, 9-thioguanine, 6-mercaptopurine, 5-fluorouracil, and methotrexate.

5. Hydrocortisone crème cures coronavirus, aspergillosis and many precancerous conditions. Hormone therapy is often used to treat hormone-sensitive cancer. Hormone therapy for cancer is also called endocrine therapy. Hormone therapies associated with menopause and aging seek to increase the amount of certain hormones to compensate for age or disease related hormonal declines, or surgical removal of a cancerous endocrine gland. Hormone therapy, as a cancer treatment, either reduces the level of specific hormones in the body or alters the cancer's ability to use these hormones to grow and spread. Cancers that are most likely to be hormone-receptive include breast cancer, prostate cancer, ovarian cancer and endometrial cancer. Various drugs can alter the body's production of estrogen and testosterone. Anti-hormone drugs, such as tamoxifen (Nolvadex) and toremifene (Fareston) for breast cancer, and the anti-androgens flutamide (Eulexin) and bicautamide (Cadodex) for prostate cancer, block cancer cell's ability to interact with the hormones that propel cancer growth without reducing the body's production of hormones. Aromatase inhibitors (AIs), such as letrozole (Femara), anastrozole(Arimidex) and exemestane (Aromasin), target enzymes that produce

estrogen in postmenopausal women, thus reducing the amount of estrogen available to fuel tumors. Luteinizing hormone-releasing hormone) LH-RH) agonists and antagonists reduce the level of hormones in the body by altering the mechanisms in the brain that tell the body to produce hormones. LH-RH agonists include Leuprolide (Lupron, Viadure, Eligard) for prostate cancer, Goserelin (Zoladex) for breast and prostate cancers and Triptorelin (Trelstar) for ovarian and prostate cancers. One LH-RH antagonist currently approved for men with prostate cancer is abarelix (Plenaxis) that is also under investigation for use in women with breast cancer. Many women who've had surgery for breast cancer take tamoxifen only for five years because taking it for a longer period doesn't offer any further benefit and may actually increase the risk that cancer will recur.

6. A number of natural substances have been identified that block the proliferation of new blood vessels. One of the most potent antiangiogenic chemicals is thalidomide. Compounds like thalidomide operate by interfering with with particular chemical signals – one called TGFα, in particular, and these molecules are not only important for blood vessel formation but for other vital functions including the immune response. There is persuasive evidence that non-steroidal anti-inflammatory drugs can reduce the incidence of precursor lesions in the colon and lower the risk of colon cancer, perhaps by 50 percent. In general, a gene cannot be directly inserted into a person's cell. It must be delivered to the cell using a carrier, or "vector" known as a monoclonal antibody. The vectors most commonly used in gene therapy are viruses. Viruses have a unique ability to recognize certain cells and inset their DNA into the cells. In some gene therapy clinical trials, cells from the patient's blood or bone marrow are removed and grown in the laboratory. The cells are exposed to the virus that is carrying the desired gene. The virus enters the cells and inserts the desired genes into the cells' DNA. The cells grow in the laboratory and are then returned to the patient by injection into vein. This type of gene therapy is called e vivo because the cells are grown outside the body. The gene is transferred into the patient's cells while the cells are outside the patient's body. In other studies, vectors (often viruses) or liposomes (fatty particles) are used to deliver the desired gene to cells in the patient's body. This form of gene therapy is called in vivo, because the gene is transferred to cells inside the patient's body. Many gene therapy clinical trials rely on retroviruses to deliver the desired gene. Other viruses used as vectors include adenoviruses, adeno-associated viruses, lentiviruses, poxviruses and herpes viruses.

Trends in the Five-Year Survival Rates of Certain Cancers 1960-2015

Site	1960-63	1970-73	1975-77	1987-89	2009-2015
All types	39%	43%	49%	55%	69%
Brain and Nervous system			23	29	34
Breast	63	68	75	84	91
Colon	43	49	50	60	66
Rectum	38	45	48	58	69
Esophagus			5	9	21

Hodgkin lymphoma			72	79	89
Kidney and renal pelvis			50	57	76
Larynx			66	66	62
Leukemia	14	22	34	43	66
Liver and bile duct			3	5	20
Lung and bronchus	8	10	12	13	21
Melanoma	60	68	82	88	94
Myeloma			25	27	54
Non-Hodgkin lymphoma			47	51	75
Oral cavity and pharynx			53	54	68
Ovary			36	38	48
Pancreas			3	4	10
Prostate	50	63	68	83	99
Stomach			15	20	32
Testis	63	72	83	95	97
Thyroid			92	94	99
Urinary Bladder	53	61	72	79	78
Uterine cervix	58	64	69	70	69
Uterine corpus	73	81	87	82	83

Source: Friedberg '92: 141 In general survival rates for African-Americans are 5-10 percent lower. American Cancer Society Fact and Figures 2020. pg. 18

E. There are some types of cancer that can be completely cured in a high percentage of case. This includes cancers of the mouth, testicles and certain leukemias and lymphomas. It is not unusual for people to be apparently well for varying periods after treatment, a time called remission, only to relapse with the disease. It is possible to predict with a high degree of certainty that if one survives longer than the generally expected time for that type of cancer in the absence of further treatment, one can be considered to be cured, meaning that it is unlikely the cancer will ever return. There has been steady improvement in the five year relative survival rate for some of the commoner types of cancers that were diagnosed in the United States during five periods from 1960 to 1985. Between 1985 and 1988 the three-year survival rate for cases of lung cancer that were localized and treated by surgery was close to 70 percent. Stage 1 cancer of the breast has a five-year survival rate of about 80 percent. But this survival drops to 65 percent with stage 2 breast cancer, to 40 percent for stage 3 and to 10 percent with stage 4. Similarly cancer of the colon that is strictly localized, as in stages A and B, has a 74 percent three

year survival rate. This drops to about 56 percent for stage C and to 15 percent with stage D. Similarly encouraging results have emerged for childhood cancer diagnosed before the age of 15.

1. The following strategies have been outlined for improving cancer care: Supportive decision-making. The cancer care system needs to support patients in making informed medical decisions that match their needs, values and preferences. Cancer care teams should provide patients and their families with understandable information about cancer prognosis and the benefits, harms and costs of treatments. Team-based cancer care. This requires a workforce that is adequately staffed, trained and coordinated. Evidence-based cancer care. Researchers should investigate the benefits and harms of various treatment options so doctors, patients and patients' families can be more informed when making treatment decisions. This information needs to include the impact of treatments on quality of life, symptoms and patients' overall experience with the disease. A "learning" information technology system. This is a system that can "learn" by enabling real-time analysis of data from cancer patients in a variety of care settings to improve knowledge and help guide medical decisions. Such a system should be developed by the federal government and professional medical groups. Accessible and affordable cancer care. Currently, access to cancer care can be difficult for the poor, racial and ethnic minorities, seniors, and those without health insurance. The federal government should develop a national strategy to provide accessible and affordable cancer care.

§354 Surgery

A. Every year more than 15 million people in the U.S. have surgery and some 40 million people will undergo a procedure requiring an anesthetic. The U.S. surgical death rate is estimated that 1.14 percent of the 15 million patients who go in for surgery 171,000 never leave the hospital. Some 2,000 of these patients will die from causes related to their anesthesia care. Researchers in the United Kingdom looked at more than 46,000 patients in 28 European countries who underwent non-cardiac surgery. They found that 4 percent of them died before they could make it out of the hospital. Nearly 75 percent of patients in Europe who died did not get admitted to an intensive care unit (ICU). The surgery death rates that the researchers found in other countries ranged from Latvia, which at 21.5 percent had the worst death rate, to Iceland with a rate of 1.2 percent. Since 1950 the number of physician anesthesiologists in the United States has increased approximately six-fold. At the same time, the mortality associated with anesthesia has dramatically declined. In 1954 deaths attributable to anesthesia were estimated to be about one in 2,700 patients. In the 1990s the reported mortality attributed to anesthesia was between one in 20,000 to one in 250,000 or less depending on the patient group being studied. There is less than a one percent chance that an otherwise healthy person will die on the operating table and about three percent chance of disabling complications. The risk of surgery increases dramatically as physical status deteriorates. Currently 65-70 percent of all surgeries are done as outpatients. Another 20-30 percent are performed as same day admits (you might stay overnight after, but not before surgery). Even the vast majority of open-heart and brain surgery patients are admitted the morning of surgery. About 5 percent of surgeries are performed in surgeons' offices. In 1984, less

than a half-million surgical procedures were done in the office. In 1990, the number was estimated at 1.2 million. In 1996, it was estimated at more than 3.4 million surgeries. More than 3 million procedures were performed in doctors' and dentists' offices in 2000.

Hospital Mortality Risk by Age, Preoperative Disease and Surgery

Condition	Elective/Emergency	Age <50 years old	Age 50-69 years old	Age >70 years old
Chronic heart or pulmonary failure	Elective	0.1%	0.4%	0.8%
	Emergency	0.5%	2%	4%
Renal Failure	Elective	0.2%	0.9%	2%
	Emergency	1%	2%	9%
Abdominal Surgery	Elective	0.3%	1%	3%
	Emergency	2%	6%	12%
Chronic heart failure and renal failure	Elective	0.7%	3%	6%
	Emergency	3%	13%	24%
Chronic heart or pulmonary failure and abdominal surgery	Elective	0.9%	4%	7%
	Emergency	4%	17%	30%
Renal failure and abdominal surgery	Elective	2%	2%	16%
	Emergency	8%	32%	50%
Chronic heart or pulmonary failure and renal failure and	Elective	6%	22%	37%

abdominal surgery				
	Emergency	26%	60%	76%

Source: Table 8.2; Sweeney '03: 43

1. Despite a growing interest in price transparency, obtaining price information for a common medical procedure (total hip arthroplasty) is very difficult. Many healthcare providers are not able to provide reasonable price quotes. They also found enormous variation in the quoted prices for elective hip arthroplasty -- from $11,100 to more than $125,000. The investigators used a standard script when contacting the hospitals. The caller (Rosenthal in all cases) said she was helping her grandmother do a price comparison in anticipation of an upcoming elective hip arthroplasty. The script included other elements including the specific ICD-9 and CPT codes, likely length of stay, and the need for post-discharge care. The mean price at top-ranked hospitals for which full information was found was $53,140; at the unranked hospitals, it was slightly lower at $41,666 ($P$=0.07).

Physical Status Scoring System

ASA Score	Physical Status
ASA 1	A normal, health patient
ASA 2	A patient with mild to moderate systemic disease
ASA 3	A patient with severe systemic disease that is not incapacitating
ASA 4	A patient with incapacitating illness that is a constant threat to life
ASA 5	A moribund patient who is not expected to survived twenty-four hours with or without surgery
ASA 6	Organ donor. Brain dead patient for organ harvesting. Included in the physical status scoring system is the designation "E" for emergency.

Source: Sweeney '03: 42, American Society of Anesthesiologists (ASA)

2. The ASA physical status score is a grading of general health coming to surgery. Patients with a physical status score of 3 or greater may have a several-fold higher incidence of complications during and after surgery when compared to ASA 1 and 2 patients. The number-one factor correlating with complications or mortality associated with surgery was an ASA score of 3 or greater. When "E" (for emergency") is added on the physical status score there is a severalfold increase in risk. Emergency surgery on the patient with a physical status score of ASA 3 or higher can be associated with prohibitive risk. More than 3 million children receive anesthesia in operating rooms in the United States each year. Infants and young children are at significantly higher risk of a serious complication or death associated with anesthesia than older children and adults. Infants and small children have substantially higher metabolic rates and oxygen demand. The infant has much smaller lung volumes, a smaller airway that is more prone to obstruction, and far less respiratory reserve. The epiglottis is relatively large and floppy; minor airway irritation or infection (croup, epiglottitis) may result in swelling that can cause dangerous narrowing or even closure of the airway. Infants are prone to cold stress, which may lead to cardiovascular instability, decreased oxygen levels in the blood, and

bleeding disorders. These physiological conditions present in infants and small children make them far more prone to life-threatening complications, including hypoxemia (low oxygen level in the bloodstream) and cardiac arrest. Anesthesia for infants and small children requires specialized equipment and skill set. Studies who that the "occasional" pediatric surgeon has substantially higher complication rates, including death, than the surgeon who regularly performs surgery on children. Cardiac surgery is the most invasive and perhaps the most risky of all operations. To accomplish heart surgery, you may be subjected to incredible physiological derangements, like induced cardiac arrest, and placement on a heart-lung bypass machine. To monitor cardiac surgery patients, high-tech and invasive monitors are used. These monitors may be placed directly on the heart (the Swan-Ganz monitor) or in the esophagus (transesophageal echocardiography) to monitor heart function during and after surgery. Scientific literature suggests that surgical results may be substantially better when performed at a facility doing more than 200 open-heart operations per year.

B. The preferred method of anesthesia induction in adults is by intravenous injection of the anesthetic drug thiopentone sodium. Intravenous induction results in a very rapid transition from awake to general anesthesia. This is smoother and swifter than inhalation induction. General anesthesia takes the patient form wide awake to drug-induced coma in a matter of seconds and maintains this state for the duration of surgery. During the surgery, general anesthesia keeps the patient unconscious, without pain, without memory and without movement, al the while maintaining the patient's vital functions as close to normal as possible. Within minutes of the termination of general anesthesia, the patient is returned to consciousness to begin the recovery from surgery. If a muscle paralyzing drug is used an electronic device to accurately monitor the extent of muscle weakness called a nerve stimulator is used. The nerve stimulator is often attached to the wrist, and using an electrical pulse stimulator, the twitch of your thumb is measured and this will indicate the level of muscle paralysis.

1. Liberal infiltration of local anesthesia at the site of surgery, early administration of oral narcotic medication, and the administration of Toradol and Lidocaine are important for successful treatment of pain in the outpatient. The spinal and epidural are different. The epidural space is approximately one to two millimeters shy of the membrane that contains the spinal fluid bathing the spinal cord (the dura mater). The proper placement of the epidural needle is just outside the dura. This is where medication is deposited in epidural anesthesia. For the spinal, the tough dura mater is intentionally penetrated with a much finer spinal needle that enters the space where the spinal fluid is contained, where medication is deposited. Spinal headache, that are worse upon standing or sitting and are relieved by laying down, occur in far less than one in 100 patients. Conservative therapy for spinal headache includes pain medicine, rest, hydration and intravenous or oral caffeine. For those with incapacitating spinal headache or those who do not get better in 48 hours, an epidural blood patch (EBT) can be performed.

2. Fasting before surgery is important. An empty stomach at the time of anesthesia induction makes the risk of aspiration pneumonia unlikely. Stomach emptying depends on many factors, including the type of contents in the stomach (solids versus liquids), the

volume of the substance and the composition of the substance (fat and protein versus sugar and starch). With liquids, the volume is less important than the type of liquid ingested. Clear liquids, like water are emptied form the stomach in one to two hours. Other clear liquids include fruit juices without pulp, carbonated beverages, clear tea, and black coffee. Clear liquids do not include alcohol. American Society of Anesthesiologists (ASA) guidelines for preoperative fasting allow for the patient to consume clear liquids up to two hours preoperatively if they are otherwise healthy. Full liquids include alcohol, milk and any other liquid not listed as a clear liquid above, full liquids may take as long as solids to be emptied from the stomach, six to eight hours. Break milk is digested easily and quickly by infants and small children, and is usually emptied from the stomach within three to four hours. Solid foods should be avoided for a full eight hours or more prior to surgery. For a light meal with minimal grease and protein, fast a minimum of six hours prior to surgery to maximize gastric emptying. In Britain patients are allowed a light breakfast (toast and tea, with no milk) up to two to four hours prior to surgery.

3. Intubation, is the insertion of plastic endotracheal tube in the windpipe during anesthesia. The purpose of the endotracheal tube is to provide a safe and secure airway during surgery and general anesthesia and, in some cases, to control ventilation after surgery. In 1920, rubber tubes designed to deliver inhaled anesthetic gases directly into the trachea were introduced. These tubes were called “endotracheal tubes” to denote their position within the trachea. The end of the endotracheal tube coming out of the mouth is connected to the anesthesia breathing circuit. A low-pressure cuff (balloon) on the outer portion of the endotracheal tube is positioned inside the trachea and is inflated to form an airtight seal between the endotracheal tube and the trachea. This airtight seal prevents any stomach contents fluids or secretions from entering into the trachea or the lungs. The laryngeal mask airway (LMA), is another device used to secure a patient’s airway. It is inserted in the throat and rests above the vocal chords. The LMA is made of soft rubber and is inserted via the mouth into the back of the throat and rests above the vocal cords after you are asleep.

4. More than half of hospital patients reported excruciating pain after surgery, and almost half of these people did not discuss the pain with their nurse of doctor. Patient reluctance is based on a fear of addiction and no pain no gain mentality. Tissue injury from surgery results in the local release of various chemicals including prostaglandins that cause redness, pain and swelling at the site of injury. Drug like Motrin, Naprosyn, and Vioxx (nonsteriodal anti-inflammatory drugs, or NSAIDs) block a key enzyme in the synthesis of prostaglandins and are used to combat pain and inflammation associated with surgical tissue trauma. Toradol is a potent and highly effective injectable NSAID commonly used following surgery, that is comparable in effectiveness to narcotics without the side effects. Local anesthetic drugs (e.g. xylocaine, novocaine, and marcain) are injected into the tissues in close proximity to the nerves in the region of the origin of the pain, and they will block the transmission of pain signals from these nerve fibers for up to eight to twelve hours after surgery. For the most painful surgeries, the pain score won’t be able to get to zero, but can usually get into the tolerable 3-5 range. Patients should not be sent home with pain scores in the 6-10 range after surgery. Pain is not good and should not be

unbearable. Pain not relieved by other treatments is the most common indication for operative treatment. Although operative treatments can produce excellent results, they also expose patients to serious risks. Potential operative and perioperative complications include extensive blood loss, cardiac arrhythmia and arrest, nerve and blood vessel injury, infection, venous thrombosis, and pulmonary embolism. Late postoperative complications include delayed infection and loosening and wear of implants. Even in the absence of complications, the results of surgical procedures such as joint debridements, synovectomies, and osteotomies may deteriorate with time. For these reasons, the potential risks and expected short-term and long-term outcomes of operative treatment must be carefully considered for each patient.

Top 20 Pediatric Procedures and Total Procedures by Hospital Type for 2009

	All Hospital Types, Weighted Frequency	Children's Hospital and Children's Unit		General Hospital		Fold-Change
		Weighted Frequency	Per 10, 000 (95% CI)	Weighted Frequency	Per 10 000c (95% CI)	
1. Appendectomy	81 848	24 003	285 (234.2–336.1)	50 362	239 (226.7–251.2)	1.2
2. Central venous access	33 474	18 655	222 (179.7–263.5)	9347	44 (38.1–50.6)	5.0
3. Pyloromyotomy	11 326	6863	82 (66.3–96.8)	2805	13 (11.3–15.3)	6.1
4. Burn debridement or grafting	10 844	5122	61 (47.8–73.9)	3988	19 (16.2–21.6)	3.2
5. Cholecystectomy	7679	2744	33 (26.9–38.3)	4132	20 (18.3–20.9)	1.7
6. PDA ligation	5653	3398	40 (32.9–47.8)	1633	8 (6.0–9.5)	5.2
7. Bladder/ureteral reconstruct	5543	4291	51 (38.3–63.7)	746	4 (2.5–4.6)	14.4
8.	5355	3472	41 (33.1–	858	4 (2.9–	10.1

Antireflux procedure			49.4)		5.2)	
9. Pediatric inguinal hernia repair	4507	2680	32 (26–37.7)	1300	6 (5.2–7.1)	5.2
10. Gastrostomy/jejunostomy	4407	3277	39 (31.1–46.8)	525	2 (1.8–3.2)	15.6
11. Intestinal resection (congenital lesiond)	4309	2715	32 (26.5–38)	1097	5 (4.5–5.9)	6.2
12. Oophorectomy/salpingectomy	3699	1428	17 (14.0–20.0)	1888	9 (8.3–9.6)	1.9
13. Decortication pleurodesis	3173	1897	23 (18.4–26.6)	746	4 (2.9–4.2)	6.4
14. Diagnostic laparoscopy or laparotomy	2779	1349	16 (13.2–18.9)	1070	5 (4.6–5.6)	3.2
15. Intestinal resection/ostomy (IBD)	2758	1760	21 (17–24.9)	666	3 (2.7–3.6)	6.6
16. Pyeloplasty/UPJ reconstruction	2689	1979	24 (18.5–28.5)	413	2 (1.5–2.4)	12
17.	1988	1462	17 (13.9–	279	1 (1.0–	13.1

Closure/revision/creation ostomy			20.8)		1.6)	
18. Gastroschisis/Omphalocele	1914	1188	14 (11.4–16.9)	515	2 (1.9–3.0)	5.8
19. Repair chest wall deformity	1775	1287	15 (11.1–19.5)	239	1 (0.8–1.5)	13.5
20. Major excision soft tissue tumor	1191	656	8 (6.1–9.5)	410	2 (1.6–2.3)	4.0
All 86 procedures	216 081	102 869	1222 (1024.8–1419.3)	87 110	413 (387.8–438.7)	

Source: Sømme, S.; Brosert M.; Marrato, E.; Ziegler M. Frequency and variety of inpatient pediatric surgical procedures in the United States. Pediatrics. 132(6)e1466-72. Dec. 2013

C. Pediatric general and thoracic surgery in the United States is now approaching the century mark since its origin. This historic beginning has generally been attributed to Dr William Ladd (1880–1967), the first chief of surgery at Boston Children's Hospital. The first association of pediatric surgeons subsequently occurred in 1947, with the creation of the Surgical Section of the American Academy of Pediatrics. Around that time, general surgeons or urologists performed most operations on infants and children in both children's and adult general hospitals, and the operative morbidity and mortality rates were high. Pediatric surgery has since established itself as an independent subspecialty; it has professional relationships with both pediatric as well as surgical professional associations. Over the past 25 years, the pediatric surgeon workforce growth rate has been double that of the pediatric population growth. A pediatric surgeon is present in all areas with >200 000 population but only in two-thirds of areas with populations >100 000. A person is subjected to more trauma during childhood than at any later period life. Most trauma is well-tolerated and few of the scars are carried into adulthood. Accidents are the most common cause of death in the first half of life. One child in every four will be injured seriously enough to require medical care. Each year 50,000 children are permanently disabled and about 10,000 die from trauma. Motor vehicle accidents, drowning and burns account for three fourths of these deaths. Accidents in decreasing frequency are lacerations, contusions and abrasions, fractures, ingestion of poisons, drugs and foreign bodies, bites, sprains, head injuries, puncture wounds, eye trauma and burns.

Approximately two-thirds of accidents occur in or near the home and can be prevented by parental supervision and the removal of the more common hazards.

1. Before antibiotics, medical (infectious) disorders accounted for most hospitalizations and deaths of children. Today, in industrialized countries more than half of hospitalized children have disease with surgical overtones and one fourth of all surgical patients are children. About 0.5% (1 out of 200) live-born babies require emergency neonatal surgery, generally because of congenital anomalies obstructing flow through one of the vital body conduits (food through the gastrointestinal tract, cerebrospinal fluid through the central nervous system, and blood through the heart and major vessels). 80% of surgical problems in the newborn involve congenital anomalies. 3% of live babies are found to have congenital anomalies on immediate careful examination, and an additional 4% harbor occult abnormalities. Most of these are minor, 75% are single, but 25% are multiple, when one congenital anomaly is discovered others may be anticipated. Anomalies are about 15% higher in males than in females. The incidence is 2.5 times higher in multiple births than single births. When one anomalous child is born into a family, there is a 25 times greater chance that subsequent children will have anomalies. With two malformed siblings there is about a 50% change the anomalies will be similar in location and severity.

2. Appendectomy is the most frequent procedure, by a good margin, although the data do not allow for stratification of the operation into acute non-complicated, acute complicated, interval, or incidental appendectomy types. The frequency of appendectomies and cholecystectomies were notable in that the western states had the highest operative frequencies for both of these procedures. The most frequent neonatal case on the list is closure of an abdominal wall defect (omphalocele/gastroschisis closure), which ranks as number 18 in frequency. Of those remaining in the top 20, several, including patent ductus arteriosus ligation, pyloromyotomy, inguinal hernia repair, anti-reflux procedure, ostomy creation, and intestinal resection for congenital anomalies, may occur within the first 30 days of life. Most children undergoing inguinal hernia repair are discharged the same day (outpatient surgery) and are not captured by our data. This study reports, almost exclusively, inguinal hernia surgical volume for the neonate/infant population aged <6 months who require admission and monitoring postoperatively. 40% of procedures performed on inpatient pediatric surgery patients were performed in a general hospital in 2009. Major pediatric surgery index cases that define the specialty of pediatric surgery (eg, esophageal atresia repair, diaphragmatic hernia repair, intestinal atresia repair, repair of imperforate anus, and surgery for Hirschsprung disease) represent infrequent congenital anomalies typically diagnosed in the newborn period, with a predictable population frequency (1:2000 to 1:15 000).

D. The role of surgery in the diagnosis of cancer is well-established. With few exceptions, cancer diagnosis is based on a histological interpretation of tissue removed by surgical methods. The procedure may range in scope form the ecision of a small fragment of a superficial tumor of the skin to an abdominal lapartomy or cariotomy to obtain sufficient tissue for pathological examination. In general, excisional rather than incisional biopsies of the primary tumors are to be preferred whenever possible.

Excisional biopsy also minimizes the risk of disseminating tumor cells and, should the lesion prove benign, obviates the need for further surgery. Surgery or needle biopsy is also often required to establish the diagnosis of cancer recurrence or the presence of distant metastasis. Surgery may also be used to remove precancerous conditions such as leukoplakia of the buccal mucosa, carcinoma in situ of the cervix and chronic ulcerative colitis. The combination of various therapeutic modalities in the treatment of certain cancers has led to considerable improvement in their survival rates. The ultimate place of surgery in the multimodality approach to cancer treatment remains to be precisely defined. Generally speaking, surgery should be reserved for those patients presenting with solitary metastasis, where a considerable period of time has elapsed since resection of the primary lesion and the patient is otherwise in good health. To improve treatment other surgical techniques of cancer therapy have evolved, such as Mohs' chemosurgery, cryosurgery and electrosurgery.

1. Complete resection of low-grade tumor (low-grade astrocytomas (Kernohan grades I and II) can be considered curative, with no further treatment necessary. However, recurrence after 2 to 25 years is not unusual. Gamma Knife® and CyberKnife® machines are particularly good at aiming the radiation only at the area of each metastasis. The response of CNS tumors to treatment varies widely. The histologically benign tumors can often be resected for cure. Individual malignant tumors may have the potential for cure. Cure rates of 20% to 25% have been reported for medulloblastomas. Low-grade gliomas have been observed to show minimal growth for 15 to 20 years with no treatment. Prolonged survival and apparent cure have been achieved in rare patients with glioblastoma. But, in general, treatment of CNS tumors only delays inevitable progression. The potential surgical options are biopsy, subtotal/ de-compressive resection, gross total resection, curative resection (e.g. frontal or temporal lob amputation), and temporizing procedures (e.g. ventriculostomy drainage). Occasionally, a palliative de-compressive craniectomy or laminectomy is the only reasonable surgical approach. Malignant lesions are rarely curatively resected, but the histologically benign tumors are frequently successfully resected without subsequent recurrence. The surgical laser, used in conjunction with the operating microscope, allows extensive resections with minimal traction or manipulation of normal tissues.

2. In experienced hands, peri-operative brain surgery mortality is about 1%. Surgery in the posterior fossa and in the elderly may reach mortality levels of 5%. Common postoperative complications include wound infection (1%), hemorrhage (2%), CNS edema (6%), lower extremity phlebitis and deep vein thrombosis (2%), and urinary tract infection (8%). Incompletely resected low-grade tumors may be treated postoperatively with 5000 cGy to 5500 cGy limited-field radiation with the option to withhold radiation until the first evidence of progression. A 5-year survival of 30% to 40% and a median survival of 3.5 years can be anticipated with surgery and radiation. All patients with higher grade gliomas (glioblastoma [Kernohan grades III and IV]) should receive postoperative radiation to approximately 6000 cGy in 180 to 200 cGy fractions delivers as a 4500 cGy whole brain plus 1500 cGy tumor boost, or as 6000 cGy to the tumor volume plus a 2 cm to 3 cm margin. Ependymomas are radiosensitive tumors and 5 year survival improves from 2% with surgery alone to 50% with surgery plus radiation.

Necrosis of neural tissue may occur 6 to 9 months after treatment and may mimic tumor recurrence, presenting as an expanding, ring-enhancing mass. The mass may resolve over several months with or without steroids or may require removal for decompression. Radiation therapy is quickly fatal in patients whose cancer was caused by radiation exposure who must not be subjected radiation therapy.

3. The reasons for admissions to surgical wards with acute abdominal pain were studied. In adults in Leeds in 1972 admissions were acute appendicitis (26.3%), cholecystitis (7.6%), small-bowel obstruction (3.6%), perforated peptic ulcer (3.1%), pancreatitis (2.9%), diverticular disease (2.0%), miscellaneous (4.0%) and non-specific acute abdominal pain (NSAP) (50.5%). In patients up to 13 years old, at the Royal Aberdeen Children's Hospital in 1974 found admissions NSAP (30.0%), acute appendicitis (28.0%), constipation (11.0%), upper respiratory tract infection (8.0%), urinary tract infection (6.9%), gastroenteritis (3.6%), bronchopneumonia (2.2%), small-bowel obstruction (inc. insususception)(2.2%), Mesenteric adenitis (2.2%), abdominal injuries (1.0%), infective hepatitis (1.0%), torsion of the testicle, acute pancreatitis, otitis media, acute glomerulonephritis and diabetic acidosis in less than 1% of cases. Not all patients who are referred to surgical wards have a surgical cause for their acute abdominal symptoms, so the emergency surgeon needs also to be a good physician. Among the children, only one-third actually required an operation, another one-third had a specific medical illness requiring diagnosis and treatment, whilst the remaining patients recovered spontaneously. Among the adults, nearly half of those admitted did not need surgery. For every malignant-small bowel neoplasm, the surgeon in Great Britain is likely to see about 50 colorectal and 30 gastric carcinomas Roughly one-third are carcinomas, one-third are lymphomas (there is an association with coeliac disease) and one-third are carcinoids.

4. Appendicitis should be treated with metronidazole, and possibly Stonebreaker herbal tincture for stones, but medicine isn't effective within 24 hours, emergency appendectomy is indicated. Although modern anesthesia and antibiotics have robbed general peritonitis of most of its terrors, it is still a very serious abdominal condition. In patients with acute uncomplicated appendicitis the mortality rate is now down to 1 in 1500 but, when peritonitis is present, one patient in 50 succumbs. Perforated peptic ulcer is an emergency. The first successful suture was performed (by candlelight) in the home of a man 41 in 1892, in North Germany. By the time of the Second World War, perforated duodenal ulcer in men was one of the commonest surgical emergencies. After 1950 there was a steady fall for fifteen years, but the incidence seems to have stabilized. Blood loss can present in a number of ways which may suggest at an early stage whether bleeding is arising from the upper (principally oesophagus, stomach and duodenum) or lower (principally colon) gastrointestinal tract. A yearly admission rate of around 120 per 100,000 population may be expected and 25% of these patients will have bled sufficiently to drop their hemoglobin below 7.0 g/dl. Approximately 70% of patients will settle on conservative measures after the first bleed, and 30% will proceed to emergency or early surgery, because of continuous bleeding. Hematemesis means the vomiting of fresh blood, blood with clots or blood which has been subject to digestion by gastric juices, which produces a brown fluid with brown granules, so-called 'coffee-ground vomit'. Melaena means the passage of tarry black shiny stools, the discoloration being

produced by the reduction hemoglobin, principally by the action of acid from the stomach. The presence of melaena implies bleeding from the upper gastrointestinal tract. If blood loss has been slow, the stool is formed, if, however, blood loss has been severe, bowel peristalsis is vigorously stimulated and the rapid transit of intestinal contents produces a bowel movement which varies in color from shiny black to dusky red and which has an instantly recognizable offensive odor. Severe blood loss is defined as the loss of 1500 ml of blood, or 25% of circulating blood volume, in a period of several minutes to several hours. Mortality from massive gastrointestinal hemorrhage varies from 5-50%, with most representative series quoting 8-15%. The mortality of perforated duodenal ulcer is now very low (2-4%, except in the elderly) but for gastric perforations the mortality rate is 10-15%. The five year survival rate of surgically treated early gastric carcinoma is 90 to 95%, with only a small negative increment if lymph node metastases are present. In contrast, the 5 year survival rate for advanced gastric cancer remains below 10%. Gastric lymphomas represent 5% of all gastric malignancies and are similar to intestinal lymphomas. The elective operation for ulcerative colitis is the proctocolectomy. All large-bowel mucosa is removed, so that the disease cannot recur, and the patient can therefore be offered complete relief at the cost of living with a permanent ileostomy.

5. More than 2800 renal transplants have been performed at the University of California, San Francisco (UCSF) by 1988. The surgical technique of renal transplantation involves vascular anastomoses and establishment of urinary tract continuity. The principal indication for renal transplantation is end stage renal failure. Patients with active infections or primary oxalosis are not accepted for transplantation. Approximately 90% of patients now receive transplants with their own kidneys left in situe. The kidney to be transplanted can be obtained from either a living related donor or a cadaver donor. Living related donors are usually siblings or parents, but in some cases, more distant relative may be accepted. Histocompatibility is assess by determination of human leukocyte antigens (HLA) to establish the inheritance pattern in a family group. The best donor-recipient combinations share all HLA antigens The prognosis for long term graft survival is about 90%. Chronic rejection is a late cause of renal deterioration over several years after inception of impaired renal function. The principal drugs used in conventional immunosuppression are prednisone and azathioprine or (Imuran) an antimetabolite, or cyclosporine, are used in combination. After a policy of low-dose immunosuppressve therapy was adopted in 1972, the cumulative patient mortality rate has been reduced to 2% at 1 year and 3% at 2 years for living related transplants and 4% and 6% for cadaver transplants. Living related transplantations should achieve greater than 90% graft survival at 2 years with conventional immunosuppression. The survival rate of cadaver grafts has been about 60% at 1 year and 55% at 2 years with conventional immunosuppression and with refined immunosuppression cadaver graft survival rates are approximately 80% at 1 year and 75% at 2 years

6. The survival rate for patients undergoing liver transplantation has improved steadily since 1983. One-year survival rates have increased from approximately 70 percent in the early 1980s, to 80 to 90 percent in the mid – 1990s. Currently, the 5-year survival rate approaches 60 percent. Survival after retransplantation for primary graft nonfunction is

approximately 50 percent. Causes of failure of liver transplantation vary with time. Failures within the first 3 months result primarily from technical complications, postoperative infections and hemorrhage. Transplant failures after the first 3 months are more likely to result from infection, rejection, or recurrent disease (such as malignancy or viral hepatitis). The recurrence of autoimmune hepatitis or primary sclerosing cholangitis has not been reported. There have been reports of recurrent primary biliary cirrhosis after liver transplantation; however the histologic features of primary biliary cirrhosis and acute rejection are viturally indistinguishable and occur as frequently in patients with primary biliary cirrhosis as in patients undergoing transplantation for other reasons. Patients who undergo liver transplantation for chronic hepatitis B plus D have a better survival rate than patients undergoing transplantation for hepatitis B alone. Recurrence of hepatitis C virus (HCV) after liver transplantation can be documented in almost every patient and about 5 to 10 percent of patients have sufficiently severe recurrent hepatitis C to merit antiviral therapy with interferon. Patients who undergo liver transplantation for end-stage alcoholic cirrhosis are at risk of resorting to drinking again after transplantation, a potential source of recurrent alcoholic liver injury. Currently alcoholic liver disease is one of the most common indication for liver transplantation and most transplantation centers screen candidates carefully for predictors of continued abstinence. Recidivism is more likely in patients whose sobriety prior to transplantation was shorter than 6 months. Full rehabilitation is achieved in the majority of patients who survive the early postoperative months and escape chronic rejection or unmanageable infection. Psychosocial maladjustment interferes with medical compliance in a small number of patients, but most manage to adhere to immunosuppressive regimen, which must be continued indefinitely. In one study, 85 percent of patients who survived their transplants returned to gainful activities. In fact, some women have conceived and carried pregnancies to term after transplantation without demonstrable injury to their infants.

E. Heart surgery is used to correct heart problems. The operative risk rate in a good center is around 5 percent or less. Although there has been a trend toward operatin on sicker and more elderly patients results continue to improve with overall mortality rates for otherwise healthy individuals of less than 3%. Risk of dying during bypass surgery 4.6 – 11.9 percent. Risk of permanent brain damage from bypass surgery 15-44 percent. Recipients of bypass surgery for whom it prolongs life 2 percent. Risk of death during angioplasty 0.4 – 2.8 percent. Risk of major complications developing during angioplasty 10 percent. Studies that have found that angioplasty prolongs life or prevents heart attacks but serious mechanical complications can result from trying to threat a tube through an artery. Patients undergo bypass and angioplasty operations primarily to relieve angina and improve blood flow to the heart. Yet there is however a 25 to 50 percent likelihood that within six months their blood vessels will again be blocked, and their chest pain will recur, assuming they continue to eat a meat-based diet. Opening up blocked arteries via either surgery on the carotid (neck) artery or stenting (inserting a metal expanding sleeve into a narrowed artery to hold it open) reduces stroke risk substantially: in persons in whom the carotid artery is narrowed by 70 percent or more and who have had warning symptoms of stroke, surgically removing the inner layer of the artery with the plaque that is blocking the artery (endarterectomy) – reduces stroke or death by two-thirds over two years. (For patients with a narrow carotid artery who have

not yet had warning symptoms of a stroke, surgery is only for those at high risk of stroke, as evidence by the particles breaking off the plaque (microemboli) that can be detected by ultrasound of the brain arteries (transcranial Doppler). Patients need to follow their diet, quit smoking and take medication.

1. Heart surgery can be done to: correct a congenital heart defect, repair abnormal or damaged arteries and structures in the heart; repair or replace valves that control blood flow through the heart; Implant medical devices that regulate heart rhythms or blood flow; or replace a damaged heart with a healthy heart from a donor (heart transplant). Traditional open heart surgery, is done by opening the chest wall to operate on the heart. Almost always, the chest is opened by cutting through a patient's breastbone. Once the heart is exposed, the patient is connected to a heart-lung bypass machine. The machine takes over the pumping action of the heart. This allows surgeons to operate on a still heart. Heart surgery is done to correct problems with the heart. More than half a million heart surgeries are done each year in the United States for a variety of heart problems. For very ill people with severe heart problems, heart surgery can reduce symptoms, improve quality of life, and increase lifespan.

2. Ferdinand Sauerbruch (1875-1951) was a German surgeon who introduced a new era into the surgery of the pleural cavity. As a result of the differential pressure procedure he invented it became possible to open the thorax in a low-pressure chamber, without the lung collapsing and respiration ceasing. Today the differential pressure procedure has been replaced by endotracheal narcosis and artificial bronchial respiration. Through the creation of the heart-lung machine, the most difficult heart operations, such as the artificial replacement of the heart-valve, have become possible, today thousands of people are walking around with artificial heart-valves made of Silastik, synthetic material that is not rejected by the living organism. Electrical pacemaker machines are set into the pleural cavity to govern the constant stimulation or regulation of the disturbed activity of the heart. At the end of 1967 Professor Christian Barnard, a surgeon in Cape Town, South Africa, succeeded in transplanting the heart of an accident casualty into a patient whose own heart was on the point of failing. In 1968 other heart transplants were undertaken with varying success in the U.S.A. Japan and in Europe. Once the immunity barrier is conquered and the rejection reaction arrested, a whole new era of medicine dawned. Approximately 20,000 operations of the heart and circulation in patients with congenital heart disease are performed each year in the United States. Nearly 80% of the first-year survivors live to reach adulthood. The trend in cardiac surgery for congenital heart disease has gone from palliative to staged anatomic correction to single-stage total repair.

3. The most common type of heart surgery for adults is coronary artery bypass grafting (CABG). More than 500,000 operations were completed in 2000. Bypasses are done using grafts of either autologous reversed saphenous vein or internal mammary artery (usually the left internal mammary artery is used owing to the proximity to the heart). The long-term patency of saphenous vein grafts is 60% or less at 10 years, owing to pathologic changes, including thrombosis (usually occurs early), intimal thickening (which usually occurs several months to several years postoperatively) and

atherosclerosis in the graft, sometimes with superimposed plaque rupture, thrombi or aneurysms (usually more than 2 to 3 years). In contrast the internal mammary artery has a greater than 90% patency at 10 years.

4. Coronary angioplasty is a medical procedure in which a balloon is used to open a blockage in a coronary (heart) artery narrowed by atherosclerosis. This procedure improves blood flow to the heart. Angioplasty is done on more than 1 million people a year in the United States. Serious complications don't occur often, but can happen no matter how careful your doctor is, or how well he or she does the procedure. The process of balloon dilatation of an atherosclerotic vessel characteristically causes plaque fracture, often with accompanying localized hemorrhagic dissection of the adjacent arterial wall. The plaque splits at is weakest point, which is not necessarily the area most severely obstructed. Uncommonly, abrupt reclosure follows the angioplasty. Nevertheless, most patients improve symptomatically following angioplasty, thereby avoiding the need for aortocoronary bypass graft surgery at that time. The long term success of angioplasty is limited by the development of proliferative restenosis that occurs in approximately 30 to 40% of patients within the first 4 to 6 months following angioplasty. In experienced hands, PTCA is a low-risk procedure with 1% or less mortality and approximately 5% morbidity, including myocardial infarction, infection, bleeding and the need for emergency CABG because of dissection or acute closure. PTCA is too dangerous for anyone but a cardiologist avoiding the thoracic surgeon. The success rate for experienced operators is 90% per vessel dilated. The major pitfall is that restenosis occurs in 30 to 50% of cases and to a variable degree in virtually all lesions.

5. Stenting has had an enormous impact in lowering restenosis rates, accounting for a 30 to 50% decrease. Stenting prevents elastic recoil and constrictive remodeling and are used in more than 80% of interventions. In coronary and other arteries that do not stay open after a simple angioplasty to dilate them, it is necessary sometimes to place a metal frame or stent, like a self-expanding sleeve over the balloon used in angioplasty. When the balloon is inflated, the stent opens up and holds itself in place against the artery wall, so that it stays there when the balloon is deflated. To perform endovascular repair, the doctor first inserts a catheter into an artery in the groin (upper thigh) and threads it up to the area of the aneurysm. There are high levels of death from angioplasty because they puncture the artery, most of which are not properly reported, because they are performed by doctors other than cardiologists avoiding thoracic surgeons. Then, watching on x ray, the surgeon threads the graft (also called a stent graft) into the aorta to the aneurysm. The graft is then expanded inside the aorta and fastened in place to form a stable channel for blood flow. The graft reinforces the weakened section of the aorta to prevent the aneurysm from rupturing. Endovascular repair surgery reduces recovery time to a few days and greatly reduces time in the hospital. The procedure has been used since 1999. Not all aortic aneurysms can be repaired with this procedure. The exact location or size of the aneurysm may prevent the stent graft from being safely or reliably positioned inside the aneurysm.

6. At one time, aortic dissection was almost invariably fatal, but the prognosis has markedly improved. The development of surgical procedures involving the aortic wall

and the early institution of intensive antihypertensive therapy permit salvage of 65 to 75 percent of patients. Treatment recommendations for aortic aneurysms are based on the size of the aneurysm. Small aneurysms found early can be treated with "watchful waiting." If the aorta is larger than 5 cm (2 inches around or about the size of a lemon) or growing more than 1 cm per year, surgery should be considered as soon as possible. Two main types of surgery to repair aortic aneurysms are open abdominal or open chest repair and endovascular repair. The traditional and most common type of surgery for aortic aneurysms is open abdominal or open chest repair. It involves a major incision in the abdomen or chest. General anesthesia is needed with this procedure. The aneurysm is removed and the section of aorta is replaced with an artificial graft made of material such as Dacron® or Teflon®. The surgery takes 3 to 6 hours, and the patient remains in the hospital for 5 to 8 days. It often takes a month to recover from open abdominal or open chest surgery and return to full activity. Open abdominal and chest surgeries have been performed for 50 years. More than 90 percent of patients make a full recovery. The risk of rupture for a small abdominal aortic aneurysm (less than 4 cm) is about 2%, aneurysms larger than 5 cm are the most dangerous, with a risk 5 to 10% per year. Timely surgery is key, operative mortality for untreated aneurysms is approximately 5% whereas emergency surgery after rupture carries a mortality rate of more than 50%.

7. An endarterectomy is an operation in which a surgeon removes the inner lining of an artery, along with the plaque attached to it. In the case of blockage in the carotid artery, the surgeon makes an incision along the length of the neck, exposing the artery, and clamps the artery above and below the area that needs to be cleaned out. The artery is then opened lengthwise, and the inner lining and plaque are removed. The artery is then sewn closed, the clamps removed and the skin sutured. Some teams routinely put in a shunt. Some medical centers are better than others and it is wise to have a carotid endarterectomy performed in a center where such operations are routine, with a complication rate, established by audit, of 3 percent or less. Until 1991, nobody knew whether this operation produced better results than medical therapy, even though the surgery had been done in about a million individuals. In general surgeons believed that the operation was beneficial, and neurologists had some doubts. In 1991 a major study found that for individuals with severe narrowing of the carotid arteries and symptoms, the benefit of endarterectomy was so clear that the study was stopped after two years, when only 691 individuals had been enrolled. In persons with narrowing of 70 percent or more, stroke and death were reduced from 26 percent to 9 percent over two years; in other words with surgery, they were nearly three times better off. The actual risk at the time of surgery was a 1 percent risk of death and a 1 percent risk of a severe stroke, with a 4 percent risk of lesser complications. Another clinical trial in Europe produced similar results. There is no benefit from surgery in individuals with narrowing less than 50 percent, with narrowing between 50 percent and 70 percent, the benefits depend on other risk factors such as ulceration of the artery, the specific symptoms (ocular vs. hemispheric) sex and associated conditions such as diabetes. The number of patients who need to be treated with surgery (carotid endarterectomy) to prevent 1 stroke in 2 years is estimated for symptomatic narrowing of the carotid artery >70% at 1 patient in 6, for symptomatic moderate narrowing 50-70% 1 patient in 15 and asymptomatic narrowing >60% 1 patient in 67.

8. In catheter ablation a long thin medical device called an ablation catheter is inserted by hand through a blood vessel and then is guided into the heart using x-ray or mapping equipment to find and treat abnormal rhythms. The success rate of catheter ablation is 90 percent or greater for superventricular tachycardia, such as atrial flutter, atrial tachycardia, AV node, AV node reentrant tachycardia, Wolff-Parkinson-White syndrome, 50 to 85 percent for atrial fibrillation, 50 to 75 percent for ventricular tachycardia from coronary artery disease and 90 percent or greater for focal ventricular tachycardia. Although the risks vary depending on the case, cardiac catheterization in a stable patient at a catheterization laboratory carries a less than 1% probability of morbidity, with major complications such as stroke, myocardial infarction, major bleeding, less than 0.5% and overall mortality less than 0.2%. The solution for dysrhythmia is often an implanted battery-powered pacemaker which will jolt the heart to keep it in line. An implantable cardioverter defibrillator (ICD) is connected to at least one wire, which is typically inserted through a blood vessel into the heart. A doctor may prescribe an ICD if there might be a high risk for sudden cardiac death without one. An ICD helps to treat lethal arrhythmias such as ventricular tachycardia and ventricular fibrillation. The term pacemaker dependent is used when a patient is completely dependent on the pacing function from the device and has little or no underlying heart rhythm. In the United States, medical devices are regulated by the Food and Drug Administration (FDA). The FDA issues three classifications of recall. The most serious is class I recall, in which the device problem may severely impair the safety of the patient and has the potential for severe injury, including death. A class II recall might also have a risk for injury or death, but these outcomes are much less likely to occur. A class III recall is for a problem that is not likely to harm the patient, though there is a very remote chance of injury.

9. Replacement of damaged cardiac valves with prostheses has become a common and often lifesaving mode of therapy. Artificial valves fall primarily into two categories – mechanical prostheses using different types of occluders, such as old style caged balls, tilting disks, or hinged flaps and tissue valves usually bioprostheses consisting of chemically treated animal tissue, especially porcine aortic valve tissue, which has been preserved in a dilute glutaraldehyde solution and subsequently mounted on a prosthetic fram (called a “stent”) or cryopreserved aortic homografts offer durability in younger patients without the need for anticoagulation. Cryopreserved aortic homografts from deceased human organ donors offer durability in younger patients without the need for anticoagulation. The Ross procedure is particularly effective in young patients with aortic valve disease. This technique involves replacing the patient's diseased aortic valve with his or her own pumonic valve and reimplanting the coronary arteries. Three popular bioprostheses are available in the United States: The Hancock and Carpentier-Edwards valves, which are both porcine bioprostheses, and the Bacter pericardial valve, which is constructed from bovine pericardium. Within 10 years postoperatively, at least 30% of tissue valves require replacement for calcification, often with tearing. Ideal patients for mitral valve repair are those with calcified valves and mitral regurgitation. Valve repair can include partial resection of leaflets, lengthening, shortening, transposition, or replacement of chorda tenineae, and placement of valvuloplasty rings to decrease the size of the mitral annulus. In 1996 minimally invasive valve surgery began with new technology using smaller incisions, transeosophageal echocardiography (TEE) to assess

the competency of the operating room repair, newer perfusion techniques and is as safe or safer than convention open sternotomy cases.

10. Surgery for patients with end-stage congestive heart failure currently is limited to heart transplantation, frequently after a period of left ventricular assistance with a mechanical device. Transplant surgery makes use of the super-cooled foreign organs of people who have died in accidents, is complicated by the defense mechanism of the organism against foreign albumen. The number of heart transplants performed in the United States each year is limited to approximately 2,000 (2,500 worldwide) because of the shortage of donor organs. Patients older than age 60 have been shown to have similar early mortality ad length of hospitalization as younger gropus. Five year survival ranges from 71% in older patients to 82% in younger patients. The major current limitation to the long-term success of cardiac transplantation is late, progressive diffuse stenosing intimal proliferation of the coronary arteries (graft arteriosclerosis), which is a problem because denervated hearts feel no chest pain, and congestive heart failure or sudden death is the usual outcome. Hypercholesteremia affects 60-80% of recipients and may contribute to coronary vasculopathy. Statins reduce the level of cholesterol and appear to have the added advantage of decreasing the incidence of cardiac rejection. The outlook is good with a 1-year survival of 70 to 80% and 5 year survival of more than 60% Transplant atherosclerosis is responsible for many later deaths. Three major factors contribute to the widespread success of cardiac transplantation; (1) better selection of candidates, (2) improved maintenance immunosuppression (including the use of cyclosporine A, along with steroids and azathioprine) and (3) early histopathologic diagnosis of acute allograft rejection by sequential endomyocardial biopsy. When myocardial injury is not extensive, the rejection episode is usually successfully reversed by increased immunosuppressive therapy. Advanced rejection may be irreversible and fatal often as the result of infection and development of malignancies, particularly lymphomas (generally related to fungus or the Epstein-Bar virus in the presence of profound chronic therapeutic immunosuppression).

G. Skin grafting involves taking healthy skin from one part of the body and placing it over a damaged area of skin instead. A graft allows injured skin to heal more quickly and effectively and with less scarring than would otherwise be the case. There are two main types of skin graft: a full thickness skin graft that includes the epidermis and the dermis below it and a split thickness skin graft in which only the epidermis and upper dermis are used as a graft. Graft death can occur because of infection. When a patient has a wound that needs to be covered with skin immediately but there is not enough healthy skin for this job, the patient may receive skin from another donor (living or dead) as a temporary biological dressing. The patient's body will ultimately reject the "foreign" skin and the use of immunosuppressive drugs to prevent rejection is not a suitable treatment for someone who has a major skin defect and is therefore wide open to infection. Cadaver skin (generally from the thighs and back) can be stored in a skin bank. There are about 40 skin tissue banks in the United States that are accredited by the American Association of Tissue Banks. Scientists can take a strip of epidermis the size of postage stamp and stimulate the cells to multiply, producing a sheet of epidermal skin that can be rafted over

the patient's wound. At present, the process is a slow and expensive one, so this treatment is not yet widely available.

1. Surgery is an essential part of the treatment plan for all patients with third-degree burns and for some patients with second-degree burns. The burn wounds must be covered with new skin both to prevent infection and to limit scarring, which may interfere with the person's ability to function. The principal surgical operation performed on burn patients is skin grafting. In this procedure, a sliver of the patient's skin is removed form a healthy, unburned area (the donor area) and attached to the area destroyed by the burn (the recipient area) by stitches, staples, or adhesive paper strips or simply by dressings. The recipient area must be prepared to accept the donor skin. This may be done either surgically, by excision, or by allowing the heat-damaged skin (the eschar) to separate naturally form the underlying, healthy tissue. Excision is performed on the areas of the burn that are not expected to heal on their own. In excision, the eschar is removed either tangentially or facially. Tangential excision involves removing the eschar with a long razor blade in layers until all dead tissue is gone and the surface consists of healthy tissue. Excision down to the fascia involves removing the entire layer of damaged skin and underlying at down to the fascia – the tough covering over the underlying muscle. Excision promotes early healing and eliminates a source of infection. Despite its advantages, this technique is sometimes used reluctantly because the final appearance after removal of fat can be less pleasing, and the blood loss is disconcerting. Natural separation of the eschar takes three to five weeks. Once the eschar is remove, if there is not enough remaining dermis, which contains regenerating elements (epidermal cells in hair follicles and sweat glands), new skin will not grow. Multiple trips to the operating room are often required before all the eschar is removed and the entire burn wound is grafted.

2. Reconstructive surgery is the aspect of plastic surgery whose goal is correction of dysfunction an disfigurement resulting from injury. Reconstructive surgery is surgery that deals with the repair or replacement of lost or damaged parts of the body. Reconstructive surgery for burn injuries usually consists of replacing the skin lost or disfigured by the injury in order to correct the pathological scars. Deforming scars are cut out (excised) and the wound is either closed (if sufficient skin exists) or covered with new skin, a procedure called resurfacing. Also in reconstructive surgery, contractures are released (cut across) and skin is placed in the resulting wound after the joint is extended. A graft is tissue that is completely removed from the body, disconnected from its blood supply, and replaced on a wound, where it lives by absorbing nutrients form the wound. The area from which tissue is taken is called the donor site. The recipient site is the wound in need of closure. Blood vessels from the wound generally grow into the graft within three or four days, resulting in the "take" of the graft. Whereas most burn wounds that need to be closed by skin graft surgery are covered with split-thickness skin grafts during acute burn recovery period, full-thickness grafts, composite grafts, and flaps are generally used for reconstructive surgery. When a split-thickness graft is taken, only a portion of the dermis is removed with the epidermis, a full-thickness graft involves removing the entire thickness of the skin for use as a graft. Composite grafts contain more than one type of tissue, most commonly skin and cartilage from the ear, and are

sometimes used to reconstruct facial features such as the nose, eyebrows, and upper lip. Split-thickness donor sites heal by epithelialization, but when a full-thickness or composite graft is taken, the donor site must be closed with sutures or, sometimes, a split-thickness graft. A flap is a tissue that maintains its blood supply when moved to another area of the body, they do not contract. A local flap is a flap that is moved to an area adjacent to its original donor site. A distant flap is a piece of tissue which is moved to an area that is not adjacent to the donor site. The most common way of maintaining the blood supply to a distant flap is to disconnect the blood supply to the flap from the original donor site and connect the flap's blood vessels into blood vessels close to the recipient site using microvascular surgery. This is called free flap.

H. Orthopedics is the branch of medicine dealing with the correction of deformities of bones or muscles. Orthopedic surgeons use both surgical and nonsurgical means to treat musculoskeletal trauma, spine diseases, sports injuries, degenerative diseases, infections, tumors, and congenital disorders. Between 2001 and 2016, the prevalence of musculoskeletal procedures drastically increased in the U.S, from 17.9% to 24.2% of all operating room procedures performed during hospital stays. In a study of hospitalizations in the United States in 2012, spine and joint procedures were common among all age groups except infants. Spinal fusion was one of the five most common OR procedures performed in every age group except infants younger than 1 year and adults 85 years and older. Laminectomy was common among adults aged 18–84 years. Knee arthroplasty and hip replacement were in the top five OR procedures for adults aged 45 years and older.

1. According to applications for board certification from 1999 to 2003, the top 25 most common orthopedic procedures (in order) performed by orthopedic surgeons are as follows: Knee arthroscopy and meniscectomy. Shoulder arthroscopy and decompression. Carpal tunnel release. Knee arthroscopy and chondroplasty. Removal of support implant. Knee arthroscopy and anterior cruciate ligament reconstruction. Knee replacement. Repair of femoral neck fracture. Repair of trochanteric fracture. Debridement of skin/muscle/bone/fracture. Knee arthroscopy repair of both menisci. Hip replacement. Shoulder arthroscopy/distal clavicle excision. Repair of rotator cuff tendon. Repair fracture of radius (bone)/ulna. Laminectomy. Repair of ankle fracture (bimalleolar type). Shoulder arthroscopy and debridement. Lumbar spinal fusion. Repair fracture of the distal part of radius. Low back intervertebral disc surgery. Incise finger tendon sheath. Repair of ankle fracture (fibula). Repair of femoral shaft fracture. Repair of trochanteric fracture. Knee surgery is the most common surgical procedure and knee surgeries are four of the top ten most performed orthopedic procedures; total knee replacement is the most common major arthroplasty.

2. The use of intramedullary rods to treat fractures of the femur and tibia was pioneered Gerhard Küntscher of Germany. This made a noticeable difference to the speed of recovery of injured German soldiers during World War II and led to more widespread adoption of intramedullary fixation of fractures in the rest of the world. External fixation of fractures was refined by American surgeons during the Vietnam War but a major contribution was made by Gavril Abramovish Ilizarov in the USSR. He was sent, without

much orthopedic training, to look after injured Russian soldiers in Siberia in the 1950s. With no equipment he was confronted with crippling conditions of unhealed, infected, and mal-aligned fractures. With the help of the local bicycle shop he devised ring external fixators tensioned like the spokes of a bicycle. With this equipment he achieved healing, realignment and lengthening to a degree unheard of elsewhere. His llizarov apparatus is still used today as one of the distraction osteogenesis methods. Traction was the standard method of treating thigh bone fractures until the late 1970s when the Harborview Medical Center in Seattle group popularized intramedullary fixation without opening up the fracture. Some tibial shaft fractures cannot be accurately reduced using closed or percutaneous techniques during an intramedullary nailing procedure. Under these circumstances, a formal open reduction can be performed. All fractures ultimately healed within 5° of anatomic alignment.

3. Arthroplasty is an orthopedic surgery where the articular surface of a musculoskeletal joint is replaced, remodeled, or realigned by osteotomy or some other procedure. It is an elective procedure that is done to relieve pain and restore function to the joint after damage by arthritis (rheumasurgery) or some other type of trauma. As well as the standard total knee replacement surgery, the uni-compartmental knee replacement, in which only one weight-bearing surface of an arthritic knee is replaced, is a popular alternative. Joint replacements are available for other joints on a limited basis, most notably the knee, shoulder, elbow, wrist, ankle, spine, and finger joints. In recent years, cartilage replacement of joints, in particular the hip and knee joints, have become more popular amongst younger and more active patients. This type of operation delays the need for the more traditional and less bone-conserving total hip replacement, but carries significant risks of early failure from fracture and bone death. One of the main problems with joint replacements is wear of the bearing surfaces of components. This can lead to damage to surrounding bone and contribute to eventual failure of the implant. Use of alternative bearing surfaces has increased in recent years, particularly in younger patients, in an attempt to improve the wear characteristics of joint replacement components. These include ceramics and all-metal implants (as opposed to the original metal-on-plastic). The plastic (actually ultra high-molecular-weight polyethylene) can also be altered in ways that may improve wear characteristics.

4. The modern total hip replacement was pioneered by Sir John Charnley, expert in tribology at Wrightington Hospital, England in the 1960s. He found that joint surfaces could be replaced by implants cemented to the bone. His design consisted of a stainless steel one-piece femoral stem and head and a polyethylene, acetabular component, both of which were fixed to the bone using PMMA (acrylic) bone cement. For over two decades, the Charnley Low Friction Arthroplasty and its derivative designs were the most-used systems in the world. This formed the basis for all modern hip implants. The Exeter hip replacement system (with a slightly different stem geometry) was developed at the same time. Since Charnley, there have been continuous improvements in the design and technique of joint replacement (arthroplasty) with many contributors, including W. H. Harris, the son of R. I. Harris, whose team at Harvard pioneered uncemented arthroplasty techniques with the bone bonding directly to the implant.

5. Knee replacements using similar technology were started by McIntosh in rheumatoid arthritis patients and later by Gunston and Marmor for osteoarthritis in the 1970s developed by Dr. John Insall in New York utilizing a fixed bearing system, and by Dr. Frederick Buechel and Dr. Michael Pappas utilizing a mobile bearing system. Modern orthopedic surgery and musculoskeletal research has sought to make surgery less invasive and to make implanted components better and more durable. Partial excision of the medial or lateral meniscus of the knee (CPT code 29881) remains the most common procedure, followed by carpal tunnel surgery (CPT code 64721). Shoulder arthroscopy and/or acromial decompression (CPT code 29826) moved up seven places over the five years. The total number of procedures coded 29881 (meniscectomy) is consistently more than twice that of procedure 64721 (carpal tunnel release), which, until 2003, was the second most common procedure. Five of the top eleven procedures required the use of arthroscopy skills. 56% of the top eleven procedures required arthroscopy.

6. Arthroscopy was pioneered in the early 1950s by Dr.Masaki Watanabe of Japan to perform minimally invasive cartilage surgery and reconstructions of torn ligaments. Arthroscopy helped patients recover from the surgery in a matter of days, rather than the weeks to months required by conventional, 'open' surgery. It is a very popular technique. Knee arthroscopy is one of the most common operations performed by orthopedic surgeons today and is often combined with meniscectomy or chondroplasty. The majority of upper extremity outpatient orthopedic procedures are now performed arthroscopically. The majority of orthopedic procedures are now performed arthroscopically. Articular cartilage, most notably that which is found in the knee joint, is generally characterized by very low friction, high wear resistance, and poor regenerative qualities. It is responsible for much of the compressive resistance and load bearing qualities of the knee joint and, without it, walking is painful to impossible.

7. There are two methods of grafting cartilage defects, osteochondral grafting (mosaicplasty), and articular cartilage stem cell paste grafting. Periosteal grafts are harvested from the perichondrial tissue and grafted to the articular cartilage defect. Given low long-term success rates, perichondrial grafting alone has not been clinically accepted as a particularly excellent therapy. Mosaicplasty, a form of chondral grafting, is a therapy designed to replace cartilage on the surface of the knee joint that has been damaged by trauma or arthritis by implanting osteochondral plugs. The implants can be autogenic (autologous) or allogenic. Osteochondral autograft (OATS) is a technique that requires that the surgeon transplant sections of bone and cartilage. First, the damaged section of bone and cartilage is removed from the joint. Then a new healthy dowel of bone with its cartilage covering is removed from the same joint and transplanted or grafted into the hole left from removing the old damaged bone and cartilage. The healthy bone and cartilage are taken from areas of low stress in the joint so as to prevent weakening the joint. Depending on the severity and overall size of the damage multiple plugs or dowels may be required to adequately repair the joint. Paste grafting involves replacing damaged cartilage with autologous cartilage and cancellous bone from the intercondylar notch in the center of the knee that is first morselized into a paste (typically with hydroxyapatite) to better fill the defect and more successfully promote chondrocyte activity and cartilage formation. These procedures are often performed arthroscopically. The human body's

own cartilage is still the best material for lining knee joints. This drives efforts to develop ways of using a person's own cells to grow, or re-grow cartilage tissue to replace missing or damaged cartilage. One cell-based replacement technique is called autologous chondrocyte implantation (ACI) or autologous chondrocyte transplantation (ACT).

8. A variation on the Carticel technique, called matrix-associated autologous chondrocyte transplantation (MACT), grows the patient's cells in a 3D matrix of resorbable tissue which is implanted via an open or arthroscopic procedure. It appears to be a simpler technique and resolves some of the issues of using Carticel under a periosteal patch. Another ACI technique, using "chrondospheres", uses only chrondrocytes and no matrix material. The cells grow in self-organized spheroid matrices which are implanted via injected fluid or inserted tissue matrix. MACI stands for Matrix-induced Autologous Chondrocyte Implantation. The technique involves an initial arthroscopy or key-hole procedure during which a very small amount of the patient's articular cartilage is taken from a specific area within the knee. The retrieved cartilage is then grown in a laboratory to produce millions of cartilage cells which are attached to a "matrix" made of collagen. A second procedure is then carried out to expose the damaged area and the new cartilage cells are re-implanted. A careful post-operative rehabilitation programme is then followed to ensure the best result. Recently, there have been several published case reports of successful cartilage growth in human knees using autologous cultured mesenchymal stem cells. In addition, an n=229 safety study has also been published showing safety better than surgical alternatives for this cultured cell injection procedure at a 3 year follow-up. An advantage to this approach is that a person's own stem cells are used, avoiding transmission of genetic diseases.

§355 Resuscitation, Fractures, and Prosthetics

A. Modern cardio pulmonary resuscitation (CPR) developed in the late 1950s and early 1960s. The discoverers of mouth-to-mouth ventilation were Drs. James Elam and Peter Safar. Though mouth-to-mouth resuscitation was described in the Bible (mostly performed by midwives to resuscitate newborns) it fell out of practice until it was rediscovered in the 1950s. In early 1960 Drs. Kouwenhoven, Knickerbocker, and Jude discovered the benefit of chest compression to achieve a small amount of artificial circulation. Later in 1960, mouth-to-mouth and chest compression were combined to form CPR similar to the way it is practiced today. Cardiopulmonary resuscitation (CPR) is a lifesaving technique useful in many emergencies, including a heart attack or near drowning, in which someone's breathing or heartbeat has stopped. The American Heart Association recommends that everyone — untrained bystanders and medical personnel alike — begin CPR with chest compressions. The normal CPR routine is two breaths to 30 chest compressions for adults and 15 for children and infants. When an adult, child or infant has a pulse, but is not breathing effectively, as in opiate overdose, rescuers should give breaths without chest compressions This is rescue breathing. For adult give 1 breath every 5 to 6 seconds, about 10 to 12 breaths per minute. For infants and children, give 1 breath every 3 to 5 seconds, about 12 to 20 breaths per minute. Give each breath in 1 second. Each breath should result in a visible chest rise. Check the pulse about

every 2 minutes. When the heart or breathing stops, the lack of oxygenated blood can cause brain damage in only a few minutes. A person may die within eight to 10 minutes. CPR can keep oxygenated blood flowing to the brain and other vital organs until more definitive medical treatment can restore a normal heart rhythm. To learn CPR properly, take an accredited first-aid training course, including CPR and how to use an automated external defibrillator (AED).

1. Cardiopulmonary resuscitation and rescue breathing are skills used to resuscitate a person who has fallen victim to sudden cardiac or respiratory arrest. Both of these situations pose an immediate threat to life. While effective CPR is known to double or triple a person's chances for surviving sudden cardiac arrest, less than one-third of people who arrest outside of the hospital receive bystander CPR. Rescue breathing of 2 breaths per five seconds is necessary to survive severe respiratory depression and arrest, such as that associated with the opiate overdose. Studies show that 15- 30 chest compressions per 2 breaths, tends to slightly impair cardiac arrest survival rates. Study results suggest that 100 to 120 chest compression per minute alone may increase survival among certain subgroups of patients — those with a cardiac cause of arrest and those with ventricular fibrillation. Of 1941 patients who met the inclusion criteria, 981 were randomly assigned to receive chest compression alone and 960 to receive chest compression plus rescue breathing. No significant difference was noted between the two groups in the proportion of patients who survived to hospital discharge (12.5% with chest compression alone and 11.0% with chest compression plus rescue breathing) or in the proportion who survived with a favorable neurologic outcome in the two sites that assessed this secondary outcome (14.4% and 11.5%, respectively). Among the 1941 eligible patients, approximately 70% had arrests with a cardiac cause, less than half the arrests were witnessed, and nearly a third had a shockable rhythm. Pre-specified subgroup analyses showed a trend toward a higher proportion of patients surviving to hospital discharge with chest compression alone as compared with chest compression plus rescue breathing for patients with a cardiac cause of arrest (15.5% vs. 12.3%) and for those with shockable rhythms (31.9% vs. 25.7%). Rescue breathing statistics were censored. The key to determining whether to deliver chest compressions or rescue breathing is whether the unconscious person is suffering cardiac or respiratory arrest. The only reason to deliver 15 chest compressions per 2 rescue breaths is if the cause is undetermined.

2. The ‘‘Community Access to Emergency Defibrillation Act of 2002’ found that over 220,000 Americans die each year from cardiac arrest. Every 2 minutes, an individual goes into cardiac arrest in the United States. The chance of successfully returning to a normal heart rhythm diminishes by 10 percent each minute following sudden cardiac arrest. Eighty percent of cardiac arrests are caused by ventricular fibrillation, for which defibrillation is the only effective treatment. Sixty percent of all cardiac arrests occur outside the hospital. The average national survival rate for out-of-hospital cardiac arrest is only 5 percent. Communities that have established and implemented public access defibrillation programs have achieved average survival rates for out-of-hospital cardiac arrest as high as 50 percent. According to the American Heart Association, wide use of defibrillators could save as many as 50,000 lives nationally each year. Successful public access defibrillation programs ensure that cardiac arrest victims

have access to early 911 notification, early cardiopulmonary resuscitation, early defibrillation, and early advanced care.

B. When someone has extremely shallow and intermittent breathing (around one breath every 5-10 seconds) or has stopped breathing and is unresponsive, rescue breathing should be done as soon as possible because it is the quickest way to get oxygen into someone who has stopped breathing. The difference between survival and death in an opioid overdose depends on how quickly enough oxygen gets into the person's body. These are the steps for rescue breathing: 1. Place the person on their back. 2. Tilt their chin up to open the airway. 3. Check to see if there is anything in their mouth blocking their airway, such as gum, toothpick, undissolved pills, syringe cap, cheeked Fentanyl patch (these things have all been found in the mouths of overdosing people!). If so, remove it. 4. Plug their nose with one hand, and give 2 even, regular-sized breaths. Blow enough air into their lungs to make their chest rise. If you don't see their chest rise out of the corner of your eye, tilt the head back more and make sure their nose is plugged. 5. Breathe again. Give one breath every 5 seconds. Without a naloxone kit to reverse the overdose, continue rescue breathing until help (i.e. the ambulance) arrives.

1. There are three steps in adult CPR. Remember a person in cardiac arrest may have abnormal breathing for a couple of minutes. This abnormal breathing is called "*agonal respiration*" and is the result of the brain's breathing center sending out signals even though circulation has ceased. The key point is that the abnormal breathing may sound like grunting, gasping or snoring. It disappears in 2-3 minutes. If this type of breathing is noted do not delay CPR. The person desperately needs air. 1. Check the victim for unresponsiveness. If there is no response, Call 911 and return to the victim. In most locations the emergency dispatcher will assist with CPR instructions. 2. Tilt the head back and listen for breathing. If not breathing normally, pinch nose and cover the mouth with yours and blow until the chest rises. Give 2 breaths. Each breath should take 2 seconds. 3. If the victim is still not breathing normally, coughing or moving, begin chest compressions. Push down on the chest 1 1/2 to 2 inches 15 times right between the nipples. Pump at the rate of 100 -120 compressions per minute, faster than once per second. Sometimes you may hear a cracking sound. Do not be alarmed. The sound is caused by cartilage or ribs cracking. Even if this occurs the damage is not serious. The risk of delaying CPR or not doing CPR is far greater than the risk of a broken rib. Continue with 2 breaths and 15 pumps until help arrives.

C. There are four differences for giving CPR to children. 1. If you are alone with the child give one minute of CPR before calling 911. 2. Use the heel of one hand for chest compressions 3. Press the sternum down 1 to 1.5 inches. 4. Give 1 full breath followed by 5 chest compressions. D. CPR for infants younger than one year of age: 1. Shout and gently tap the child on the shoulder. If there is no response, position the infant on his or her back. 2. Open the airway using a head tilt lifting of chin. Do not tilt the head too far back. 3. If the baby is NOT breathing give 2 small gentle breaths. Cover the baby's mouth and nose with your mouth. Each breath should be 1.5 to 2 seconds long. You should see the baby's chest rise with each breath. 4. Give five gentle chest compressions at the rate of 100 per minute. Position your 3rd and 4th fingers in the center of the chest half an inch

below the nipples. Press down only 1/2 to 1 inches. 5. Repeat with 1 breath and 5 compressions. After one minute of repeated cycles call 911 and continue giving breaths and compressions.

D. When healing from a broken bone it is absolutely essential that the patient consume adequate calcium and phosphorus to sustain hydroxy-apatite formation until the bone is completely healed. A high calorie diet with plenty of meat, dairy and eggs is needed for bones to heal in the normal amount of time – 20 days for foot bones, 30 days for arm bones and 40 days for leg bones. In the 48 Part Treaties on Fractures translated by Francis Adams, Hippocrates treats upon fractures and dislocations and the application of bandages. The physician must take the extension as straight as possible, for this is the most natural direction. Those, then, who act in such cases without deliberation, for the most part do not fall into any great mistake of necessity. If one will extend a broken arm, he will turn the bone, situated at the extremity of the little finger, into the straight line, and also the one at the elbow, and the tendons which stretch from the carpus to the extremity of the humerus will be placed in the straight line; and when the arm is suspended in a sling, it will be in the same attitude as that in which it was bound up, and will give no pain to the patient when he walks about, nor when he lies reclined, and will not become fatigued.

1. The prominence of a broken bone could not escape being detected by the hand of an experienced person, when applied for this purpose, and, moreover, the projecting part is particularly painful to the touch. When the patient's arms are extended, the physician should apply the palms of the hands, and adjust the fractured parts and then having rubbed the parts with cerate, but not in large quantity so that the bandages may not come off, it is to be bound up in this state, care being taken that the hand be not lower than the elbow, but a little higher, so that the blood do not flow toward the extremity, but may be determined to the upper part; and then it is to be secured with the bandage, the head of which is to be placed at the fracture, and the bandage should impart firmness to the parts without occasioning strong compression. When you have carried the bandage twice or thrice round at the seat of the fracture, it is to be carried upward, so that the afflux of blood into it may be stopped, and the bandage should terminate there, and the first bandages ought not to be long. The head of the second bandage is also to be placed upon the seat of the fracture, and a single round of it being made there, it is then to be carried downward, and is not to be applied so tight as the other, and there should be greater distances between the turns, so that the bandage may prove sufficient to revert to the spot where the other terminated. The bandages may be rolled to the left hand or to the right, or to whatever side suits best with the position of the fractured arm, or according to the inclination which it may have. Afterward we must place along the arm, compresses, smeared with a little cerate, for thus they occasion less uneasiness, and are more easily arranged. Then we must apply the bandages crossways, sometimes to the right hand, and sometimes to the left, for the most part beginning below and terminating above, but sometimes commencing above and ending below. The parts which are thinly covered with flesh should be wrapped round with compresses, and inequalities should be made up, not by a number of folds at once, but by degrees. These two bandages are sufficient at first.

2. When the third day arrives, that is to say, the seventh from the first dressing, if properly done, the swelling in the hand should be not very great; and the part which has been bandaged should be found more slender and less swelled at each time, and on the seventh day the swelling should be quite gone, and the broken bones should be more readily moved, and admit of being easily adjusted. If, then, you see that the bones are properly adjusted by the first dressings, and that there is no troublesome pruritus in the part, nor any reason to suspect ulceration, you may allow the arm to remain bandaged in the splints until after the lapse of more than twenty days. The bones of the fore-arm generally get consolidated in thirty days altogether; but there is nothing precise in this matter, for one constitution differs from another, and one period of life from another. When you remove the bandages, you must pour hot water on the arm and bind it up again, but somewhat slacker, and with fewer bandages than formerly: and again on the third day you undo the bandages, and bind it still more loosely, and with still fewer bandages.

3. The human foot is composed of several small bones like the hand. These bones therefore are scarcely ever broken, unless the skin at the same time be wounded by some sharp and heavy body. If any bone be moved from its place, or a joint of the toes be luxated, or any of the bones of the part called the tarsus be displaced, it must be forced back again to its place as described with regard to the hand; and is to be treated with cerate, compresses, and bandages, like the fractures, with the exception of the splints; and is to be secured tightly in the same way, and the bandages renewed on the third day; and the patient thus bandaged should return the same answers as in fractures, as to the bandages feeling tight or slack. All these bones recover perfectly in twenty days.

4. Fractures involving the bones of the leg take longer to heal. It is advantageous to lie in bed during the whole of this time; but the patients, thinking light of the complaint, have not perseverance to do this, and they walk about before they get well; wherefore many of these do not make a perfect recovery. When the parts are adjusted, you should apply the bandages while the limb is in a stretched position, making the first turns to the right or to the left, as may be most suitable; and the end of the bandage should be placed over the fracture, and the first turns made at that place; and then the bandage should be carried up the leg, as described with regard to the other fractures. The bandages should be broader and longer, and more numerous, in the case of the leg than in that of the arm. And when it is bandaged it should be laid upon some smooth and soft object, so that it may not be distorted to the one side or the other, and that there may be no protrusion of the bones either forward or backward. A canal may be used to keep the leg elevated. Bandaging should be renewed on the third day; and the bandaged part should be found reduced in swelling; and the new bandagings should be more tightly put on, and more pieces of cloth should be used; and the bandages should be carried loosely about the foot, unless the wound be near the knee. Extension should be made and the bones adjusted at every new bandaging; for, if properly treated, and if the swelling progress in a suitable manner, the bandaged limb will have become more slender and attenuated, and the bones will be more mobile, and yield more readily to extension. On the seventh, the ninth, or the eleventh day, the splints should be applied as described in treating of the other fractures. Attention should be paid to the position of the splints about the ankles and along the

tendon of the foot which runs up the leg. The bones of the leg get consolidated in forty days, if properly treated.

5. In those cases of fracture in which the bones protrude and cannot be restored to their place, the following mode of reduction may be practiced:- Some small pieces of iron are to be prepared like the levers which the cutters of stone make use of, one being rather broader and another narrower; and there should be three of them at least, and still more, so that you may use those that suit best; and then, along with extension, we must use these as levers, applying the under surface of the piece of iron to the under fragment of the bone, and the upper surface to the upper bone; and, in a word, we must operate powerfully with the lever as we would do upon a stone or a piece of wood. The pieces of iron should be as strong as possible, so that they may not bend.

6. Luxations and subluxations at the knee are much milder accidents than subluxations and luxations at the elbow. For the knee-joint, in proportion to its size, is more compact than that of the arm, and has a more even conformation, and is rounded, while the joint of the arm is large, and has many cavities. And in addition, the bones of the leg are nearly of the same length, for the external one overtops the other to so small an extent as hardly to deserve being mentioned, and therefore affords no great resistance, although the external nerve (ligament?) at the ham arises from it. The bones of the fore-arm are unequal, and the shorter is considerably thicker than the other, and the more slender (ulna) protrudes, and passes up above the joint, and to it (the olecranon) are attached the nerves (ligaments) which go downward to the junction of the bones; and the slender bone (ulna) has more to do with the insertion of the ligaments in the arm than the thick bone (radius).

7. Dislocations at the elbow are more troublesome than those at the knee, and, owing to the inflammation which comes on, and the configuration of the joint, are more difficult to reduce if the bones are not immediately replaced. For the bones at the elbow are less subject to dislocation than those of the knee, but are more difficult to reduce and keep in their position, and are more apt to become inflamed and ankylosed. Such dislocations, to whatever side, are easily reduced, and the extension is to be made in the line of the arm, one person making extension at the wrist, and another grasping the armpit, while a third, applying the palm of his hand to the part of the joint which is displaced, pushes it inward, and at the same time makes counter-pressure on the opposite side near the joint with the other hand. In dislocations of this kind, extension should be made in the manner described when treating of the bandaging of fractured bones of the arm, extension being made upward at the armpit, while the parts at the elbow are pushed downward, for in this manner can the humerus be most readily raised above its cavity; and when so raised, the reduction is easy with the palms of the hand, the one being applied so as to make pressure on the protuberant part of the arm, and the other making counter-pressure, so as to push the bone of the fore-arm into the joint. In bandaging, the head of the first bandage should be placed at the seat of the injury, whether it be a case of fracture, of dislocation, or of diastasis (separation), and the first turns should be made there, and the bandages should be applied most firmly at that place, and less so on either side. Dislocations heal quickly but a complete recovery takes many months.

E. The ability to properly apply casts and splints is a technical skill easily mastered with practice and an understanding of basic principles. The initial approach to casting and splinting requires a thorough assessment of the injured extremity for proper diagnosis. Once the need for immobilization is ascertained, casting and splinting start with application of stockinette, followed by padding. Splinting involves subsequent application of a noncircumferential support held in place by an elastic bandage. Splints are faster and easier to apply; allow for the natural swelling that occurs during the acute inflammatory phase of an injury; are easily removed for inspection of the injury site; and are often the preferred tool for immobilization in the acute care setting. Disadvantages of splinting include lack of patient compliance and increased motion at the injury site. Casting involves circumferential application of plaster or fiberglass. As such, casts provide superior immobilization, but they are more technically difficult to apply and less forgiving during the acute inflammatory stage; they also carry a higher risk of complications. Compartment syndrome, thermal injuries, pressure sores, skin infection and dermatitis, and joint stiffness are possible complications of splinting and casting. Patient education regarding swelling, signs of vascular compromise, and recommendations for follow-up is crucial after cast or splint application. Standard materials and equipment for splint and cast application include (1) adhesive tape (to prevent slippage of elastic wrap used in splints; (2) bandage scissors; (3) basin of water at room temperature (dipping water); (4) casting gloves (necessary for fiberglass; (5) elastic bandage (for splints; (6) padding; (7) plaster or fiberglass casting material; (8) sheets, underpads (to minimize soiling of the patient's clothing; (9) stockinette. Regardless of the material used, the most important variable affecting the setting time is water temperature. Casting materials harden faster with the use of warm water compared with cold water. The faster the material sets, the greater the heat produced, and the greater the risk of significant skin burns. Cool water is also recommended when extra time is needed for splint application.

1. To prepare the injured extremity for splinting, stockinette is measured and applied to cover the area and extend about 10 cm beyond each end of the intended splint site. Later, once the padding and splint material have been applied, the excess stockinette is folded back over the edges of the splint to form a smooth, padded edge. Care should be taken to ensure that the stockinette is not too tight, and that wrinkling over flexion points and bony prominences is minimized by smoothing or trimming the stockinette. Generally, a stockinette 2 to 3 inches wide is used for the upper extremities and 4 inches wide for the lower extremities. An acceptable alternative is to create a splint without the use of a stockinette. This technique may be particularly useful if dramatic swelling is anticipated. Next, layers of padding are placed over the stockinette to prevent maceration of the underlying skin and to accommodate for swelling. Padding is wrapped circumferentially around the extremity, rolling the material from one end of the extremity to the other, each new layer overlapping the previous layer by 50 percent. This technique will automatically provide two layers of padding. Extra layers may be added over the initial layers, if necessary. The padding should be at least two to three layers thick without being constrictive, and should extend 2 to 3 cm beyond the intended edges of the splint. Joints should be placed in their proper position of function before, during, and after padding is applied to avoid areas of excess wrinkling and subsequent pressure. In general, the wrist

is placed in slight extension and ulnar deviation, and the ankle is placed at 90 degrees of flexion. Padding comes in several widths. In general, padding 2 inches wide is used for the hands, 2 to 4 inches for upper extremities, 3 inches for feet, and 4 to 6 inches for lower extremities. An additional 1 to 2 cm should be added at each end of the splint to allow for shrinkage that occurs during wetting, molding, and drying.

2. Ultimately, the splint should be slightly shorter than the padding. If using plaster, the physician should measure and layer the appropriate number of sheets for the desired splint. If using a roll of fiberglass, the physician should unroll the splint material to the appropriate length to create the first layer. When the splint edge is reached, the next layer should be folded back on itself to create the subsequent layer. This process should be repeated until a splint with the appropriate number of layers has been created. The thickness of the splint depends on the patient's size, the extremity involved, and the desired strength of the final product. For an average-size adult, upper extremities should be splinted with six to 10 sheets of material, whereas lower extremity injuries may require 12 to 15 sheets. Use of more sheets provides more strength, but the splint will weigh more, produce more heat, and be bulkier. In general, the minimum number of layers necessary to achieve adequate strength should be used. Dry, layered splint material should be submerged in water until bubbling from the materials stops. The splint is removed and excess water squeezed out. Fiberglass will feel damp; plaster will have a wet, sloppy consistency. The splint is then placed on a hard surface and smoothed to remove any wrinkles and to ensure even wetness of all layers. With the extremity still in its position of function, the wet splint is placed over the padding and molded to the contours of the extremity using only the palm of the hand to avoid pressure points produced by the fingers. Finally, the stockinette and padding edges are folded back to create a smooth edge. The dried splint is secured with an elastic bandage wrapped in a distal to proximal direction.

F. The principles of casting are similar to those of splinting. Once the extremity has been prepared with stockinette and padding and placed in the desired position, the plaster or fiberglass material is applied. The casting material is wrapped circumferentially, with each roll overlapping the previous layer by 50 percent. The physician should avoid placing excess tension on the plaster or fiberglass because it can create a tight, constrictive cast that may damage underlying skin through pressure, neurovascular compromise, or both. Conversely, a cast that is overly padded or loosely applied can allow for significant rubbing, friction, and skin injuries (e.g., abrasions, friction blisters). Just before the final layer of casting material is applied, the physician should fold back the stockinette and padding, and then apply the final layer, molding the cast while the materials are still malleable. Compartment syndrome is the most serious complication of casting or splinting. It is a condition of increased pressure within a closed space that compromises blood flow and tissue perfusion and causes ischemia and potentially irreversible damage to the soft tissues within that space. If an immobilized patient experiences worsening pain, tingling, numbness, or any sign of vascular compromise such as severe swelling, delayed capillary refill, or dusky appearance of exposed extremities, an immediate visit to the nearest emergency department or urgent care office is indicated for prompt removal of the cast. Ice can be applied for 15 to 30 minutes at a

time over a cast or splint. Strong opioids should be used with caution during the first two to three days after splinting because they can mask pain that would otherwise prompt a follow-up visit. Time to follow-up and length of immobilization are extremely variable, depending on the site, type, and stability of the injury and on patient characteristics (e.g., age, accessibility, compliance). Most splints and casts require initial follow-up within one to two weeks after application, and most fracture guidelines estimate four to eight weeks for healing. All injuries must be assessed, treated, and followed on an individual basis.

G. Worldwide estimate of all-cause lower-extremity amputations is 2.0–5.9 per 10,000 inhabitants. For birth prevalence rates of congenital limb deficiency they found an estimate between 3.5–7.1 cases per 10,000 births. In the USA an estimate was found of 32,500 children (<21 years) that suffer from major pediatric amputation, with 5,525 new cases each year, of which 3,315 congenital. A typical prosthetic limb costs anywhere between $15,000 and $90,000, depending on the type of limb desired by the patient. With medical insurance, a patient will typically pay 10%–50% of the total cost of a prosthetic limb, while the insurance company will cover the rest of the cost. The percent that the patient pays varies on the type of insurance plan, as well as the limb requested by the patient. Transradial (below the elbow amputation) and transtibial prostheses (below the knee amputation) typically cost between US $6,000 and $8,000, while transfemoral (above the knee amputation) and transhumeral prosthetics (above the elbow amputation) cost approximately twice as much with a range of $10,000 to $15,000 and can sometimes reach costs of $35,000. The cost of an artificial limb often recurs, while a limb typically needs to be replaced every 3–4 years due to wear and tear of everyday use. In addition, if the socket has fit issues, the socket must be replaced within several months from the onset of pain. If height is an issue, components such as pylons can be changed. Not only does the patient need to pay for their multiple prosthetic limbs, but they also need to pay for physical and occupational therapy that come along with adapting to living with an artificial limb. Unlike the reoccurring cost of the prosthetic limbs, the patient will typically only pay the $2000 to $5000 for therapy during the first year or two of living as an amputee. Once the patient is strong and comfortable with their new limb, they will not be required to go to therapy anymore. Throughout one's life, it is projected that a typical amputee will go through $1.4 million worth of treatment, including surgeries, prosthetics, as well as therapies. A plan for a low-cost artificial leg, designed by Sébastien Dubois, was featured at the 2007 International Design Exhibition and award show in Copenhagen, Denmark, where it won the Index: Award. It would be able to create an energy-return prosthetic leg for US $8.00 composed primarily of fiberglass.

1. A prosthesis is an artificial device that replaces a missing body part, which may be lost through trauma, disease, or congenital conditions. Limb prostheses include both upper- and lower-extremity prostheses. Upper-extremity prostheses are used at varying levels of amputation: forequarter, shoulder disarticulation, transhumeral prosthesis, elbow disarticulation, transradial prosthesis, wrist disarticulation, full hand, partial hand, finger, partial finger. A transradial prosthesis is an artificial limb that replaces an arm missing below the elbow. Two main types of prosthetics are available. Cable operated limbs work by attaching a harness and cable around the opposite shoulder of the damaged arm. The other form of prosthetics available are myoelectric arms. These work by sensing, via

electrodes, when the muscles in the upper arm move, causing an artificial hand to open or close. In the prosthetic industry a trans-radial prosthetic arm is often referred to as a "BE" or below elbow prosthesis.

2. Lower-extremity prostheses provide replacements at varying levels of amputation. These include hip disarticulation, transfemoral prosthesis, knee disarticulation, transtibial prosthesis, Syme's amputation, foot, partial foot, and toe. The two main subcategories of lower extremity prosthetic devices are trans-tibial (any amputation transecting the tibia bone or a congenital anomaly resulting in a tibial deficiency) and trans-femoral (any amputation transecting the femur bone or a congenital anomaly resulting in a femoral deficiency). A transfemoral prosthesis is an artificial limb that replaces a leg missing above the knee. Transfemoral amputees can have a very difficult time regaining normal movement. In general, a transfemoral amputee must use approximately 80% more energy to walk than a person with two whole legs. This is due to the complexities in movement associated with the knee. In newer and more improved designs, hydraulics, carbon fiber, mechanical linkages, motors, computer microprocessors, and innovative combinations of these technologies are employed to give more control to the user. In the prosthetic industry a trans-femoral prosthetic leg is often referred to as an "AK" or above the knee prosthesis. A transtibial prosthesis is an artificial limb that replaces a leg missing below the knee. A transtibial amputee is usually able to regain normal movement more readily than someone with a transfemoral amputation, due in large part to retaining the knee, which allows for easier movement. Lower extremity prosthetics describes artificially replaced limbs located at the hip level or lower. In the prosthetic industry a trans-tibial prosthetic leg is often referred to as a "BK" or below the knee prosthesis.

3. In addition to the standard artificial limb for everyday use, many amputees or congenital patients have special limbs and devices to aid in the participation of sports and recreational activities. In early 2008, Oscar Pistorius, the "Blade Runner" of South Africa, was briefly ruled ineligible to compete in the 2008 Summer Olympics because his transtibial prosthesis limbs were said to give him an unfair advantage over runners who had ankles. One researcher found that his limbs used twenty-five percent less energy than those of an able-bodied runner moving at the same speed. This ruling was overturned on appeal, with the appellate court stating that the overall set of advantages and disadvantages of Pistorius' limbs had not been considered. Pistorius did not qualify for the South African team for the Olympics, but went on to sweep the 2008 Summer Paralympics, and has been ruled eligible to qualify for any future Olympics. He qualified for the 2011 World Championship in South Korea and reached the semifinal where he ended last time-wise, he was 14th in the first round, his personal best at 400m would have given him 5th place in the finals. At the 2012 Summer Olympics in London, Pistorius became the first amputee runner to compete at an Olympic Games. He ran in the 400 meter race semifinals, and the 4 × 400 meter relay race finals. He also competed in 5 events in the 2012 Summer Paralympics in London. In the early morning of Thursday, 14 February 2013, Pistorius shot and killed South African model Reeva Steenkamp at his home in Pretoria. On 21 October 2014, he received a prison sentence of a maximum of five years for culpable homicide and a concurrent three-year suspended prison sentence for the separate reckless endangerment conviction. He was released from prison on 19

October 2015. On 6 July 2016, Pistorius was sentenced to six years imprisonment for murder by Judge Thokozile Masipa; once again he was incarcerated on the hospital wing at the Kgosi Mampuru II jail. It is anticipated that Pistorius will be eligible for release on parole after serving between 2–4 years of his sentence.

§356 Bacteriology

A. Bacterial cells are prokaryotes, which lack nuclei and endoplasmic reticulum. Their cell walls are relatively rigid, composed either of two phospholipid bilayers with a peptidoglycan layer sandwiched in between (gram-negative species) or of a single bilayer covered by peptidoglycan (gram positive bacteria). Bacteria synthesize their own DNA, RNA and proteins but depend on their host for favorable growth conditions.. There are 10 times more microbes than human cells in our bodies. Humans live in symbiosis with an estimated $10^{14.001}$ bacteria. Normal persons carry 10^{12} bacteria on the skin, including the *Staphylococcus*, we do most of our hand-washing to protect against, *epidermidis* and *Propionibacterium acnes*, the agent responsible for adolescent pimples. Normally, 10^{14} bacteria reside inside the gastrointestinal tract, 99.9% of which are anaerobic, including *Bacteroides* species. 30% of fecal matter is composed of living and dead bacteria. Without these symbiotic gut flora humans would not gain any nutrition from their food and die. Other bacteria are necessary for the proper functioning of certain joints. Antibiotics are the most effective medicine from the 20th century. Pneumovax greatly reduces the demand for antibiotics to treat common pneumococcal infection.

1. Robert Koch (1842-1920) is generally attributed with being the father of modern scientific bacteriology. He was twenty-two years old when Lister performed his first antiseptic operation. Koch began an unparalleled rise from unknown district physician. First, he explained the secrets of the life of the anthrax bacillus. Next he turned his attention to the suppuration of wounds and proved that this was caused by various animate microbes, again a scientific feat. It was not long before Koch was called to the Imperial Public Health Administration in Berlin, embarked on research into tuberculosis. On 24 March 1882 with the modesty of true genius, he was able to make known to a meeting of the Physiologica society in Berlin that he had found the consumption germ to be a rod-shaped fission-fungus which was between one-and-a-half and three-and-a-half thousandths of a millimeter long and barely half a thousandth of a millimeter thick. His fame could no longer be checked. He was awarded honors and distinctions on all sides and became the most well-known and renowned scientist of his era. He was revered as a God in Japan where he lived for some time with his Japanese wife. Robert Koch did not discover the germs of all contagious diseases, what he did achieve, however, by his tenacious, unflinching work was the creation of the initial procedures which made possible the construction of an original scientific bacteriology. By a brilliant process of synthesis of many individual discoveries an entirely new science was created. He taught people to understand the nature of infectious diseases and epidemics and the manner in which they were transmitted. He also made clear why uncleanliness, dirt and disease are so closely connected, called into being a new public health service and so by his work, introduced an entirely new era for all humanity.

2. There is an international effort to catalogue thousands of new microbe species by gathering their DNA sequences. They're finding that the micro-biome does a lot to keep us in good health. Micro-biome first came to light in the mid-1600s, when the Dutch lens-grinder Antonie van Leeuwenhoek scraped the scum off his teeth, placed it under a microscope and discovered that it contained swimming creatures. A number of teams are working together to tackle this problem in a systematic way. The biggest of these initiatives is known as the Human Microbiome Project. The $150 million initiative was started in 2007 by the National Institutes of Health. The project team is gathering samples from 18 different sites on the bodies of 300 volunteers and are sequencing the entire genomes of some 900 species that have been cultivated in the lab. Before the project, scientists had only sequenced about 20 species in the microbiome. The scientists published details on the first 178 genomes. They discovered 29,693 genes that are unlike any known genes. The entire human genome contains only around 20,000 protein-coding genes. In the mouth alone, there are between 500 and 1,000 species. Next to viruses, bacteria are the most frequent and diverse class of naturally occurring human pathogens but this may not hold true as our understanding of the microbiome increases. One common sense procedure the Microbiome project helped to develop is that many people with auto-immune disorders of the gut, particularly *antibiotic associated colitis* that is not treatable by antibiotics, might benefit from is fecal transplant, otherwise known as bacteriotherapy. More than 15 fecal transplants have been performed, 13 of which cured their patients. It is a harmless procedure that one might be able to perform at home with a healthy loved one, but neither modern or traditional medicine perform it. The only problem is that the indication for fecal transplant is vancomycin resistance rather than metronidazole resistance. Metronidazole works.

B. The development of drugs able to prevent and cure bacterial infections is one of the twentieth century's major contributions to human longevity and quality of life. The term antibiotics literally means "against life" in this case against microbes. There are many types of antibiotics, antibacterials, antivirals, antifungals and antiparasitics. Some drugs are effective against many organisms, these are called broad-specturm antibiotics. Others are effective against just a few organisms and are called narrow-spectrum antibiotics. The most commonly used antibiotics are antibacterials. In 1920, British scientist Alexander Fleming was working in his laboratory at St. Mary's Hospital in London when almost by accident, he discovered a naturally growing substance that could attack certain bacteria. In one of his experiments Fleming observed colonies of the common *staphylococcus aureus* bacteria that had been worn down or killed by mold growing on the same plate or petrie dish. He determined that the mold made a substance that could dissolve the bacteria. He called this substance *penicillin*, after the *Penicillium* mold that made it, by 1941 they recognized even small doses of *penicillin* cured bacterial infections and Fleming was awarded the Nobel Prize in Physiology and Medicine. During World War II antibiotics came into use curing battlefield wound infections and *pneumonia*. By the mid-to late 1940s it became widely accessible for the general public. Before antibiotics 90% of children with bacterial meningitis died, strep throat was at times a fatal disease.

1. Antibacterial agents are among the most commonly prescribed drugs of any kind worldwide. At least 150 million antibiotic prescriptions are written in the United States each year, many of them for children. Use of antibacterial agents in hospitals in the United States accounts for 20 to 50 percent of all drug costs and represents the largest expenditure for any pharmacologic class. In the outpatient setting, the costs of antibacterial drugs are second only to those of cardiovascular agents. A survey of office-based physician found that between 1980 and 1992 there was a marked increase in the use of expensive broad spectrum antimicrobials. It is not unusual for the purchase cost in 1995 of a newer parenteral antibiotic to be $1,000 to $2,000 for a 10 to 14 day course of treatment. Therapy with a new oral antibiotic can easily cost $50 to $60. The cost of an office visit to get a prescription, administrative costs, monitoring costs and pharmacy charges must be added to these figures for a start-up fee for an as needed refillable prescription of around $150 dollars. The best choices of broad spectrum antibiotics for the medicine cabinet to cure common problems of antibiotic resistance are ampicillin (Principen) for pneumonia, meningitis and sinusitis, doxycycline or clindamycin for staphylococcus aureus and Lyme disease, metronidazole for gastroenteritis and joints.

Bacterial Infections and Usual Antibiotic

Bacteria	Infections	Usual Antibiotic	Comments
Actinomyces israelii	Actinomycosis, lumpy jaw disease, abscesses	Penicillin	An anaerobic infection
Arcanobacterium haemolyticum	Pharyngitis	Erythromycin	Rash similar to scarlet fever
Bacillus anthracis	Anthrax	Penicillin, ciprofloxacin, doxycycline	Rate in nature; was used as a bioterrorism weapon
Bacillus cereus	Diarrhea	Supportive care	Food borne
Bacteroides species	Abscesses	Metronidazole	Anaerobes; part of normal flora of the bowel
Bartonella henselae	Cat-scratch disease	None or azithromycin	Kittens are the usual transmitters
Bordetella pertussis	Whooping cough	Erythromycin, azithromycin	Infection can be prevented by immunization
Borrelia burgdorferi	Lyme disease	Doxycycline, amoxicillin, ceftriaxone	Transmitted by ticks
Borrelia recurrentis	Relapsing fever	Penicillin	Transmitted by body lice and ticks
Brucella species: abortus, melitensis, suis, canis	Brucellosis: flu-like symptoms	Doxycycline	Rare in the United States; acquired by animal contract or drinking

			unpasteurized milk
Burkholderia cepacia	Pneumonia	Meropenem	Causes illness in people with cystic fibrosis or chronic granulomatous disease
Campylobacter species: fetus, jejuni, coli	Diarrhea	Azithromycin	Transmitted by food and animals
Chlamydia psittaci	Psittacocis (pneumonia)	Doxycycline	Acquired from birds
Chlamydia trachomatis	Genital tract infection, newborn conjunctivitis, infant pneumonia, trachoma	Erythromycin, doxycycline	Sexually transmitted infection; newborns are infected during birth; trachoma rare in the United States
Clostridium botulinum	Botulism	Supportive care; antitoxin or antibody	Food-borne and infant botulism
Clostridium difficile	Diarrhea	Stop antibiotics, metronidazole	Occurs in people who have been on antibiotics
Clostridium perfringens	Food poisoning, diarrhea	Supportive care	Food-borne infection
Clostridium species: perfringens, sordellii, septicum, novyi	Gas gangrene	Surgery, penicillin	Anaerobic bacteria; uncommon infection of muscles
Clostridium tetanus	Lockjaw	Antitoxin, metronidazole	Rare in United States because of immunization
Corynebacterium diphtherieae	Diptheria	Antitoxin, erythromycin	Rare in the United States because of immunization
Escherichia coli	Sepsis, meningitis, urinary tract infection, diarrhea, others	Depends on the site of infection	Can be part of normal flora of the bowel
Francisella tularensis	Tularemia	Streptomycin	Transmitted by fleas or ticks or contact with infected wild animals
Haemophilus ducreyi	Chancroid	Azithromycin	Sexually transmitted ulcer disease; unusual in the United

			States
Haemophilus influenza nontypeable	Otitis media (ear infection)	Amoxicillin clavulanate	Not all ear infections require antibacterial therapy
Haemophilus influenza type b	Meningitis, epiglottis, arthritis, pneumonia	Ceftriaxone	Now rare because of immunization
Helicobacter pylori	Ulcers	Combinations: amoxicillin, tetracycline, metronidazole, clarithromycin	Persistent infection increase the risk for cancer
Kingella kingae	Joint and bone infections	Penicillin	Not very common
Legionella pneumophila	Legionnaries disease (pneumonia)	Erythromycin	Rare in children
Leptospira species	Leptospirosis: fever, rash, flu-like illness, organs	Penicillin, doxycycline	Acquired through contact with dog or wild animal urine
Listeria monocytogenes	Sepsis, meningitis	Ampicillin	Occurs in pregnant women, newborns, and children with immune problems
Moraxella catarrhalis	Otitis media, sinusitis	Ampicillin clavulanate	Not all infections require antibacterial therapy
Mycobacterium leprae	Leprosy	Dapsone	Rare in the United States
Mycobacerium tuberculosis	Tuberculosis	Combinations: isoniazid, pyrazinamide, rifampin ethambutol	Most infected people have no symptoms; one third of the world' population is infected
Mycoplasma pneumoniae	Bronchitis, walking pneumonia	Doxycycline, erythromycin	Common cause of pneumonia in school-aged children
Neisseria gonorrhoeae	Gonorrhea, newborn eye infection, join infection	Ceftriaxone, cefixime	Sexually transmitted infection; newborns can acquire it during birth
Nocardia species	Pneumonia, skin	Trimethoprim sulfamethoxazole	Serious infection; usually in children with weakened immunity
Nontuberculous	Lymph glands in	Surgery; antibiotic	Lymph node

mycobacteria: Mycobacterium fortuitum, kansasii, marinum, avium-intracellulare	the neck, pneumonia, blood	depends on the organism and infection	infections in toddlers; invasive infections in children with weakened immunity
Pasteurella multocida	Bite wound infection	Penicillin	Common in cats and dogs
Prevotella species	Abscess (dental and lung)	Clindamycin	Anaerobic; part of normal flora of the mouth
Salmonella species	Diarrhea, bone, joint, kidney, meningitis	None for diarrhea; depends on site for other infections	Acquired by contact with animals or contaminated foods
Shigella species: sonnei, flexmero. Boydii. dysenteriae	Diarrhea	None, trimethoprim sulfamethoxazole, others	Food borne or contact with infected person
Staphylococcus aureus	Diarrhea, skin, pneumonia, joint, bone, heart	Nafcillin, vancomycin; depends on susceptibilities	Becoming more and more resistant to usual antibiotics
Steptobacillus agalactiae (group B streptococcus)	Meningitis, sepsis, pneumonia, skin, urinary tract infection	Penicillin	Serious in babies in pregnant women, endocarditis in susceptible adults
Streptococcus pneumoniae	Pneumonia, otitis media (ear infection), joint infection, meningitis	Penicillin, ceftriaxone, cefotaxime	Most serious infection (85%) prevented by immunization
Streptococcus pyrogenes (group A streptococcus)	Pharyngitis, skin, pneumonia, joint	Penicillin	Rheumatic fever, rheumatic heart disease, and glomerulonephritis can follow an infection after a week
Treponema pallidum	Syphilis	Penicillin	Sexually transmitted disease; can affect the fetus
Ureaplasma urealyticum	Urethritis	Doxycycline	Sexually transmitted disease
Vibrio cholerae	Diarrhea	Fluids, doxycycline	A risk for travelers
Yersinia enterocolitica	Diarrhea	Trimethprim sulfamethoxazole	Food borne from pork, especially chitterlings
Yersinia pestis	Plague	Streptomycin	Rare in the United

			States; transmitted by rodent fleas

Source: Hospitals & Asylums HA-20-11-10

2. The most important lesson regarding antibiotics is that hospital acquired methicillin resistant S*taphylococcus aureus* (MRSA) that most often presents as bumps on the butt or spinal infection becomes the excruciatingly painful condition called toxic shock syndrome when exposed to ambient social *Streptococcus* spp. MRSA is cured with Epsom salt bath, saline or chlorine swim, doxycycline or clindamycin for pregnant women and children under 8. *Clostridium botulinum* can survive much boiling and, if processing is inadequate, can survive in vegetables (especially beans) where the spores produce a neurotoxin. The toxin is destroyed by boiling for 10 minutes. If toxin is ingested, 12-36 hours later a flaccid paralysis comes on with prolonged respiratory failure. Botulism is rare but nearly always fatal. *Bacillus cereus* is most often found in fried rice, it survives boiling, multiplies at room temperatures, and may not be killed by rapid frying. Ingestion of the preformed enterotoxin induces vomiting in one to six hours. *Vibrio parahaemolyticus* contaminate raw fish and is ingested with seafood. An enterotoxin produces vomiting, pain and diarrhea within 12-24 hours. *Vibrio cholera* is rarely found in the United States but epidemics of it still sweep the Ganges river valley.

C. Numerous surveys have reported that approximately 50 percent of antibiotic use is in some way "inappropriate". The primary reason is that Pneumovax 13 and 23 can render a child or adult, respectively, immune from 13 or 23 common pneumoccocal infections, including *Streptococcus pneumoniae* and *S. pyogenes*. When patients come in complaining of heart, lung and brain damage they should be innoculated with Pneumovax to prevent pneumococcal infection. In fact all people over or under age 65 should be innoculated with Pneumovax without discrimination. Aside from the monetary cost of unnecessary antibiotics, that would be much less if organic broad spectrum antibiotics were sold Over-the-counter, there is the 1-4% risk contracting recurrent *Pseudo-membranous colitis* also known as antibiotic associated colitis, caused by proliferation of *Clostridium difficile*. *C. difficile* can be treated and avoided by using metronidazole. In the 1970s the CDC's extensive Study on the Efficacy of Nosocomial Infection Control found that nosocomial infection rates fell by 32 percent in hospitals that established programs with organized surveillance and control activities, a trained, effectual infection-control physician, and one infection-control practitioner per 250 beds. In contrast, rates in hospitals without effective programs increased by 18 percent. The most common side effect of antibacterial agents are an increase in the prevalence of naturally occurring antibiotic resistant *C. difficile,* which can cause recurrent *Pseudo-membranous colitis* but is reluctantly treatable with metronidazole. Nearly 4% of the population were allergic to the original penicillin, but that rate has gone down to 1% with ampicillin. Anaphylaxis is treated with benadryl.

1. Anti-biotic associated colitis, *Pseudomembranous colitis*, is an acute colitis characterized by the formation of an adherent inflammatory pseudomembrane overlying sites of mucosal injury. It is usually caused by toxins of *Clostridium difficile*, a normal gut commensal. This disease occurs most often in patients without a background of

chronic enteric disease, following a course of broad spectrum anti-biotic therapy. Nearly all bacterial agents have been implicated. Presumably toxin-forming strains flourish following alteration of the normal intestinal flora, the factors favoring the initiation of toxin production are not understood. The condition may rarely appear in the absence of antibiotic therapy, typically after surgery of superimposed on a chronic debilitating illness. Infrequently the small intestine is involved. Antibiotic associated colitis occurs primarily in adults as an acute of chronic diarrheal illness, although it has been recorded as a spontaneous infection in young adults without predisposing influences. Diagnosis is confirmed by the detection of the *C. difficile* cytotoxin in stool. Response to treatment with metronidazole is usually prompt, but relapse occurs in up to 25% of patients. Water filtration often helps.

§357 Virology

A.Viruses are the smallest infectious agents. Outside living cells, viruses are wholly inert. Their sole activity is to invade the cells of other organisms, which they takeover to make copies of themselves, using genetic information. Viral infections range from warts, the common cold and other minor respiratory tract infections and hepatitis, to extremely serious diseases, such as rabies, AIDS, and at least 18% of all types of cancer. Highly effective vaccines prevent poliomyelitis, measles, mumps, rubella, hepatitis, yellow fever, human papilloma, rotavirus and post-exposure rabies. AIDS drugs have reduced HIV infection and mortality worldwide. The rotavirus vaccine (2006) reduced childhood ER visits for gastroenteritis by 85%. LigoCyte is beginning phase II trials of an intranasal norovirus vaccine. Teva Pharm is authorized to manufacture the adenovirus vaccine, discontinued in 1996, after epidemics took 5 lives. The FDA removed 600 cold and flu remedies and approved Allegra OTC. Corticosteroid inhalers discontinued for fluorocarbon concerns can substitute Flovent. Acyclovir, topical and pegylated interferon alpha-2B, Foscarnet sodium and Immune Globulin IV treat a broad spectrum of the viral diseases. Prescription information regarding, low cost, amantadine (Symmetrel), the one dose flu drug, effective against human influenza type A and other diseases, and oseltamivir (Tamiflu), zanamivir (Relenza), or peramivir (Rapivab) to treat influenza types A or B, must be discussed in every publication regarding the flu vaccine. After the 2017-18 flu season, prescription flu drugs need to be sold anonymously in packages for families or one dose given at the desk to prevent the uncured flu from inoculating the waiting room and staff. Amantadine (Symmetrel) the one dose flu drug.

1. Infectious organisms belong to a wide range of classes and vary in size from the 2-nm poliovirus to 10-m tapeworms. Viruses are the smallest known types of infectious agent. Viral pathogens account for a major share of all human infections. The number of different kinds of virus probably exceeds the number of types of all other organisms. Viruses are about one half to one hundredth the size of the smallest bacteria. Viruses are smaller than cells, ranging in size from 0.02 μm to 0.3 μm. A common unit of measure for viruses is the nanometer, which is 1000 times smaller than 1 μm and one million times smaller than 1 mm. Smallpox virus, one of the largest, is about 200 nm in diameter, polio virus, one of the smallest, is only 28 nm in diameter. Viruses that cause human disease are grouped into more than 20 large families. Not all viruses cause

disease, but many do. Viral infections range from the trivial and harmless, such as warts, the common cold and other minor respiratory tract infections and hepatitis, to extremely serious diseases, such as rabies, AIDS, and some types of cancer. It is debatable whether viruses are truly living organisms or just collections of large molecules capable of self-replication under very specific favorable conditions. Their sole activity is to invade the cells of other organisms, which they takeover to make copies of themselves. Outside living cells, viruses are wholly inert. They are incapable of activities typical of life, such as metabolism. Unlike bacteria, viruses cannot be grown in a suitable culture medium; they can multiply only within living cells. Therefore, viruses must be grown in cultures of cells, which can be any of many types of animal or human cell that are easily made to multiply in test tubes.

2. A virus is a non-cellular genetic element that enlists a cell for its own replication, and is characterized by also having an extracellular state. In this extracellular state, the virus particle is metabolically inert and does not carry out respiratory or biosynthetic functions. A single virus particle (virion) consists simply of an inner core of nucleic acid surrounded by one or two protective shells (capsids) made of protein. These capsids are built from a number of identical protein subunits arranged in a highly symmetrical form, usually either as a 20-faced solid (an icosahedron) or as a spiral tube. Surrounding the outer capsid may be another layer called the viral envelope. This layer also consists primarily of protein. In many cases, the viral envelop is lost when the virus invades a cell. The nucleic acid at the core is called the genome, it consists of a string of genes that contain coded instructions for making copies of the virus. Depending on the type of virus, the nucleic acid may be either DNA, in which there are two complementary intertwined strands of nucleic acid (the double helix) or RNA, consisting of a single strand.

3.Viroids are circular single-stranded RNA molecules that encode no proteins and are completely dependent on host-encoded enzymes. They are the smallest known pathogens ranging from Coconut cadang-cadang viroid which is 246 nucelotides in size to Citrus exocortis viroid which is 375 nucleotides, and cause a number of very important crop diseases. Unlike viruses, their extracellular form is the same as their intracellular form and they have no protein coat. Prions have an extracellular form that does contain protein, but it does not contain the nucleic acid that encodes that protein. The gene that encodes the prion protein is found in the host cell and the prion somehow modifies this protein product. Prion protein particles and various prions are known to cause a variety of diseases in animals, such as scrapie in sheep, bovine spongiform encephalopathy in cattle, and kuru and Creutzfeldt-Jakob disease in humans. Although they are very simple elements, life viruses, both prions and viroids are infective and are reproduced inside cells.

B. When a virus genome is introduced into a cell and reproduces, the process is called infection. The cell that a virus can infect and in which it can replicate is called a host. Viruses can have varied effects on cells. Lytic infection results in the destruction of the host cell. However, there are several other possible effects following viral infection of animal cells. In the case of enveloped viruses, release of virions, which occurs by a kind of budding process, may be slow and the host cell may not be lysed. The cell may remain

alive and continue to produce virus over a long period of time. Such infections are referred to as persistent infections. Viruses may also cause latent infection of a host. In a latent infection, there is a delay between infection by the virus and the appearance of symptoms. Fever blisters (cold sores), caused by the herpes simplex virus, result from a latent viral infection; the symptoms reappear sporadically as the virus emerges from latency.

1. Viruses gain access to the body by all possible entry routes. They are inhaled in droplets; swallowed in food and fluids; and passed through the punctured skin in the saliva of feeding insects or rabid dogs or accidentally on the needles of tattooists, those who pierce ears, or even physicians. Many viruses begin to invade cells and multiply near their site of entry. Some enter the lymphatic vessels and may spread to the lymph nodes, where many are engulfed by white blood cells, such as lymphocytes. Many pass from the lymphatic to the blood and within a few minutes are spread to every part of the body. They may then invade and start multiplying within specific target organs such as the skin, brain, liver, or lungs. Other viruses travel along nerve fibers to their target organs.

2. Viruses cause disease in a variety of ways. First, they may destroy or severely disrupt the activities of the cells they invade, possibly causing serious disease if vital organs are affected. Second, the response of the body's immune system to viral infection may lead to symptoms, such as fever and fatigue, or to a disease process. In particular, antibodies produced by the immune system may attach to viral particles and circulate as immune complexes in the bloodstream. The antibodies may then be deposited in various parts of the body and cause inflammation and severe tissue damage. Third, by interacting with the chromosomes of their host cells, viruses may cause cancer. Fourth, a virus may cause disease by weakening the cell-mediated arm of the immune system (i.e. the activity of T-lymphocytes). This is how HIV works, invading and disrupting one type of T-lymphocyte so that the normal defenses to a wide range of infections are lost.

Viral Infections, Symptoms and Treatment

Infectious Agent	Symptoms	Treatment
Common Cold		
Coronaviruses	Upper respiratory tract infection (URI) lasting for a week, nasal congestion	None, clean. For SARS ventilate, medicate with antibiotic levofloxacin (Levaquin), and corticosteroids Methylprednisolone IV and then oral Prednisone
Rhinoviruses	URI, Swollen lymph nodes, upper respiratory tract infection, nasal infection, peak misery after two days, lasts a week	None, clean. Over-the-Counter: Diphenhydramine (Benylin, Benadryl), Chlorpheniramine (Telachlor, Chlo-Amine,

		Chlor-Trimeton, Aller-Chlor), Brompheniramine (Bromphen, Nasahist B, Dimetane Extentabs), Ipratropium intranasal (Atrovent)
Echovirus	URI, sore throat, skin rash, harpangia, croup, may inflame endocarditis, pneumonia, meningitis, prevalent in summer and fall in US	None, clean. Immune Globulin Intravenous (IGIV) for serious infections
Adenoviruses	URI and lower respiratory tract infection (LRI), may also cause conjunctivitis, bladder infection, inflamed pharynx, diarrhea and rheumatism of the lower extremities for a week, prevalent in late winter, spring and summer	None, clean. Vaccine re-authorized to Teva Pharm on contract with the U.S. Army. Get light exercise. Eat white rice for diarrhea. Clean. Avoid young children.
Flu Like Symptoms		
Influenza A & B	Body or muscle aches, chills, cough, fever over 101° F, 38°C, headaches, and sore throat, incubates for two days, lasts two days, prevalent in winter.	Bed rest for one to two days. Vaccine ineffective. OTC Theraflu, Allegra (Sanofi-Aventis) and Children's Allegra (fexofenadine) and Allegra-D (fexofenadine and pseudoephedrine); Prescription Oseltamivir (Tamiflu) and Zanamivir (Relenza). Antibiotics for pneumonia
Parainfluenza Types 1-4	LRI in children, URI in adults, prevalent in fall and winter	No vaccine, clean. Treat secondary infections with Antibiotics
Respiratory Syncytial Infection	LRI and breathing passages. Most otherwise healthy people recover from RSV infection in 1 to 2 weeks	Ribavirin (Virazole), asthmas inhalers ie. corticosteroids: flunisolide (Aerobid), beclomethasone (QVAR), (Flovent); triamcinolone, (Azmacort), Antibiotics for pneumonia or ear infection
Gastrointestinal Viruses		
Rotavirus	Childhood diarrhea	Rotovirus vaccine (Rotarix

		GlaxoSmithKline GSK) (Rotateq Merck & Co.) Imodium (Loperamide)
Norovirus (Norwalk agent)	Gastroenteritis, vomiting	LigoCyte phase I/II trials for Intranasal Norovirus VLP Vaccine (2010) Imodium (Loperamide)
Coxsackie virus	Pleurodynia, herpangina, hand-foot-and-mouth disease	None, usually recover in 7-10 days without medical treatment. Perhaps Immune Globulin (IGIV)
Poliovirus	Poliomyelitis	Pentacil (DTaP-IPV/Hib, Sanofi-Pasteur), Kinrix (DTaP-IPV GSK), Ipol (Sanofi-Pasteur)
JC virus	Progressive multifocal leukoencephalopathy (opportunistic)	None, avoid immunosuppressant drugs. Perhaps cytarabine (DepoCyt) and Immune Globulin (IGIV)
Hepatitis A virus	Acute viral hepatitis	Monovalent Hepatitis A Vaccine (HAVRIX GSK)) or VAQTA (Merck), Bivalent (Combination) Hepatitis A and Hepatitis B Vaccine (TWINRIX GSK)
Hepatitis B virus	Acute or chronic hepatitis	Monovalent Hepatitis B Vaccine (ENGERIX-B (GSK) or RECOMBIVAX-HB (Merck), Bivalent (Combination) Hepatitis A and Hepatitis B Vaccine (TWINRIX GSK); Pegylated interferon alfa-2b (Pegasys), Nucleoside/nucleotide analogues (NAs) adefovir (Hepsera), entecavir (Baraclude), lamivudine (Epivir-HBV, Heptovir, Heptodin), telbivudine (Tyzeka) and tenofovir (Viread)
Hepatitis C	Acute or chronic hepatitis	Combination of Pegylated

		interferon alfa-2b (Pegasys) and Ribavirin (Virazole)
Hepatitis D	With HBV, acute liver disease of several months or life-long chronic hepatitis that may lead to liver cancer	None approved. Pegylated interferon alfa-2b (Pegasys) may help. Liver transplantation
Hepatitis E virus	Enterically transmitted hepatitis lasting one or two weeks	None approved. Small meals, fluids, avoid medicines that may harm the liver, avoid alcohol and exercise regularly.
Skin Viruses		
Measles virus	Measles (rubella)	Measles, Mumps, Rubella and Varicella vaccine (MMRV, ProQuad, Merck & Co., Inc.) or Measles, Mumps, Rubella vaccine (MMR, M-M-RII, Merck & Co., Inc.) and Varicella vaccine (VARIVAX, Merck & Co., Inc.)
Mumps virus	Mumps, pacreatitis, orchitis	Measles, Mumps, Rubella and Varicella vaccine (MMRV, ProQuad, Merck & Co., Inc.) or Measles, Mumps, Rubella vaccine (MMR, M-M-RII, Merck & Co., Inc.)
Rubella virus	German measles (rubella)	Measles, Mumps, Rubella and Varicella vaccine (MMRV, ProQuad, Merck & Co., Inc.) or Measles, Mumps, Rubella vaccine (MMR, M-M-RII, Merck & Co., Inc.) and Varicella vaccine (VARIVAX, Merck & Co., Inc.)
Vacciniavirus	Smallpox, Cowpox	Smallpox vaccine
Varicella-zoster	Chickenpox, shingles	Measles, Mumps, Rubella and Varicella vaccine (MMRV, ProQuad, Merck & Co., Inc.) or Varicella vaccine (VARIVAX, Merck

		& Co.); Acyclovir (Zovirax), Valtrex (Valacyclovir)
Herpes simplex virus I	Cold sore	Valtrex (Valacyclovir)
Herpes simplex virus II	Genital herpes	Acyclovir (Zovirax)
Cytomegalovirus	Cytomegalic inclusion disease	Acyclovir (Zovirax), Ganciclovir Sodium, Foscarnet Sodium (Foscavir) injection
Epstein-Barr (EBV) virus	Infectious mononucleosis, 10 day fever and fatigue, nasopharyngeal carcinomas	Acyclovir (Zovirax), Foscarnet Sodium (Foscavir) injection
Papillomavirus (HPV)	Condyloma, genital warts, cervical carcinoma	Quadrivalent HPV vaccine (HPV4; Gardasil, Merck & Co, Inc.), Acyclovir (Zovirax), topical interferon alpha 2B
Molluscum virus	Warts, Molluscum contagiusum	Topical: trichloroacetic acid, imiquimod (Aldara), podophyllotoxin cream (Condylox), cantharidin (Cantharone)
Zoonotic Fever		
Arboviral Encephalitis viruses	Eastern, Western, Venezuelan, St. Louis, LaCrosse, California group	None, mosquito protection, repellant and prevention
Yellow fever	Yellow fever	Yellow Fever vaccine (VF-VAX, Sanofi-Pasteur)
Colorado tick	Colorado tick fever	None.
Denguevirus 1-4	Dengue, hemorrhagic fever	acetaminophen (Tylenol); Early results of clinical trials show that a vaccine may be available by 2012.
Regional hemorrhagic fever viruses	Bolivian, Argentinian, Lassa Crimean-Congo, Hantaan, sandfly fever Ebola, Marburg disease Korean, USA pneumonia	None. Ribavirin (Virazole)
Rabiesvirus	Rabies	Rabies Immune Globulin (Human): Hyper RAV (Talecris); Imogram Rabies – HT (Sanofi-Pasteur) and Purified Chick Embryo Cells (PCEC) Rabavert (Novartis) or Human

		Diploid Cell Vaccine (HDCV): Imovax (Sanofi-Pasteur)
Parvovirus	Erythema infectiosum, Aplastic anemia	None, Immune Globulin Intravenous (IGIV)
Human Immuno-Deficiency Virus (HIV)	Acquired Immune Deficiency Syndrome (AIDS)	Seven classes of antiretroviral drugs. 1 x day Combinations: efavirenz/emtricitabine/tenofovir (Atripla), emtricitabine-tenofovir (Truvada), abacavir/lamivudine (Epzicom)

Source: Hospitals & Asylums HA-24-4-11

3. The immune system deals fairly rapidly with most viruses. Each mechanism of the immune system may be involved in resisting a viral attack – including white cells (macrophages) that engulf the viral particles, and lymphocytes that produce antibodies against the virus or attack virally infected cells. This leads to recovery from most viral infections within a few days to weeks. Furthermore, the immune system is often sufficiently sensitized by the infection to make a second illness form the same virus rare (as is the case with measles). With some viruses, however, the speed of the attack is such that serious damage or even death may occur before the immune system can adequately respond (as is the case with rabies and some cases of poliomyelitis). In other cases, a virus is able to dodge or hide from the immune system, so the infection becomes chronic or recurrent. This is common with many herpes virus infections (such as genital herpes and shingles) and with viral hepatitis B. Finally, the AIDS virus, by weakening the immune system, leaves the body open to many opportunistic infections.

C. The study of virology involves the isolation and identification of viruses to diagnose specific viral infections. To achieve this, a tissue or fluid sample (such as a specimen of feces, sputum, blister fluid, blood, urine, cerebrospinal fluid, or even brain biopsy specimen, depending on the suspected virus, is needed. The specimen is exposed to a cellular culture and the cells are then observed for distinctive changes that occur when they are infected with viruses. Alternatively, virus particles must first be made to clump together by adding an antiserum (antibodies obtained from the blood of someone who has had the viral infection, and which will bind to the virus particles). Immunoassay techniques, in which "labeled" antibodies are added to the specimens and detected if they have bound to virus cell components, are another possibility. Another method of diagnosing viral infections is to look for antibodies produced by the immune system to combat the viruses. A rapidly rising level of antibodies to a particular virus can prove good evidence of infection Antibodies can be detected by types of immunoassay and other laboratory techniques.

1.Various serological techniques are extremely useful in the diagnosis of infectious diseases. If a person has been exposed to a particular infectious organism, antibodies (proteins with a role in immunity) directed specifically against the organism appear in that person's serum some days after exposure. Their presence or absence in the blood can be detected by such laboratory techniques as immunoassay, including the ELISA test and radioimmunoassay. In other cases, serological techniques are used to identify parts of infectious organisms (antigens) by studying the reaction between the antigens (obtained by culture of a specimen taken from a patient) and serum samples known to contain certain antibodies. A series of tests may be carried out in which the unknown antigen is added to carious antiserums (preparations containing specific antibodies) in test tubes; a positive reaction is sometimes revealed by a color change. In addition to devising and carrying out such diagnostic tests, serologists may be involved in developing antiserums for passive immunization.

D. Viruses are more difficult than bacteria to combat with drugs because it is difficult to design drugs that will kill viruses without also killing the cells they parasitize. Nevertheless, there has been remarkable progress in the development of antiviral agents, especially against the herpes group of viruses. Such drugs may work by helping to prevent viruses from entering cells or by interfering with their replication in cells. Interferon refers to a group of natural substances, produced by virus-infected cells, that protects uninfected cells. Some interferons can now be produced artificially and have been tried in the treatment of various viral infections, including the common cold and viral hepatitis B. Otherwise, treatment of viral infections depends largely on alleviating the patient's symptoms and trusting the body's immune defenses to brings about a cure. A much more fruitful area in the fight against viruses is immunization. One viral disease, smallpox, has already been eradicated worldwide through a coordinated vaccination program. Highly effective vaccines are also now available to prevent many others, including poliomyelitis, measles, mumps, rubella, hepatitis B, yellow fever and rabies.

§358 Fungal Diseases

A. Fungus (plural: fungi or funguses) is any member of the group of eukaryotic organisms that includes microorganisms such as yeasts and molds, as well as the more familiar mushrooms. Similar to animals, fungi are heterotrophs; they acquire their food by absorbing dissolved molecules, typically by secreting digestive enzymes into their environment. Fungi do not photosynthesize. These organisms are classified as a kingdom , Fungi, which is separate from the other eukaryotic life kingdoms of plants and of plants and. The fungus kingdom encompasses an enormous diversity of taxa with varied ecologies, life cycle strategies, and morphologies ranging from unicellular aquatic cgytrids to large mushrooms. Little is known of the true biodiversity of the Fungi Kingdom, which has been estimated at 2.2 million to 3.8 million species. Of these, only about 120,000 have been described, with over 8,000 species known to be detrimental to plants and at least 300 that can be pathogenic to humans. Mild fungal skin diseases can look like a rash and are very common. Fungal diseases in the lungs are often similar to other illnesses such as the flu or tuberculosis. Some fungal diseases like fungal meningitis

and bloodstream infections are less common than skin and lung infections but can be deadly. It is possible that the leukemia diagnosis based upon what is believed to be mutated white blood cells are in fact mold. Aspergillosis, candidiasis, blastomycosis, coccidioidomycosis, histoplasmosis, cryptococcus, and ringworm are most common.

1. A team led by the National Human Genome Research Institute in Bethesda, Maryland, sequenced the DNA of fungi living on the skin at 14 different body areas in 10 healthy adults. Samples were taken from the ear canal, between the eyebrows, the back of the head, behind the ear, the heel, toenails, between the toes, forearm, back, groin, nostrils, chest, palm, and the crook of the elbow. The data reveal that fungal richness varies across the body. The most complex fungal habitat is the heel, home to about 80 types of fungi. The researchers found about 60 types in toenail clippings and 40 types in swabs between the toes. Other favored fungal hotspots include the palm, forearm and inside the elbow. These had moderate levels of fungi, with each location supporting 18 to 32 types. In contrast, the head and the trunk harbored fewer varieties of fungi - just two to 10 each. The bottom line is that the feet are teeming with fungal diversity, so wear flip flops in locker rooms to avoid mixing foot fungi with someone else's fungi. In 20% of volunteers, the researchers observed problems consistent with fungal infections. An imbalance of microbes may provide an opportunity for harmful microbes to flourish and establish disease. Fungi normally co-exist quite happily on the body without causing any harm, except in people with poor immune systems.

2. Amphotericin B, a polyene antibiotic in use since 1958, remains the IV treatment of choice for all serious infections caused by systemic fungi. Unfortunately, it is fungistatic, and not fungicidal, deriving its therapeutic as well as its toxic effects from its affinity for sterols in cell membranes. Its affinity for ergosterol in fungal membranes is 500 times greater than its affinity for the major human cell membrane sterol, cholesterol. Damage to the cell membrane induced by this binding results in the leakage of necessary components and eventually cell death. As an amphoteric substance the antibiotic is highly insoluble and is available only as a colloidal suspension in buffer and deoxycholate. It is not absorbed from the gastrointestinal tract and must be given intravenously. It is prepared in sterile preservative-free water to a concentration of less than 0.1mg/ml, and then administered with a light protective wrapper around the bottle over a 4 to 6 hour period. The use of a butterfly needle for access and the administration of small amounts of added heparin (1,000 units) and hydrocortisone (25 mg) aid in the prevention of phlebitis. In the beginning a 1 mg test dose is given, followed by a daily increase of 5 to 10 mg, until a dose of 1 mg/kg/day is achieved, or toxicity occurs and alters the plan. An alternative is to increase the dose until 0.5/mg/kg/day is reach and then stick to that daily dose. Nephrotoxicity with the development of an active urinary sediment and progressive increase in blood urea nitrogen (BUN) and creatinine usually helps tailor the dose that can be given daily or every other day. It is often necessary to temporarily suspend treatment until the BUN is less than 50 µg/dl and the creatinine less than 3 µg/dl. For most systemic mycotic infections a total dose of 2 to 2.5 gm suffices. Irreversible nephrotoxicity almost always is noted with total doses in excess of 4 gm. Systemic reactions, hypokalemia and hematologic reactions make up the most common side effects besides renal dysfunction. Chills, fever, nausea, vomiting and hypotension occur frequently but can usually be managed orally by pretreatment with antipyretics,

diphenhydramine, and occasionally by small doses of oral cortisone. Hypokalemia predictably develops with ongoing therapy and requires substantial replacement throughout most courses of amphotericin B. As alternatives or adjuncts to amphotericin B, two imidazole derivatives, ketoconazole and miconazole, have been approved for systemic fungal infection treatment. Miconazole is active against *Coccidioides immitis*, *Cryptococcus neoformans*, and *Candida* organisms. It must be administered intravenously and has side effects that include nausea and vomiting, phlebitis, hyponatremia and pruritis and should only be used in patients who fail to respond to amphotericin B. Ketoconazole is an oral preparation efficient against *Coccidiodes immitis*, *Cryptococcus neoformans*, *Candida* organisms, *Histoplasma capsulatum*, and *Blastomyces dermatitidis*. Absorption depends on an acid environment in the stomach, so it cannot be used in achlorhydria or in conjunction with bicarbonate, antacids, or H_2 blockers. Generally, doses of 400 to 800 mg/day are used for non-meningeal infection and 800 to 1200 mg/day for disseminated infections with meningitis. In 20% of patients, it cause significant nausea and vomiting and, in 1% to 2%, hepatic dysfunction. Clotrimazole, athlete's foot crème for the foot and shin, hydrocortisone crème for the rest of the body, including for fungal infections of the nose and chest (lungs), treat almost all fungal infections, are safe, effective and cost only $1.

B. In the normal population three major fungi cause invasive, systemic infection. These are *Coccidioides immitis*, *Histoplasma capsulatum* and *Blastomyces dermatitidis,* each having its own geographic area of distribution and each residing in the soil from whence it becomes airborne and is inhaled into the respiratory tract. A fourth and less frequent systemic mycosis is sporotrichosis, a disease that enters through the skin and lymphatic system and has a wider geographic distribution. The three major fungi are dimorphic, existing in nature in a mycelial form with hyphae that bear spores, which are the infectious agents in humans, and in a yeast form in human tissue after infection is established. Human-to-human transmission is virtually unknown. Amphotericin B continues to be the antifungal of choice in spite of claims that newer agents are effective and less toxic. Small epidemics of mycotic infection can usually be traced to a point source of infected soil that has been disturbed by ever increasing numbers of people impacting the endemic areas.

1. *Coccidioides immitis*, the organism responsible for the disease known as desert fever, valley fever, desert rheumatism, or "the bumps" is endemic to ecologic areas known as lower Sonoran life zone, characterized by an arid to semiarid climate with hot summers, few winter freezes, sparse flora, alkaline soil, and low altitudes, such as the southwestern United States and northern Mexico. In some areas, more than 80% of the native population reacts to coccidioidin skin testing. Of those infected, 60% are clinically asymptomatic; 40% give a history of a flulike illness with cough, fever, pleuritic chest pain, weakness, malaise, myalgia, and arthralgia 1 to 3 weeks after exposure. Subsidence of symptoms over the next 2 to 4 weeks is usual. The chest radiograph during the initial infection reveals small to large scattered areas of infiltrates, often subpleural in location, and hilar adenopathy with or without evidence of pleural involvement. Less than 1% of patients with coccidioidomycosis develop disseminated disease. Mycelial phase antigen, coccidioidin, is the standard reagent for skin testing, but the newer parasitic phase

reagent, Spherulin, is just as specific and more sensitive. Skin tests are positive in almost every symptomatic patient by the end of the third week of illness. The inhalation of arthrospores that are highly chemotactic for polymorphonucleocytes (PMN) is followed by an outpouring of those cells with subsequent destruction of arthrospores and the formation of microabscesses. Arthospores that escape destruction begin to form ever enlarging spherules that may contain 10^5 endospores before spontaneous rupture, leading to another cycle of spherule production. Diagnosis can be made by identifying spherules in potassium hydroxide preparations of infectious material, by culturing the fungus from sputum, purulent drainage, or cerebrospinal fluid, or by detecting the organism in histologic section. During the mycelial phase, the organism grows on artificial media, producing highly infectious arthrospores that pose a hazard to laboratory personnel. A total dose of 30 mg/kg of amphotericin is recommended for treatment of progressive or persistent pulmonary disease. Disseminated disease with meningitis required both intrathecal and intravenous therapy for prolonged periods and total doses as high as 10 gm of intravenous amphotericin B. Ketoconazole given orally in doses of 800 to 1200 mg per day for several months have been shown to be helpful as an adjunct in the treatment of chronic cocci meningitis. Miconazole and transfer factor appear to offer limited help as alternatives or adjuncts to amphotericin B. Surgical removal is necessary for enlarging cavities, that, despite chemotherapy cause recurrent or severe hemoptysis or spread of infection to the pleura. An umbrella of amphotericin B to a total dose of 500 to 1000 mg given before and after surgery is part of the therapeutic approach in these situations.

2. The dimorphic fungus *Blastomyces dermatitidis* causes blastomycosis, an endemic disease of the southeastern and south central United States, which also extends up the Mississippi and Ohio River valleys into the north central United States and Canada. Men who spend much time outdoors aged 15 to 50 are most likely to become infected. The habitat of B. *dermadititis* is moist soil with an acid pH that has been contaminated with animal excreta. If the conidia of the fungus are inhaled and deposited in the peripheral air spaces of the lower lobes, primary infection can result after a 6 week incubation and may develop pulmonary symptoms. Active infection usually causes a diffuse, patchy lower-love alveolar infiltrate that can be unilateral or bilateral, with hilar adenopathy, usually sparing the pleurae and resolving within 8 to 12 weeks. Systemic symptoms include weight loss, productive cough, hemoptysis, fever, night sweats, and shortness of breath predominate in the chronic stage. Occasionally a mass lesion is mistaken for carcinoma. A careful search of skin for lesions and ulcers should be sought for biopsy and culture. Spheroid cells that are thick walled, 1 or 2 times the size of a red blood cell, with a refractile double-contour and unipolar body are characteristic and usually numerous enough to enable identification. Cultures should be watched for 30 days using Sabouraud's agar at 30°C. Other methods of testing are not reliable. A total dose of 2 to 2.5 gm of amphotericin B over 60 to 90 days is the treatment of choice for severe, life-threatening meningeal disease. 400 to 800 mg of ketoconazole per day for 6 months is effective for less serious situations.

3. People who inhale the spores of *Histoplasma capsulatum* generally do not develop symptoms. The saprophytic form of the fungus is found in the soil of chicken houses, in

caves where bats reside, and in the droppings from starlings and blackbirds. The Ohio and Mississippi River valleys are the most heavily contaminated regions in the United States, although distribution of the organism is worldwide. Infection results from the inhalation of spores from an environmental source and leads to several clinical states. In asymptomatic infection, multiple parenchymal or hilar calcifications may be found in the chest radiograph. Acute symptomatic infection may mimic a viral upper respiratory tract infection with low-grade fever, generalized somatic symptoms, and dry cough that lasts from a few days to a few weeks. Soft, scattered pulmonary infiltrates plus hilar and mediastinal lymphadenopathy are characteristic and usually resolve without residual structural damage. A severe confluent pneumonia that persists for 2 to 3 months or acute respiratory distress syndrome and death may follow inhalation of a large number of organisms from a heavily contaminated source. Progressive destruction of lung tissue and loss of pulmonary function is due to the continuing mycotic infection. Treatment with amphotericin B appears to slow the progression of chronic cavitary disease, but it does not significantly improve lung function. Immune disturbance diseases, such as leukemia, lymphoproliferative syndromes and AIDS predispose patients to histoplasmosis. Adrenal insufficiency is found in half of the instances of disseminated disease. Histoplasmomas are healed primary pulmonary or lymph node foci of infection. Typically they have a fibrotic capsule and a caseaous center that contains a calcified nodule. They often increase in size form less than 1 to 4 cm over a 10-year to 25-year period. Distinguishing them from neoplasia may be difficult. The diagnosis of histoplasmosis must be made by isolation of the organism in culture or histologic specimen. Sputum, blood and urine are reliable. Skin testing with histoplasmin, an antigenic preparation made from a culture filtrate of the mycelia, is useful as an epidemiologic tool but does not have good clinical reliability. A total dose of 500 to 1000 mg of amphotericin B is used to treat severe primary infections, and 2 to 2.5 gm is used to treat all symptomatic disseminated infection. Ketoconazole has been used in the treatment of disseminated histoplasmosis; its role is yet to be fully defined, but it is probably adjunctive to amphotericin B. Sporotrichosis is generally a lymphocutaneous disease that results from subcutaneous inoculation with the ubiquitous organism *Sporothrix schenckii* that is found in rose and barberry thorns, splinters of rotten wood, some soils and sphagnum moss. Occasionally the spores are inhaled and cause upper-lobe involvement with nodules, fibrosis and cavitation similar to tuberculosis, cocci and histoplasmosis. The organism is best identified by culture. Iodides are quite effective at treating the cutaneous and lymphatic forms of the infection, amphotericin B is required to treat the pulmonary and disseminated forms. Rarely, even extensive pulmonary disease may resolve spontaneously without any fungal therapy.

Diagnosis and Treatment of Common Fungal Infections

Fungal Infection	Symptoms	Medication
Coccidioides immitis	Desert fever, valley fever, desert rheumatism, or "the bumps" is endemic to ecologic areas known as lower Sonoran life zone,	A total dose of 30 mg/kg of amphotericin is recommended for treatment of progressive or persistent pulmonary disease. Ketoconazole 400 to 800 mg/day

	characterized by an arid to semiarid climate with hot summers, few winter freezes, sparse flora, alkaline soil, and low altitudes, such as the southwestern United States and northern Mexico. In some areas, more than 80% of the native population reacts to coccidioidin skin testing.	are used for non-meningeal infection and 800 to 1200 mg/day for disseminated infections with meningitis. Miconazole.
Histoplasma capsulatum	The Ohio and Mississippi River valleys are the most heavily contaminated regions in the United States, although distribution of the organism is worldwide. Infection results from the inhalation of spores from an environmental source and leads to several clinical states.	A total dose of 500 to 1000 mg of amphotericin B is used to treat severe primary infections, and 2 to 2.5 gm is used to treat all symptomatic disseminated infection. Ketoconazole 400 to 800 mg/day are used for non-meningeal infection and 800 to 1200 mg/day for disseminated infections with meningitis.
Blastomyces dermatitidis	Endemic disease of he southeastern and south central United States, which also extends up the Mississippi and Ohio River valleys into the north central United States and Canada.	A total dose of 2 to 2.5 gm of amphotericin B over 60 to 90 days is the treatment of choice for severe, life-threatening meningeal disease. 400 to 800 mg of ketoconazole per day for 6 months is effective for less serious situations.
Aspergillus fumigatus, *A. flavus*, *A. niger* and others	Allergic aspergillosis, invasive or disseminated infection or fungus ball (or mycetoma). Fungus ball may develop in the setting of allergic bronchopulmonary or invasive disease and release highly carcinogenic aflotoxin. Common signs and symptoms are repeated attacks of wheezing with fever, evanescent pulmonary infiltrates,	A total dose of 500 to 1000 mg of amphotericin B is used to treat severe primary infections. Oral sporanox (itraconazole) is reported to be effective. Athlete's foot crème (clotrimazole) can be purchased for $1 and is often helpful used topically on the affected region-chest.

	bronchial plugging, repeated isolation of *Aspergillus* from sputum, eosinophilia, and positive skin test results to *Aspergillus* antigen.	
Candida (C. albicans)	Thrush, vaginal yeast infection, gastroenteritis, possible cause of squamous cell carcinoma	2 to 3 mg of amphotericin B, sporanox (itracondazole). Micronazole. Ketoconazole 400 to 800 mg/day are used for non-meningeal infection and 800 to 1200 mg/day for disseminated infections with meningitis.
Cryptococcus neoformans	Isolated from the excreta of pigeons and other birds.	2 to 3 mg of amphotericin B, miconazole. Ketoconazole 400 to 800 mg/day are used for non-meningeal infection and 800 to 1200 mg/day for disseminated infections with meningitis.
Actinomyces, *Nocardia*, *Streptomyces*, or *Staphylococcus* organisms.		Intravenous penicillin G, 10 to 20 mU daily for 4 to 6 weeks, followed by oral phenoxymethyl penicillin, 2 to 4 gm daily for 6 o 12 months, cures most severe infections; Penicillin hypersensitivity or occasional failures to respond to treatment require alternative antibiotics such as tetracycline or clindamycin.

Source:(Bindschadler '89: 107-117)

4. Aspergillosis is caused by species of the ubiquitous mold *Aspergillus*. Infections caused by *Aspergillus fumigatus*, *A. flavus*, *A. niger* and others result in allergic aspergillosis, invasive or disseminated infection or fungus ball (or mycetoma). Fungus ball may develop in the setting of allergic bronchopulmonary or invasive disease. Bronchopulmonary aspergillosis is frequently a progressive disease with IgE-mediated asthma and IgG-mediated type III parenchymal reactions. Common signs and symptoms are repeated attacks of wheezing with fever, evanescent pulmonary infiltrates, bronchial plugging, repeated isolation of *Aspergillus* from sputum, eosinophilia, and positive skin test results to *Aspergillus* antigen. Serum IgG antibody levels to *Aspergillus* organisms and total serum IgE are elevated. Central saccular bronchiectasis can often be identified in the middle-lung or upper-lung fields in chest radiographs. Patients expectorate brown sputum plugs that contain the organisms. Long-term therapy with oral corticosteroids plus standard antiasthma regiments are often required to control the disease process. Colonization of the tracheobronchial tree with concentric rings of hyphae and surrounding fibrosing granulomatous inflammation or chonic nonspecific inflammatory

elements occur in patients with chronic obstructive pulmonary disease. Periodic acid-schiff or silver stains are used to demonstrate *Aspergillus* hyphae in histologic sections. Since symptoms in invasive aspergillosis are usually related to the point of entry and since 90% or more begin in the lungs, fever, chills, shortness of breath, non-productive cough, and pleuritic pain are commonly noted. Hemorrhagic infarction or necrotizing bronchopneumonia are noted. Life-threatening hemoptysis is a major clinical presentation of mycetoma. Other complications include bacterial lung abscess, bronchopleural fistula with fungal empyema and spread of infection to thoracic vertebral bodies. The diagnosis of invasive disease is usually difficult because cultures only transiently yield positive results. *Aspergillus* organisms are a frequent laboratory contaminant and this further complicates the certainty of diagnosis. In immunocompromised situations, aggressive therapy with amphotericin B must be initiated. Systemic therapy with amphotericin B for fungus ball is of no value. Occasionally control of symptoms and reduction in the size of the fungus ball can be achieved by aerosol or insufflation of amphotericin B. Surgical excision is the treatment of choice; the major justification for resection is life-threatening hemmhorage, with a mortality of 5% to 10%. The outcome of surgical therapy usually depends on the degree of underlying lung disease.

C. Candidiasis is a fungal infection caused by *Candida albicans* that produces lesions in the mouth, vagina, skin, nails, lungs or the gastrointestinal tract or occasionally a septicemia, in patients on long-term, high dose antibiotic therapy and in those who are immunosuppressed. Thrush is a Candida infection of the mouth in which white fibers can be painfully removed from the oral mucosa. OTC anticandidal remedies are effective. *Candida* species commonly colonize the tracheo-bronchial tree in healthy subjects and are easily identified in sputum smears and cultures. Rarely, primary *Candida* pneumonia occurs in an immunosuppressed host. It cannot be reliably diagnosed by sputum culture and requires lung biopsy for confirmation. More commonly, *Candida* organisms invade the lung in conjunction with hematogenous dissemination and produce military micro-abscesses. Radiographic findings range from diffuse infiltrations to confluent areas suggestive of pulmonary edema. Allergic broncho-pulmonary disease and fungus balls have also been described rarely. A total dose of 2 to 3 mg of amphotericin B should be used to treat disseminated infection.

1. Since *C. albicans* exists commonly as a harmless skin inhabitant, the laboratory findings of this organism is not adequate proof of its pathogenicity and etiologic role. Candida commonly seed preexisting disease conditions. Cutaneous candidiasis, or candida paronychia, is a common candida infection characterized by development of painful, red swellings of the skin around the nail plate. In chronic infections the nail becomes secondarily thickened and hardened. Candidal paronychia is commonly seen in housewives and those individuals whose occupations predispose to frequent immersion of the hands in water. This nail involvement is to be differentiated from superficial tinea of the nails (the candida infection does not cause the nail to lose its lust or to become crumbly, and debris does not accumulate beneath the nail) and from bacterial paronychia (this is more acute in onset and throbs with pain). Apply antifungal imidazole type solution (Lotrimin or Mycelex Solution 1%) to base of nail for several weeks. At night

apply sulfur ppt. 5% in Benzoic and salicyclic acid ointment (USP) locally (or Mycostatin cream can be used as the base). Candidal intertrigo is a moderately common characterized by well-defined, red, eroded patches, with scaly, pustular or pustulovesicular diffuse borders. The most common sites are axillae, umbilicus, genital area, anal area and webs of toes and fingers. Obesity and diabetes predispose to the development of this intertriginous type. It is to be differentiated from superficial tinea infections, which are not as red and eroded, and seborrheic dermatitis. Apply Sulfur, ppt. 5%, Hydrocortisone 1% and Mycostatin cream locally. Mycostatin dusting powder can be used over cream. Generalized cutaneous candidiasis is a rare infection involving the smooth skin, mucocutaneous orifices, and intertriginous area. It follows in the wake of general debility, as seen in immunosuppressed patients, and was very resistant to treatment prior to the discovery of ketoconazole. Mucous membrane candidiasis, oral candidiasis is either Thrush and Perléche. Thrush is characterized by creamy white flakes on a red, inflamed mucous membrane. The tongue may be smooth and atrophic, or the papillae may be hypertrophic, as in "hairy tongue". Perléche is seen as cracks or fissures at the corners of the mouth, usually associated with candida disease elsewhere, and dietary deficiency. It is usually effectively treated with over-the-counter anticandidal medicine but ketoconazole and other antifungal drugs are often prescribed by physicians and Amphotericin B intravenously in severe systemic infections. Candidal vulvovaginitis is an oozing, red, sharply bordered skin infection surrounding an inflamed vagina that contains a buttermilk-like discharge. This type of candida infection is frequently seen in pregnant women and diabetics. It is to be differentiated from an allergic condition or from trichomonal vaginitis. It is treated with Mycostatin vaginal tablets 100,000 units inserted into the vagina. Or Monostat-Derm lotion or Sulfur, ppt. 5%, Hydrocortisoe 1% and Mycostatin cream 30.0. For chronic mucocutaneous candidiasis, ketoconazole can heal dramatically. Natural anticandidal remedies cure gastroenteritis and thrush caused by candidiasis.

D. Cryptococcosis is caused by *Cryptococcus neoformans*, a yeast that can be isolated from the excreta of pigeons and other birds. Although *Cryptococci* organisms in nature are largely unencapsulated, they rapidly form a polysaccharide capsule that protects them from attack by neutrophils and monocytes following their inhalation into the lung. Multiform pulmonary lesions can develop, ranging from an asymptomatic solitary nodule to nonspecific pulmonary infiltrates, and occasionally are associated with pleural effusion, cavitation and calcification. Cryptococcal pneumonia, as well as bronchial colonization, often occurs without subsequent spread to the central nervous system (CNS). Although most cases of pulmonary cryptococcosis resolve without specific therapy, some develop progressive pneumonic spread, whereas others remain clinically and radiographically stable for extended periods. In AIDS patients *Cryptococcus* infection is 80% fatal. Amphotericin B with or without flucytosine remains the treatment of choice for meningeal cryptococcosis. Modification of the dose of amphotericin B from 2 to 3 grams may be successful when one is dealing only with pulmonary cryptococcosis. Either perioperative flyctosine, ketoconazole, or miconazole may be used to prevent the 5% incidence of cryptococcal meningitis associated with resection of pulmonary lesions.

1. Actinomycetes are gram-positive organisms that have a filamentous, branching hyphalike appearance that at one time led to their erroneous classification as fungi. Two genera, *Actinomyces* and *Nocardia* of the family *Actinomycetaceae*, cause human disease. *Actinomyces* are microaerophilic or anaerobic; *Nocardia* are aerobic and weakly acid-fast. Most human actinomycoses are caused by *Actinomyces israelii*, with pulmonary involvement resulting from aspiration of infected oral material. Suggestive radiographic findings include extension of pulmonary lesions through the chest wall, destruction of ribs or other adjacent bony structures, infiltrates that cross interlobar fissures, and vertebral erosion from posterior chest structures. Superior vena caval obstruction and tracheoesophageal fistula have been described. Sulfur granules are large aggregate masses of *Actinomyces* organisms that are uncommonly seen today, in part because of the widespread use of antibiotics in earlier stages of infection. Similar conglomerates are seen in other mycoses or with infections due to *Nocardia*, *Streptomyces*, or *Staphylococcus* organisms. Intravenous penicillin G, 10 to 20 mU daily for 4 to 6 weeks, followed by oral phenoxymethyl penicillin, 2 to 4 gm daily for 6 o 12 months, cures most severe infections. Penicillin hypersensitivity or occasional failures to respond to treatment require alternative antibiotics such as tetracycline or clindamycin. Nocardia species are soil-born, aerobic, partially acid-fast actinomycetes that enter the body through the respiratory tract. Most infections are opportunistic in patients with a predisposing condition such as lymphoreticular malignancy, long-term high-dose corticosteroid use, pulmonary alveolar proteinosis, bronchiectasis, Cushing's disease, or dysglobulinemia or in transplant recipients. Nocardia is unusual in AIDS. Bronchopneumonia that progresses rapidly to consolidation, multiple wide-spread cavities, and early pleural involvement are radiographic clues to nocardiosis. Dissemination occurs from the lung to the CNS, heart, pericardium, or retroperitoneal or subcutaneous structures. No skin tests work so bronchial brushing, direct percutaneous needle aspiration and bronchoscopy with trans-bronchial biopsy are used to establish the diagnosis. A sulfonamide, such as sulfisoxazole in a dosage of 6 to 9 gm daily (divided into doses given every 6 hours) to accomplish peak serum levels of 12 to 15 mg/dl is the treatment of choice. Once substantial improvement has been noted, oral therapy with 4 to 6 gm of the same drug may be used. Treatment schedules often require 2 to 6 months for a cure, especially in patients receiving immunosuppressive therapy. Although trimethoprim-sulfamethoxazole is active against Nocardia organisms in vitro, it is not clear whether this combination is clinically better than a sulfonamide alone. Alternative therapy is 300 mg of minocycline every 12 hours, ampicillin and erythromycin combinations. Empyema requires surgical drainage, but lung abscess usually does not. 60% to 70% of patients with Nocardia organisms infections recover with appropriate treatment.

E. Fungi can be present as part of the normal flora of the skin or as abnormal inhabitants. Pathogenic fungi have a predilection for certain body areas: most commonly it is the skin, but the lungs, the brain and other organs can be infected. Pathogenic fungi can invade the skin superficially and deeply. The superficial fungi live on the dead horny layer of the skin and elaborate an enzyme that enables them to digest keratin, causing the superficial skin to scale and disintegrate, the nails to crumble, and the hairs to break off. Under the microscope in wet preparation two structural elements will be seen: the spores and the

hyphae. Spores are the reproducing bodies of the fungi. Sexual and asexual forms occur. Spores are rarely seen in skin scrapings. Hyphae are threadlike, branching filaments that grow out from the fungus spore. The hyphae are the identifying filaments seen in skin scraping in potassium hydroxide (KOH) solution. Mycelia are matted clumps of hyphae that grow on culture plates. The latest classification divides the superficial fungi into three genera: Microsporum, Epidermophyton and Trichophyton. Only two of these species invade the hair: Microsporum and Trichophyton. Microsporu causes an extothrix infection of the hair shaft, whereas Trichophyton causes either an ectothrix or an endothrix infection. The extorthrix fungi cause the formation of anexternal spore sheath around the hair, whereas the endothrix fungi do not. The filaments of mycelia penetrate the hair in both types of infection. The clinical types of superficial fungal infections are Tinea of the feet (*Tinea pedis*), Tinea of the hands (*Tinea manus*), Tinea of the nails (Onychomycosis), Tinea of the groin (*Tinea cruris*), Tinea of the smooth skin (*Tinea corporis*), Tinea of the scalp (*Tinea capitis*), Tinea of the bears (*Tinea barbae*) and Tinea of the ear (External Otitis).

1. The most common problem associated with sporting activity are fungal infections, and the most common of these is athlete's foot, which develops between the toe webs and may also involve the nails. Small particles of skin may be rubbed form the soles of the eet onto the floor of changing rooms, swimming pools, etc. and may be picked by the next person who walks over the area. If the skin infection is recognized and treated promptly, it can usually be clearly relatively easily. If, however the infection on the skin is not recognized or is ignored, the same fungal infection may spread to involve the nails. When this happens the nail becomes rough, crumbles and develops irregular white patches. The nail may become very thick and difficult to cut. This can lead to pain and difficulty finding comfortable shoes. Once the nails are involved with fungal infection, curing the problem is very much more difficult. It takes from 1 to 2 years for a toe-nail to grow right out, and treatment for fungal infection of the toe-nail needs to be continued for this entire period of time. Even then it is very easy to re-infect to-nails from shoes, and many people who developed fungal infection of toe-nails when they were teenagers still have the problem 20, 30 and even 40 years later. For many years the most effective oral treatment available was friseolfulvin. This was very effective in the treatment of infections of the skin, although less effective for treatment of the nails. As the present time there are some exciting new developments in the treatment of fungal infection of the sin, and newer drugs which are very effective in the treatment of fungal infection of the nail, are now becoming available. One of these is terbinafine (Lamisil).

F. Tinea of the feet (athlete's foot or ringworm of the feet) is a very common skin infection. Blisters occur on the soles and sides of the feet or between the toes. In the chronic form the lesions are dry and scaly. Secondary bacterial infection is common, maceration and fissures are also seen. If the toenails become infected, a cure is highly improbable. The species of fungus influences the response to therapy. Most vesicular, acute fungal infections are due to *Trichophyton mentagrophytes* and respond readily to treatment with clotrimazole athlete's foot crème. The chronic scaly type of infection is usually due to *T. rubrum* and is exceedingly difficult, if not impossible, to cure. Males are more susceptible than females. A differential diagnosis is needed with contact

dermatitis, atopic eczema, psoriasis, pustular bacterid, hyperhidrosis of feet, symmetric lividity of the soles and pitted keratolysis (keratolysis plantare sulcatum). Treatment involves hygiene, debridement, the skipping off the tips of the blister enabling pus to drain out and medication to reach the organisms. The edges of any blister should be kept trimmed, since fungi spread under these edges. Follow debridement with foot soak in Burow's solution. Neosporin or other antibiotic ointment and sulfur (antifungal) ppt. 5% may be applied locally to feet after soaking. Subsequent treatment should include an antifungal crème such as clotrimazole, Lotrimin, Monistat-Derm, Loprox, Spectazole, Tinactin, Halotex, Desenex, and so on. A combination of an antifungal cream and a corticosteroid, as in Lotrisone cream (Schering) is very beneficial. Antifungal solutions, such as Lotrimin or Mycelex solutions, are quite effective. Apply a few drops on affected skin and rub in. Griseofulving and ketoconazole therapy are not recommended for acute tinea of the feet because (1) response to oral agents is slow, (2) recurrence rate is high and (3) the cost of oral therapy is much greater. Sporanox (itraconazole) and Lamisil (affordable oral) are indicated. Tinea of the fingernails can be cured, but the treatment usually takes months. This type of tinea of the nails is usually due to *T. rubrum* and less importantly *T. mentagrophytes*. Differential diagnosis with nail injury, psoriasis of fingernails or toenails, candidiasis of fingernails, or green nails, an infection yielding *Candida albicans* or *Pseudomonas aeruginosa* most commonly. Griseofulvin ultrafine (330 mg or equivalent) therapy is the oral treatment of choice, it is used for approximately 9 months. Therapy is stopped when there is no clinical evidence of infection and no cultural evidence of fungi. Ketoconazole therapy 200 mg once a day for 9 months might be curative. For the tinea of the toenails 12 months of therapy. Antifungal solution, 15 ml or athlete's foot crème (clotrimazole) applied locally for several months might help some milder cases. Debriding of thick nails offers relief from discomfort.

1. Tinea of the groin is a common, itching, annoying fungal infection of the groin, appearing usually in males and often concurrently with tinea of the feet. Bilateral, fan-shaped, red scaly patches with a sharp, slightly raised border occur. Small vesicles may been seen in the active border. Oozing, crusting, edema and secondary bacterial infection are evident. The infection extends to involve the scrotum, penis, thights, perianal area and buttocks. Tinea of the groin is commonly due to the fungi of tinea of the feet, *T. rubru*, and *T mentagrophyties* and also the fungus *Epidermophyton floccosum*. It is minimally contagious even between husband and wife. Differential diagnosis is needed with Candidiasis, contact dermatitis, prickly heat, neurodermatitis, psoriasis, and Erythrasma due a diphtheroid organisms called *Corynebacterium minutissimum*. Treatment is to advise drying the feet after the groin, Griseofulvin oral therapy 330 mg 1 tablet a day for 6 to 8 weeks. Vinegar 1 part to 2 parts water can be applied to the area for 15 minutes twice a day. Sulfur ppt. 5% and nonalcoholic white shake lotion can be applied locally. Subsequently, antifungal solution 15 ml or a mix of Sulfur ppt. 5%, Hydrocortisone powder 1% an antifungal crème 15.0 may be applied locally. A small amount of the following solution may be applied in the office with a cotton swab Chrysarobin 3% and Chloroform 15.0, it is quite effective for resistant dry scaly patches but stings after application. Caution patient to avoid touching the area with their fingers and then rubbing their eyes. $1 Clotrimazole (athlete's foot crème) may be effective.

2. Tinea of the smooth skin, the familiar ringworm of the skin most commonly seen in children because of their intimacy with animals and other children. Round, oval or semicircular scaly patches have a slightly raised border that commonly is vesicular. Rarely, deep, ulcerative, granulomatous lesions are due to superficial fungi. Bacterial infection is common in association with certain fungi, such as *M. canis* and *T. mentagrophytes*. Infection is short lives, if treated correctly and seldom recurs. This disorder is most commonly due to *M. cani* form kitten and puppies, to *M. audouini* frm other children, who usually also have scalp infection and less commonly due to *E. floccosum* and *T. mentagrophytes*, from groin and foot infections. It is very contagious. There is a differential diagnosis with pityriasis rosea, impetigo, and contact dermatitis. Treatment is with antifungal solution 15 ml or a cream sulfur ppt. 5%, antifungal salve 15.0 applies locally. Antifungal bases that can be used are Clotrimazole, Lotrimin, Monstat-Derm, Loprox, Spectazole, Halotex, Tinactin, and so on. On subsequent visits Griseofulvin (ultrafine can be gien in tablet or oral suspension form. The usual dose for children is 165 mg but the product information sheet should be consulted. Therapy should be maintained for 3 to 6 weeks or until lesions are gone.

3. Tinea of the scalp is the most common cause of patchy hair loss in children. Griseofulvin orally finds it greatest therapeutic usefulness in the management of tinea of the scalp. Ketoconazole is available for griseofulvin resistant cases. *Tinea capitis i*nfections can be divided into two clinical types noninflammatory and inflammatory. The noninflammatory type has grayish, scaly, round patches with broke-off hairs causing balding areas. The incubation period is short by clinical evidence of the infection cannot be expected under 3 weeks after inoculation. Spontaneous cures are rare in 2 to 6 months but after that time occur with greater frequency. Some cases last for years, if untreated. Infection of the scalp is most common between the ages of 3 and 8 and is rare after the age of puberty. The adult resistance to infection is attributed in part to the higher content of fungistatic fatty acids in the sebum after puberty. This finding led to the development of Desenex, Timofax, Salundek and other fatty acid ointments and powders. The noninflammatory type of scalp ringworm is caused most commonly by *M. audouini*, occasionally by *M. canis* and rarely by *T. tonsurans*. *M. audouini* and *T. tonsurans* are anthropophilic fungi (human-to-human passage only), whereas *M. canis* is a zoophilic fungus (animals are the original source, mainly kittens and puppies. Hair is infected with *M. audouini* and *M. canis* fluoresce with a bright yellowish green color in Wood's light. Over 90% of the tinea capitis in the United States and Canada is due to these fungi. Infected individuals may go to school provided that the child wears a cotton stockinette cap at all times and a note must be presented from the physician every 3 weeks. Griseofulvin oral therapy ultrafine (Fulvicin U/F. Grifulvin V, and Frisactin) can be administered in tablet form or liquid suspension. The usual dose for a child aged 4 to 8 is 250 mg. The duration of therapy is usually 6 to 8 weeks. Near the end of therapy the remaining infected and fluorescent hairs can be plucked out, or the involved area can be shaved closely. Duration of the inflammatory type of tinea of the scalp is much shorter than the non-inflammatory type of infection. Spontaneous cures will result after 2 to 4 months in majority of cases, even if untreated. The inflammatory type of scalp ringworm is most commonly caused by *M. canis*, occasionally by *M.audouini*, and rarely by *M.*

gypseum, *T. mentagrophytes* and *T. verrucosum*. Except for *M. audouini* the species are zoophilic, that is, passed from infected animals or soil. The incidence is high in children and farmers. It is endemic, except for cases due to *M. audouini*. Griseolfulvin oral therapy may be used as in the noninflammatory type. Local therapy can be used where drug cost is an issue, with good results, Sulfur ppt. 5% Vioform ointment q.s. 15.0 shampooed nightly. If kerion is severe, with or without griseofulving therapy: Burow's pack we solutions in warm water, antibiotic therapy orally helps to eliminate secondary bacterial infection.

4. *Tinea versicolor* is a moderately common skin eruption with characteristics of tannish colored, irregularly shaped scaly patches causing no discomfort that are usually located on the upper chest and back. It is caused by a lipophilic yeast. The skin does not tan when exposed to sunlight, and it is this cosmetic defect that often brings patients to the doctor's office. The causative agent is a lipophilic yeast, *Pityrosporum orbiculare*, which as a hyphae form called *Pityrosporum* or *Malassezia furfur*. A scraping of the scale is placed on a microscopic slide, covered with a 20% solution of potassium hydroxide and a coverslip will show the hyphae. Under the low-power lens of the microscope, very thin mycelia filaments are seen. Diagnostic grapelike clusters of spores are seen best with the high-power lens. This dimorphic organism does not grow on routine culture media. It is treated with Selenium Suspension 2 ½% 120.0 applied after bathing and drying. Bathe again in 24 hours and wash off the medicine. Repeat procedure again at weekly intervals for four treatments. Recurrences can be re-treated. Depigmented spots may remain after the tinea is cured, but if desired, can be tanned by gradual exposure to sunlight or ultraviolet light.

5. Tinea of the beard is a rare cause of dermatitis in the beard area. Farmers occasionally contract it from infected cattle. Differential diagnosis with bacterial folliculitis. The primary lesions are follicular pustular or sharp-bordered, ringworm-type lesions or deep-boggy, inflammatory masses are seen. Treatment begins with Burow's solution wet packs in 2 pint of hot water ,apply wet cloth to area for 15 minutes. Apply sulfur ppt. 5% and antifungal ointment locally. Griseofulving oral therapy ultrafine 330 mg for 6 to 8 weeks or longer, depending on clinical response or negative Sabouraud's culture. Dermatophytid, is an allergic reaction to a fungal infection. During an acute episode of any fungal infection an id eruption can develop over the body. The most common id reaction occurs on the hands during an acute tinea infection on the feet. To assume a diagnosis of an id reaction, the following criteria should be followed: (1) the primary focus should be acutely infected with fungi, not chronically infected, (2) the id lesions must not contain fungi, and, (3) the id eruptions should disappear or wane following adequate treatment of the acute focus. Vesicular eruption of the hands (primary lesion on the feet) and papulofollicular eruption on body (primary lesion commonly is scalp kerion) are found; pityriasis rosea – like id eruptions and others are seen less commonly. Excoriation and infection occur, when itching is severe, which is unusual. Treat the primary focus of infection. Burow's solutions soaks in quart of cool water. For an id reaction on the body that is moderately pruritic, Linit starch or Aveeno oatmeal bath once daily. Alcoholic white shake lotion with menthol 0.25%, phenol 0.5% or camphor 2%

could be added. For a severely itching, generalized id eruption, prednisone 10 mg or related corticosteroid tablets.

G. Sporotrichosis is a granulomatous fungal infection of the skin and the subcutaneous tissues. Characteristically, a primary chancre develops at the site of the skin inoculation, which is commonly the hand and less commonly the face or the feet. The chancre begins as a painless, movable subcutaneous nodule that eventually softens and breaks down to form an ulcer. Within a few weeks subcutaneous nodules arise along the course of the draining lyphatics and form a chain of tumors that develop into ulcers. The development of the skin lesions is slow and rarely affects the general health. The causative agent is *Sporothrix schenckii*, a fungus that grows on wood and in the soil It invades open wounds and is an occupational hazard of farmers laborers and miners. Differentiate with any of the skin granulomas, such as pyodermas, syphilis, tuberculosis, sarcoidosis and leprosy. An ioderma or bromoderma can cause a similar clinical picture. Treat with saturates solution of potassium iodide 60.0 ml. On the first day, 10 drops added to milk or water. Second day, 15 drops, third day, 20 rops, and increased until 30 to 40 drops are given. Watch for gastric irritation and ioderma. Continue this very specific treatment for 1 month after apparent cure. Ketoconazole therapy (Nizoral) 200 mg 2 tablets a day for 8 weeks.

1. North American Blastomycosis presents as two cutaneous forms (1) primary cutaneous blastomycosis and (2) secondary localized cutaneous blastomycosis. Primary cutaneous blastomycosis occurs in laboratory workers and physicians following accidental inoculation. A primary chancre develops at the site of the inoculation, and the regional nodes enlarge. In a short time the primary lesion and nodes heal spontaneously, and the cure is complete. The lesions geing as a papule that ulcerates and slowly spreads peripherally, with a warty, pustular, raised border. The face, hands and feet are involved most commonly. Central healing of the ulcer occurs gradually with resultant thick scar. A large lesion develops over several months. The fungus *Blastomyces dermatitidis* is thought to invade the lungs primarily and the skin secondarily as a metastatic lesion. High native immunity prevents the development of more than one skin lesion. This immunity is low in the rare systemic form of blastomycosis in which multiple lesions occur in the skin, the bones and other organs. This fungal disease affects adult males most frequently. It must be differentiated from any of the granuloma-producing diseases, such as tuberculosis, syphilis, iodide or bromide drug eruption, pyoderma, and neoplasm. It is treated with surgical excision and plastic repair of early lesion. Amphotericin b suppresses the chronic lesion more effectively than any other drug. It is administered by intravenous infusion, daily, in varying schedules. Ketoconazole therapy on a long-term basis is also beneficial. Since the discovery of specific systemic antifungal agents, griseofulvin and ketoconazole correct diagnosis of a fungal infection is necessary. Griseofulvin or ketoconazole are of no value in treating atopic dermatitis, contact dermatitis, psoriasis, pityriasis rosea, and so on. Oral griseofulving or ketoconazole therapy should not be use to treat tinea of the feet or toenails, the recurrence rate after therapy is very high, Lamasil, is preferred for serious foot fungus. Tinea versicolor does not respond to oral griseofulvin therapy. Sporanox (itraconazole) is even more effective, but is contraindicated in congestive heart failure due to adverse drug interactions and

price. $1 hydrocortisone crème and clotrimazole (athlete's foot crème) are the usual treatments for all fungal infections.

§359 Zoonosis

A. Zoonotic diseases are transmitted by vectors to larger animals, including humans, by the bites of parasitic insects infected with a bacteria or virus, and parasitic worms, that are themselves animals. The antibiotic treatment for bubonic plague and Lyme disease is doxycyline or clindamycin in children. Hygiene has mostly eliminated the threat of plague from *Yersinia pestis* carried by the fleas in rats. Healthy rat urine infects the hip, their feces cause meningitis, the syndrome resembles sarcoidosis, wash with water, deal with rats without poison. Acute, low dose, rat poisoning in humans, causes sticky black stool from gastro-intestinal bleeding, a slimy rectum or relaxed stomach sphincter, depending on method of ingestion and brand of rat poison. Incidence of tick borne diseases is increasing dramatically due to climate change whereby it doesn't freeze in the winter. Lyme disease is caused by the *Borrelia burgdorferi* bacteria, that is transmitted by ticks, usually carried by deer. Lyme disease can usually be avoided or localized enough to obliterate the painful white Lyme with a fingernail leaving a bloody wound, if the ticks are discovered and removed within 24 hours. Serious Lyme disease infections are often fatal. Lyme is thought to clog the neuromuscular junction and may cause many neurological idiopathic conditions that impair movement and are dangerous to life. Dermatologic parasitology is extensive and includes dermatoses due to three main groups of organisms: protozoa, helminthes and arthropods. Venomous snakes, such as the rattlesnake, water-moccasin and cobra, and certain amphibians and jellyfish, also elaborate toxins that are dangerous to humans, but intend the infest the wilderness rather than human property. The protozoal dermatoses are exemplified by the various forms of trypanosomiasis and leishmaniasis. Helminthic dermatoses include those due to roundworms (round itch, creeping eruption, filariasis, and other rare tropical diseases) and those due to flatworms (schistosomiasis, swimmer's itch, and others). Arthropod dermatoses are divided into those caused by two classes of organisms, the arachnids (spiders, scorpions, ticks and mites) and the insects (lice, bugs, flies, moths, beetles, bees and fleas). The bites leave lesions and some species, such as the black widow, wolf spider and scorpion, may be life threatening.

1. The virus that causes rabies is said to be “neurotropic” that is it seeks out nerve cells and drives its victims crazy in order to jump to the next host, via the saliva in the rabid animal’s bite wounds that break the skin in fact, the salivary glands actually become infected before most animals show any overt sign of rabies. The disease has a long incubation period, averaging a month or two in humans but sometimes years, depending a lot on the location (head, face, or hands are most dangerous) and severity of infective bites. This provides a window for treatment, which is generally futile after symptoms begin. Rabies victims at first feel a general malaise and restlessness, then grow increasingly agitated with painful spasms of the throat. Some start to hallucinate. Soon they cannot drink, which is why rabies has been called “hydrophobia”. Death comes within ten days after the appearance of symptoms, though modern care can make this somewhat less than inevitable. There is only one method for testing an animal, kill it and

examine its brain. Washing a bite thoroughly with soap is the best first aid. About thirty thousand deaths are attributed to rabies every year, the vast majority in poor countries. Since 1980, twenty cases have been reported in the US, half of which were imported. For persons who have never been vaccinated against rabies, post-exposure anti-rabies vaccination should always include administration of both passive antibody human rabies immune globulin (HRIG) either Hyper RAV (Talecris) or Imogram Rabies – HT (Sanofi-Pasteur) and either human diploid cell vaccine (HDCV) Imovax (Sanofi-Pasteur) or purified chick embryo cell vaccine (PCECV) Rabavert (Novartis).

2. Fifth disease is caused by infection with human parvovirus B19 that causes a mild, "slapped-cheek" rash most commonly in children that resolves in 7 to 10 days. The child may have a low grade fever or cold before the rash breaks out. This virus infects only humans. Pet dogs or cats may be immunized against "parvovirus", but these are animal parvoviruses, that do not infect humans, nor can a pet cat or dog catch human parvovirus B19, from an ill child. In a household, as many as 50% of susceptible persons, exposed to a family member, who has fifth disease may become infected. During school outbreaks, 10% to 60% of students may get fifth disease. Parvovirus B19 infection may cause a serious illness in persons with sickle-cell disease or similar types of chronic anemia. In such persons, parvovirus B19 can cause an acute, severe anemia. The typical rash is rarely seen in these persons. Once the infection is controlled, the anemia resolves. Persons who have leukemia or cancer, who are born with immune deficiencies, who have received an organ transplant, or who have human immunodeficiency virus (HIV) infection are at risk for serious illness due to parvovirus B19 infection and recommended Immune Globulin (IGIV) treatment.

B. The earliest known epidemic of the plague, also known as "Black Death", was in Athens in 430 B.C., an estimated 25% to 50% of the population succumbed. The epidemic spread widely across Europe in 1334 and killed three quarters of the European population and Asia in less than 20 years. By 1349 it swept across Hungary, Italy, Spain, France, Germany and England. Followed by the sporadic outbreaks of bubonic plague throughout the three centuries plague returned to Holland in 1663, and to London in 1665. There are about 20 cases of plague in the United States each year, mostly in parts of California, Colorado, Utah, Arizona, Nevada and New Mexico. It is carried by fleas that live on rodents such as prairie dogs and rats. The last known case of person-to-person transmission of plague in the United States was in 1924. Plague is still a problem in the developing world, where about 3,000 cases are reported each year. Plague is endemic in many countries in Africa, in the former Soviet Union, the Americas and Asia. In 2003, 9 countries reported 2118 cases and 182 deaths. 98.7% of those cases and 98.9% of those deaths were reported from Africa. Today the distribution of plague coincides with the geographical distribution of its natural foci. The World Health Organization reports, Plague is a zoonotic disease circulating mainly among small animals and their fleas. The bacteria *Yersinia pestis* can also infect humans. It is transmitted between animals and humans by the bite of infected fleas, direct contact, inhalation and rarely, ingestion of infective materials. Rapid diagnosis and treatment is essential to reduce complications and fatalities. Effective treatment enables most plague patients to be cured if diagnosed

in time. These methods include the administration of doxycycline or clindamycin antibiotics and supportive therapy.

1. Plague can be a very severe disease in people, with a case-fatality ratio of 30%-60% if left untreated. Infected persons usually start with “flu-like” symptoms after an incubation period of 3-7 days. Patients typically experience the sudden onset of fever, chills, head and body-aches and weakness, vomiting and nausea. Clinical plague infection manifests itself in three forms depending on the route of infection: bubonic, septicaemic and pneumonic. Bubonic form is the most common form of plague resulting from the bite of an infective flea. Plague bacillus enters the skin from the site of the bite and travels through the lymphatic system to the nearest lymph node. The lymph node then becomes inflamed because the plague bacteria, *Yersinia pestis* or *Y. pestis*, will replicate here in high numbers. The swollen lymph node is called a "bubo" which is very painful and can become suppurated as an open sore in advanced stage of infection. Septicemic form of plague occurs when infection spreads directly through the bloodstream without evidence of a "bubo". More commonly advanced stages of bubonic plague will result in the presence of *Y. pestis* in the blood. Septicemic plague may result from flea bites and from direct contact with infective materials through cracks in the skin. Pneumonic form of plague is the most virulent and least common form of plague. Typically, pneumonic form is due to a secondary spread from advanced infection of an initial bubonic form. Primary pneumonic plague results from inhalation of aerosolized infective droplets and can be transmitted from human to human without involvement of fleas or animals. Untreated pneumonic plague has a very high case-fatality ratio.

3. Leptospirosis are disease caused by the spirochetes of the complex *Leptospira interrogans*, of which the best known is *L. icterohaemorrhoagiae*, the causative organisms of icteric leptospirosis or Weil's disease. Rats are the best known hosts (*L. icterohaemorrhagiae*), but dogs (*L. canicola*) and other animals can be infected. In all the leptospires survive in the renal tubules of the host and are therefore shed in the urine. Infection can enter through abrasions on the skin, and also through the mucosa of the eyes, nose, mouth and throat. Ninety percent of infections are anicteric and many are subclinical. In these patients, the septicemic phase develops after 7-10 days, with myalgia, pyrexia, abdominal pain and proteinuria. The temperature settles after 3-7 days, but the second immune phase develops 3 days later, with a recurrent temperature. Skin rashes, uveitis and meningitis may develop. In the icteric form (Weil's syndrome) the two phases merge, and these patients are frequently very ill with jaundice, renal failure and circulatory collapse. Organisms can be isolated form blood or cerebrospinal fluid only during the first week of illness. Subsequently the diagnosis depends on serology. Antibiotic therapy in the form of benzyl penicillin or tetracycline is only helpful when administered early in the illness.

Zoonotic Diagnosis and Treatment

Pathogen	**Disease Expression**	**Drug Monograph**
Arboviral Encephalitis viruses	Eastern, Western, Venezuelan, St. Louis,	None, mosquito protection, repellant and prevention

	LaCrosse, California group	
Yellow fever	Yellow fever	Yellow Fever vaccine (VF-VAX, Sanofi-Pasteur)
Deer Tick *Borrelia burgdorferi*	Lyme disease	Doxycycline
Colorado tick	Colorado tick fever	Doxycycline
Denguevirus 1-4	Dengue, hemorrhagic fever	acetaminophen (Tylenol); Early results of clinical trials show that a vaccine may be available by 2012.
Regional hemorrhagic fever viruses	Bolivian, Argentinian, Lassa Crimean-Congo, Hantaan, sandfly fever Ebola, Marburg disease Korean, USA pneumonia	None. Ribavirin (Virazole)
Rabiesvirus	Rabies	Rabies Immune Globulin (Human): Hyper RAV (Talecris); Imogram Rabies – HT (Sanofi-Pasteur) and Purified Chick Embryo Cells (PCEC) Rabavert (Novartis) or Human Diploid Cell Vaccine (HDCV): Imovax (Sanofi-Pasteur)
Parvovirus	Erythema infectiosum, Aplastic anemia	None, Immune Globulin Intravenous (IGIV)

Source: Hospitals & Asylums

C. The number of reported cases tick-borne diseases (including Lyme disease) in the United more than doubled from 2004 to 2016, and reached a record high of more than 59,000 cases in 2018. Studies indicate red meat allergies are associated with tick bites, but it may be MRSA from spoiled animal products due to outdoor living. Lyme disease is caused by the bacterium *Borrelia burgdorferi* and is transmitted to humans through the bite of infected black-legged ticks. Typical symptoms include fever, headache, fatigue, and a characteristic white segmented skin rash called erythema migrans that must be removed by wide-excision, usually with fingernail, to remove the irritating white "Lyme". If left untreated, infection can spread to joints, the heart, and the nervous system. Lyme disease is diagnosed based on symptoms, physical findings (e.g., rash), and the possibility of exposure to infected ticks. Laboratory testing is helpful if used correctly and performed with validated methods, however isolated Lymes that have disseminated through the central nervous system may avoid detection. Most cases of Lyme disease can be treated successfully with a few weeks of taking doxycycline, not indicated for children or pregnant women, for whom Clindamycin may work. Steps to prevent Lyme disease include using insect repellent, removing ticks promptly, applying pesticides, and reducing tick habitat. The ticks that transmit Lyme disease can occasionally transmit other tickborne diseases as well. Serious Lyme disease infections are often fatal. Lyme is thought to clog the neuromuscular junction and may cause many

debilitating neurological idiopathic conditions. Doxycycline has been curative of many such disorders, such as Multiple Sclerosis (MS).

1. *Borrelia recurrentis* is another diseases born by ticks that causes relapsing fever. Colorado Tick Fever (CTF), also known as Rocky Mountain Spotted Fever, usually occurs 3-7 days after a *Dermacentor andersoni* tick bite, although the incubation period can be as long as 20 days. The initial symptoms of the disease often include fever, chills, headache, muscular and skeletal pain, and malaise. The pain can be crippling. Other symptoms may include nausea, vomiting, stomach pain, light sensitivity and sore throat. FY 22 NIH has reports a red meat allergy. About half of all patients experience a two-staged fever characterized by 2 to 3 days of acute fever followed by a brief remission of the fever, followed by a second acute fever. Similar other fevers, ie. *Streptococcus pyogenes*, in modern day manifest as angina, chest pain that can shift from hip to heart and merge with gastrointestinal MRSA infection from spoiled food and contaminated water. A petechial (spotted) rash occurs in 5-12% of CTF cases. In rare cases, patients experience illnesses of the central nervous system (CNS) ranging from mild to encephalitis with coma and death. One can only treat the symptoms.

D. Pediculosis, lice infestation, affects persons of all ages but usually those in the lower-income strata, because of lack of cleanliness and infrequent changes of clothing. There are between 6 and 12 million cases of head lice in the United States every year. Head lice are highly contagious and if one person in a family becomes infected, everyone in the household must be treated. Lice are the insects, nits are the eggs. It is also seen as a sexually transmitted disease. Three clinical entities are produced (1) infestation of the hair by the head louse *Pediculus humanus capitis*, (2) infestation of the body by *P. humanus corporis* and (3) infestation of the pubic area by the pubic louse *Phthirus pubis*. Since lice bite the skin and live on the blood, it is impossible for them to live without human contact. The readily visible oval eggs or nits are attached to hairs or to clothing fibers by the female. After the eggs hatch, the newly born lice mature within 30 days. Then the female can live for another 30 days and deposit a few eggs daily. The bite is not unusual but is seldom seen because of the secondary changes produced by the resulting intense itching. In the scalp and pubic form the nits are found on the hairs, but the lice are found only occasionally. In the body form the nits and the lice can be found after careful searching in the seams of the clothing. Pediculosis must be differentiated from bacterial infection seborrheic dermatitis or dandruff, hair casts resembling nits, scabies, senile or winter itch, or pyoderma. Treatment for pediculosis capitis and pubis is lindane shampoo (Kwell or Scabene) 60.0 shampoo and comb hair thoroughly, leave on the hair for 4 minutes. Shampoo again in 3 days. For secondary scalp infections trim hair as much as possible, shampoo once a day with an antiseborrhea-type shampoo. Neosporin or other antibiotic ointment. Change and clean bedding and headwear after 24 hours of treatment. Storage of headwear for 30 days will destroy the lice and the nits. Pediculosis corporis is treated with phenol (0.5%) in calamine lotion 120.0 applied locally for itching. Have the clothing laundered or dry cleaned. It this is impossible, dusting with 10 lindane powder will kill the parasites. Care should be taken to prevent re-infestation. Storage of clothing for 30 days will kill both nits and lice.

1. Scabies is a parasitic infestation usually more prevalent in a populace ravaged by war, famine or disease, when personal hygiene become relatively unimportant. In normal times scabies is rarely seen except in schoolchildren or in poorer populations under crowded conditions. A burrow caused by the female of the mite *Sarcoptes scabiei* measures approximately 2 mm in length and can be hidden by the secondary eruption. Small vesicles may overlie the burrow. Excoriations of the burrows may be the only visible pathology. In severe, chronic cases bacterial infection may be extensive and may take the form of impetigo cellulitis and furuncolosis. Itching is intense, particularly at night, when the patient is warm and in bed and the mite is more active. However, many skin diseases itch worse at night. The mite can persist for months and years (seven-year itch) in untreated, unclean individuals. The female scabies mite, ova and fecal pellets may seen in curetted burrows examined under the low-power magnification of the microscope. Potassium hydroxide (20% solution) can be used to clear the tissue, as with fungus smears. Another method of collection is to scrape the burrow through immersion oil and then transfer the scraping to the microscopic slide. Skill is necessary to uncover the mite by curetting or scraping. Differentiate from pyoderma, pediculosis pubic, winter itch, dermatitis herpetiformis, neurotic excoriations, and parasitophobia. Apply lindane lotion (Kwell or Scabene) to the entire body from the neck down. Old clothes may be reworn. Do not bathe for 12 to 24 hours after application. After 24 hours bathe carefully and change to clean clothes and bedding. Itching may persist for a few days or even for 2 to 3 weeks in spite of the destruction of the mite. For itching apply sulfur (4%), camphor (1%) in Alcoholic white shake lotion or Eurax cream that has scabicidal power and antipruritic action. Contaminated fabrics have been reported to be sterilized when cleaned with an Eucalyptus essential oil solution.

E. Mosquitoes are frequent disease vectors. Aside from malaria, Yellow fever, dengue, Zika and several varieties of hemorrhagic fever are transmitted by mosquitoes. An often mild or unapparent disease caused by a Flavivirus (an arbovirus genus) Zika fever is common in Africa and Asia and half of native Africans in some regions have tested positive for antibodies. Zika and dengue patients present with extremely bloodshot eyes. Zika infection in pregnant women causes hydrocephaly. Zika is usually transmitted by mosquitoes but can also be transmitted by blood and semen tests positive for months. A closely related virus causes Spondweni fever, named after the South African district. The precise circle of infection for Zika and Spondweni is unknown but may involve livestock, which have also been found to carry antibodies. Marburg and Ebola are two exotic filoviruses from tropical Africa with high fatality rates, 25 percent for Marburg and up to 90 percent for Ebola. An outbreak of ebola virus in Western Africa was cured by the development of Zmapp a drug that is cloned in tobacco plants.

1. Yellow fever was the American plague. The virus is transmitted by certain female Aedes mosquitoes, which were not native to the Americas. *A. aegypti*, the classic carrier, likes to lay its eggs in containers of clean water, so it thrives around human settlements, especially in humid climates, with an average temperature above 72°F. The classic symptoms were yellow skin and black vomit. Individuals had a fifty-fifty chance of survival. African slaves were known to be relatively immune to yellow fever, malaria, and other diseases that ravaged Europeans and native Americans. A vaccine was

developed in 1937 and given on a mass basis in 1939 Yellow Fever vaccine (VF-VAX, Sanofi-Pasteur) Today, yellow fever occurs mostly in underdeveloped, rural areas where control measures and/or immunization are lax. Mortality can be as high as 10 percent in large outbreaks, though the disease is often mild enough to escape detection.

2. There are more than 520 known Arboviruses, of which about a hundred cause disease in humans, usually with no apparent symptoms e.g. Encephalitis, yellow fever, dengue fever and many exotic tropical fever malaises. Epidemics are unlikely wherever the associated insects are kept under control. Besides the Yellow Fever vaccine (VF-VAX, Sanofi-Pasteur) there is no prescribed medical treatment, although Ribavirin (Virazole) has been suggested. Encephalitis is an inflammation of the brain often caused by arboviruses carried by arthropods, such as mosquitoes, particularly the northern house mosquito (*Culex pipiens*) and ticks. The symptoms of West Nile Virus, St. Louis encephalitis and LaCrosse encephalitis are similar. Some persons may have mild symptoms, such as a fever and headache. Severe infection may produce a rapid onset of severe headache, high fever, muscle aches, stiffness in the back of the neck, problems with muscle coordination, disorientation, convulsions and coma, fatalities rarely occur. Symptoms usually occur five to 15 days after the bite of an infected mosquito. Infection with an arbovirus provides immunity to that specific virus, but not to other arboviruses. Arenaviruses were first identified in 1933 during an encephalitis outbreak in St. Louis, Missouri. Some of the viruses cause meningitis and various hemorrhagic fevers when humans come into contact with infected excreta. Patients are attended by doctors in biohazard moon suit.

3. Today dengue occurs in the US only when brought by travelers from areas where it is endemic, like the Caribbean, Central and South America, Africa and Southeast Asia. Dengue fever is caused by an arbovirus transmitted mainly by bites of *Aedes aegypti* mosquitoes (which also carry yellow fever and viral encephalitis). American *A. aegypti*, firmly established in Texas and Florida, are not generally dangerous. An epidemic of more than a million cases occurred in the US in 1922 but the last endemic outbreak of dengue fever happened in 1986 in south Texas. Only a dozen or so confirmed cases appear every year in the US, local outbreaks usually occur when it is brought from abroad. Dengue is known for bringing on a sudden 104°F temperature, nausea, vomiting, horrendous headache, a rash that appears after a twenty-four hour pause in the fever, and long convalescence, but it is not deadly. Most cases are mild, treated with fluids and bed rest. There is a far more serious form of the disease, called dengue hemorrhagic fever, whose incidence has been increasing since first reported from Thailand and the Philippines in the mid-1950s. Another Aedes mosquito, *A. albiopictus*, the "Asian tiger" can also transport the dengue microbe. Though aggressive tiger has not yet been found to carry dengue in the US, another dangerous arbovirus, eastern equine encephalitis, has been found on *A. albiopictus* around a tire dump in Florida .

4. Malaria is an infection of the blood by a minute *Anopheles* mosquito borne plasmodium parasite. The parasites multiply rapidly and destroy red cells. Victims normally suffer severe fevers, chills, flu-like illness general malaise, and sometimes death, depending upon the age and general health of the victim and the particular species

of plasmodium parasites. Malaria parasites are micro-organisms that belong to the genus *Plasmodium*. There are more than 100 species of *Plasmodium*, which can infect many animal species such as reptiles, birds, and various mammals. Four species of *Plasmodium* have long been recognized to infect humans in nature. *P. falciparum*, which is found worldwide in tropical and subtropical areas, and especially in Africa where this species predominates. *P. falciparum* can cause severe malaria because it multiples rapidly in the blood, and can thus cause severe blood loss (anemia). In addition, the infected parasites can clog small blood vessels. When this occurs in the brain, cerebral malaria results, a complication that can be fatal. *P. vivax*, which is found mostly in Asia, Latin America, and in some parts of Africa. Because of the population densities especially in Asia it is probably the most prevalent human malaria parasite. *P. vivax* as well as *P. ovale*) has dormant liver stages ("hypnozoites") that can activate and invade the blood ("relapse") several months or years after the infecting mosquito bite. *P. ovale* is found mostly in Africa (especially West Africa) and the islands of the western Pacific. It is biologically and morphologically very similar to *P. vivax*. However, differently from *P. vivax*, it can infect individuals who are negative for the Duffy blood group, which is the case for many residents of sub-Saharan Africa. This explains the greater prevalence of *P. ovale* (rather than *P. vivax*) in most of Africa. *P. malariae*, found worldwide, is the only human malaria parasite species that has a quartan cycle (three-day cycle). (The three other species have a tertian, two-day cycle.) If untreated, *P. malariae* causes a long-lasting, chronic infection that in some cases can last a lifetime. In some chronically infected patients *P. malariae* can cause serious complications such as the nephrotic syndrome. *P. knowlesi* is found throughout Southeast Asia as a natural pathogen of long-tailed and pig-tailed macaques. It has recently been shown to be a significant cause of zoonotic malaria in that region, particularly in Malaysia. *P. knowlesi* has a 24-hour replication cycle and so can rapidly progress from an uncomplicated to a severe infection; fatal cases have been reported.

5. Patients who have severe *P. falciparum* malaria or who cannot take oral medications should be given the treatment by continuous intravenous infusion. Most drugs used in treatment are active against the parasite forms in the blood (the form that causes disease) and include: chloroquine, atovaquone-proguanil (Malarone®), artemether-lumefantrine (Coartem®), mefloquine (Lariam®), quinine, quinidine, doxycycline (used in combination with quinine), clindamycin (used in combination with quinine), artesunate (not licensed for use in the United States, but available through the CDC malaria hotline). In addition, primaquine is active against the dormant parasite liver forms called hypnozoites and prevents relapses. Primaquine should not be taken by pregnant women or by people who are deficient in G6PD (glucose-6-phosphate dehydrogenase). Patients should not take primaquine until a screening test has excluded G6PD deficiency.

6. Left untreated, malaria patients may develop severe complications and die. In 2016 an estimated 216 million cases of malaria occurred worldwide and 445,000 people died, mostly children in the African Region. About 1,700 cases of malaria are diagnosed in the United States each year. Malaria remains a principal cause of death for nearly 20% of all children under the age of five years in Africa. The mortality rate in eastern and southern Africa almost doubled over the period 1990-1998 compared with 1982-1989 possibly as a

result of increasing resistance of plasmodia to chloroquine. In malaria-endemic countries, 25% to 40% of all outpatient visits and 20% to 50% of hospital admissions were for malaria. Only 2% of children under five years of age slept under insecticide-treated mosquito nets; the proportion for untreated nets was 13%. On average, 42% of children under five years of age with fever were treated with an antimalarial agent, but in many cases this was chloroquine whose efficacy is declining.

F. Three categories of worm infestation are recognized (1) nematodes (roundworms), (2) cestodes (tapeworms) and (3) trematodes (flukes). Nematode infestations by hookworm (*Ancylostoma duodenale* and *Necator americanus*) are estimated to affect up to one quarter of the world's population, and is found in tropical and subtropical regions. Eggs pass out with the stools and, under suitable conditions, hatch into larvae which may penetrate the skin. The larvae are carried in the circulation to the lungs and, after penetration of the alveolar wall, make their way to the small intestine via the trachea, and swallowed sputum. Clinical manifestations include an itch at the site of penetration, transient chest symptoms with radiological opacities, and eosinophilia during the stage of migration. Abdominal discomfort and diarrhea occur during the phase of worm attachment, and ultimately iron deficiency anaemia develops due to blood loss. The diagnosis is established by finding eggs in the stool. Heavy infestations require treatment with mebendazole and ferrous sulphate. Infestation with Roundworm, (*Ascaris lumbricoides*) is extremely common throughout the tropics and subtropics. These are larger white worms, males being about 15 cm long and females over 20 cm. Consequently a major infestation can be a serious matter, with the lumen of the small bowel being occupied by a mass of worms, causing some degree of obstruction and malnutrition: they may also migrate into the biliary tree. Infection occurs in poor hygienic conditions from ingestion of ova form the stools of a patient. These ova can survive for a long time, even in dust, so acquisition of infection, especially in children is easy. When the ova are swallowed they develop in the small bowel into larvae, which burrow through the intestinal wall and are carried in the portal blood to the liver and on into the lungs. Cough, dyspnea and eosinophilia may occur at this stage. The larvae migrate though the alveolar wall, up the bronchial tree to reach the pharynx and are swallowed with food and saliva. In the small bowel they develop into adult worms: fertilized eggs form the females pass in the stools and are ready to repeat the cycle in another individual. Piperazine is the treatment of choice. Threadworm (*Enterobiasis vermicularis*), otherwise known as pinworms, are extremely common world-wide. These are very small white highly motile worms, about 1 cm long, which can quite often be seen in rectosigmoid at sigmoidoscopy, wriggling over the mucosal surface. The females migrate out onto the perianal skin, where they deposit their ova, and this migration sets up considerable irritation. Patients tend to scratch, contaminate their fingers with ova and readily re-infect themselves. Cross infection through use of family linen and towels can easily occur. Piperazine compounds are non-toxic and effective and often the opportunity is taken to treat the whole family. Whipworm (*Trichuris trichiuria*) infestation is very common in tropical countries. Larvae from swallowd eggs attach to the mucosa of the distal small bowel, wher ehtye mature into adult worms, 3-5 cm long. Light infestations are asymptomatic, but heavy infestations may cause diarrhea with bleeding. Diagnosis is confirmed by finding eggs in the stool and mebendazole is the

treatment of choice. Toxocariasis (*Toxocara anis*) is commonly found in the intestines of dogs, and children are particularly likely to ingest ova. Larvae are liberated in the stomach and may migrate through the body, producing allergic reactions. Granulomata may develop around dead larvae, especially in the eye and the liver. Treatment is unsatisfactory, but prevention by the regular worming of pet animals and careful hygiene is very effective.

1. Many parasites gain access to the body through the intestinal tract. A number with primarily non-intestinal clinical features may sometimes produce alimentary symptoms, including malabsoprtion, including strongyloidiasis, capillariasis and trichinosis. Cestodes (tapeworms) are widely distributed especially in tropical and subtropical countries. Infection is acquired by the patient eating the encysted larva (cysticercus) in the undercooked flesh of beef (*Taenia saginata*) or pork (*T. solium*). In the case of *T. saginata*, the cysticercus is ingested and liberated in the upper small bowel and the head of the worm attaches itself to the mucosa; the adult develops by proliferating thousands of segments, and an measure up to 12 meters. There are few symptoms and the patients usually only realize they have a worm infestation when segments are seen in the faces. If the ova in the faeces are ingested by the intermediate host – beef cattle – the embryo is liberated, enters the bloodstream and settles in the animal's tissues and becomes a cysticercus. If eaten, undercooked, by man this completes the cycle of development. The life cycle of *T. solium* has one important difference. Whereas the larval cysticercoid stage usually occurs in the flesh of the pig, it can also occur in the tissues of the sufferer because, if man y swallows the eggs of a gravid segment of a worm (either his own by the fecal –oral route, or by the liberation of many eggs within the intestine, or from another worm) the larvae liberated from these eggs in the small bowel can penetrate the bowel wall and circulate to encyst in the tissues. When the cysticerci settle in connective tissue or voluntary muscle they gradually calcify and can be seen on plain radiographs. However, in the other site of lodgment, the central nervous system, the cisticerci tend to swell as they age and can give rise to pressure effects, e.g. epileptic fits. The prognosis of this complication is severe. Infection with the fish tapeworm, *Diphyllobothrium latum*, may cause a macrocytic anaemia due to vitamin B_{12} deficiency. The smallest tapeworm of importance is *Echinococcus granulosus*, for which man is one of the intermediate hosts as a carrier of hydatid cysts.

2. Trematode infestations include schistosomiasis (blood flukes), clonorchiasis (liver flukes) and paragonimiasis (lung flukes). There are estimated to be 200 million sufferers of schistosomiasis, which is found in parts of Africa, South America and the Far East. The three main species are *S. haematobium*, *S. mansoni*, and *S. japonicum*. Infeciton is acquired when the skin is penetrated by cercarieae, or by drinking water contaminated with cercariae. These lose their tails and migrate to the liver, where they develop over three months in the portal venous system into adult worms. The worms then migrate to their final habitat: *S. haematobium* to the bladder and uterine plexus; *S. mansoni* to the tributaries of the inferior mesenteric veins; and S. japonicum to the superior and inferior mesenteric veins. Numerous eggs are laid, and some reach the exterior via the urine (*S. haemoatobium*) or stool (*S. mansoni* and *S. japonica*), and hatch in water to liberate miracidia. These penetrate the intermediate host, a snail, in which cercariae develop.

Many eggs remain in the tissues and provoke a fibrotic reaction in the bladder or intestinal wall and some are swept up the portal vein and provoke periportal hepatic fibrosis. The consequent presinusoidal hypertension results in portal systemic shunting, which is how some eggs are carried into the lungs and other organs. Three clinical phases are recognized. Pruritis at the site of penetration may be followed by a systemic illness, with fever and eosinophilia, which corresponds to the onset of egg-laying and finally chronic schistosomiasis ensues, in which symptoms relate to egg deposition in different organs. Diagnosis depends on the identification of eggs in the stool or terminal urine. Mucosal biopsy at sigmoidoscopy (or cystoscopy) is a more reliable diagnostic technique. Treatment with niridazole is appropriate for urinary and uncomplicated intestinal disease, but sever neurophsychiatric reactions preclude its use in the presence of portal hypertension or hypoalbuminaemia. Under these circumstances there is a choice of praziquantel (active against all species) or oxamniquine, which is the treatment of choice for *S. mansoni* infection.

3. Hydatid disease is caused by the adult worm of *Echinococcus granulosus* that lives in the small intestine of the definitive host. Eggs are passed in the feces and are eaten by the intermediate hosts – sheep and cattle. Hydatid cysts (which are the larval state) develop in the tissues of these herbivores and, if that flesh is eaten by a dog, the cycle is completed with the development of further worms, which will pass ova in the canine feces. When ova from canine faeces reach the small bowel the embryo is liberated, gains access to the bloodstream, and may lodge in liver, lung, brain or other tissues. Each cyst grows slowly, having an inner germinal layer secreted by the cyst with a fibrous capsule developed from the tissues of the host: new cysts develop within the germinal layer. As the cyst grows it causes swelling and pain, but liver function is usually normal. An x-ray may show calcification of the capsule. The Casoni test is sensitive but not very specific and the diagnosis is confirmed by specific complement fixation tests. Careful surgical removal of the cyst may be required to relieve pressure effects, but great care must be exercised because any accidental spillage of cyst fluid into the tissues may cause a fatal anaphylactic reaction and there is also risk of spread of daughter cysts. Specific treatment with mebendazole may prove valuable and diminish the risks of surgery.

§360 Tropical Diseases

A. Tropical diseases encompass all diseases that occur solely, or principally, in the tropics. In practice, the term is often taken to refer to infectious diseases that thrive in hot, humid conditions, such as malaria, leishmaniasis, rabies, schistosomiasis, onchocerciasis, lymphatic filariasis, Chagas disease, African trypanosomiasis, and dengue. Tuberculosis (TB) is not exclusively a tropical disease but similar to most tropical diseases, thanks to advances in medical science, has been nearly completely eliminated in industrialized nations and affects nearly exclusively people in middle and low income countries. The two major killers of people infected with HIV/AIDS in Sub-Saharan Africa are Tubercolisis (TB) and Malaria. United States immigration law requires immigrant visa applicants to obtain certain vaccinations prior to the issuance of an immigrant visa. Panel physicians who conduct medical examinations of immigrant visa applicants are required to verify that immigrant visa applicants have met the vaccination requirements, or that it

is medically inappropriate for the visa applicant to receive one or more of the listed vaccinations: -- Acellular pertussis, Hepatitis A, Hepatitis B, Human papillomavirus (HPV), Influenza, Influenza type b (Hib), Measles, Meningococcal, Mumps, Pneumococcal, Pertussis, Polio, Rotovirus, Tetanus and diphtheria toxoids, Varicella, and Zoster.

1. When traveling to foreign countries it is important to be up to date with vaccinations for diseases that exist there but are not prevalent enough in the United States to justify routine vaccination. CDC divides vaccines for travel into three categories: routine, recommended, and required. Routine vaccinations are necessary for protection from diseases that are still common in many parts of the world even though they rarely occur in the United States as the result of complete coverage of the population with effective vaccines. The only vaccine required by International Health Regulations is yellow fever vaccination for travel to certain countries in sub-Saharan Africa and tropical South America. Meningococcal vaccination is required by the government of Saudi Arabia for annual travel during the Hajj. Recommended vaccinations protect travelers from illnesses present in other parts of the world and to prevent the importation of infectious diseases across international borders. The Centers for Disease Control prepares recommendations for Traveler's Health in a List of Destinations.

B. Tuberculosis (TB) kills about two million people each year, making it one of the world's leading infectious causes of death among young people and adults. One-third of the world's population is infected with TB. Five to 10 percent of people who are infected with TB become sick with active TB at some time during their life. Each year, more than 8 million people become sick with TB. Pulmonary tuberculosis (TB) is a contagious bacterial infection that mainly involves the lungs, but may spread to other organs. Pulmonary tuberculosis is caused by the bacteria *Mycobacterium tuberculosis* and can be transmitted by breathing in air droplets from a cough or sneeze of an infected person. People most at risk are infants, elderly, people with compromised immune systems (ie. AIDS) and who live in crowded unsanitary conditions with other people who have TB. TB infection can be prevented, treated and contained. The World Health Organization recommends a strategy for detection and cure called DOTS. DOTS combines five elements: political commitment, microscopy services, drug supplies, surveillance and monitoring systems, and use of highly efficacious regimes with direct observation of treatment. Drugs for DOTS can cost only US $10 per person for the full treatment course (six to eight months). DOTS is successful and has a success rate of up to 80% in the poorest countries, prevents new infections by curing infectious patients. It has been estimated that the gap is U$300 million a year to address the TB epidemic in low and middle-income countries. The purified protein derivative (PPD) intradermal tuberculin (Mantoux) skin test is regarded as a valuable tool to diagnose tuberculosis and to exclude the disease. In 1989 ten drugs were used for the treatment of tuberculosis in the United States. The four most important drugs in contemporary chemotherapy are isoniazid (INH), rifampin, pyrazinamide, and ethambutol. Multiple studies confirm that 6 to 9 month short course of multiple drug chemotherapy may be regarded as adequate curative chemotherapy in virtually every patient with drug-susceptible tuberculosis. For nine months of chemotherapy, the combination of INH and rifampin will result in roughly

95% cure rates. Therapy with INH, rifampin and ethambutol is recommended to avoid the complication of drug resistance. The addition of pyrazinamide to INH and rifampin accelerates the rate of resolution of the disease, allowing reduction of therapy to 6 months' duration. However, side-effects and toxic reactions increase modestly with the addition of pyrazinamide. Side effects from antituberculosis medications are uncommon and usually minor. INH produces disturbances in the liver function of 10% to 20% of patients. Serious hepatitis requiring termination of INH occurs in 1% to 3% of patients. In patients with marginal nutritional status, caution may lead one to include 30 mg of pyridoxine (vitamin B_6) per day. The outlook is excellent if pulmonary TB is diagnosed early and treatment is begun quickly. Symptoms may improve in 2 - 3 weeks. Treatment usually lasts for 6 months and may require quarantine in a hospital until after the threat of contagion has eased.

2. Due to a combination of economic decline, the breakdown of health systems, insufficient application of TB control measures, the spread of HIV/AIDS and the emergence of multidrug-resistant TB (MDR-TB), TB is on the rise in many developing and transitional economies. Between 2000 and 2020, it is estimated that: Nearly one billion people will be newly infected with TB, 200 million people will become sick from TB and TB will claim at least 35 million lives. Worldwide TB is a leading cause of death among women of reproductive age and is estimated to cause more deaths among this group than all causes of maternal mortality. Women are less likely than men to be tested and treated for TB, and are also less likely to develop an infection. Over 250,000 children die every year of TB. Children are particularly vulnerable to TB infection because of frequent household contact. The Global TB Database reveals low- and lower-middle-income countries (those with an annual GNP per capita of less than US$2,995) account for more than 90% of TB cases and deaths. The regions most affected by TB include: Southeast Asia: With an estimated three million new cases of TB each year, this is the world's hardest-hit region. Eastern Europe: In Eastern Europe, TB deaths are increasing after almost 40 years of steady decline. Sub-Saharan Africa: More than 1.5 million TB cases occur in Sub-Saharan Africa each year. This number is rising rapidly, largely due to high prevalence of HIV. Poverty, a lack of basic health services, poor nutrition, and inadequate living conditions all contribute to the spread of TB. In turn, illness and death from TB reinforces and deepens poverty in many communities. The average TB patient loses three to four months of work time as a result of TB. Lost earnings can total up to 30% of annual household income. Some families lose 100% of their income. TB is estimated to deplete the incomes of the world's poorest communities by a total of US$12 billion. More than 75% of TB-related disease and death occurs among people between the ages of 15 to 54 - the most economically active segment of the population. TB and HIV/AIDS HIV/AIDS and TB form a lethal combination, each speeding the other's progress. HIV promotes rapid progression of primary TB infection to active disease and is the most powerful known risk factor for reactivation of latent TB infection to active disease. TB is a leading killer of people living with HIV/AIDS. One-third of people infected with HIV will develop TB.

3. Non-tuberculous mycobacteria (NTM), unlike *M. tuberculosis* (TB) are found in the environment. Today there are probably more cases of NTM than TB. During 1981 to

1983 the prevalence of NTM in the United States was 1.78 cases per 100,000. The most common pathogens were *Mycobacterium avium complex* (MAC) (1.3 cases), *Mycobacterium kansasii* (0.29 cases) and *Mycoacterium fortuitum-chelonae* (0.19 cases). The great preponderance of NTM cases were pulmonary. Unlike TB reports of NTM are not mandatory. Unlike M. tuberculosis, for which the only significant reservoir is infected humans, the NTM are widely distributed in nature. MAC is found in dust, soil, water and a variety of animals and fowl and the mode of transmission to pulmonary patients is by inhalation of organisms for the ambient air. MAC causes hot tub lung disease in indoor spas because the mycobacteria is killed by sunlight. Near the ocean these organisms may enter the air via aerosols generated by water breaking on the beaches. Among AIDS patients with disseminated MAC disease, the portal of entry tends to be waterborne organisms in the alimentary canal. Surveys have not discovered natural reservoirs of *M. kansasii* and it is presumed to survive on human to human transmission particularly in younger people. *M. fortuitum* and *M. chelonae* are not only found in the environment but also have produced nosocomial disease associated with contamination of medical and surgical equipment due to airborne infection or aspirated with esophageal contents in intubated patients. The clinical picture of pulmonary disease due to NT is essentially indistinguishable from that of *M. tuberculosis*. The critical question is whether an NTM is an invasive pathogen or merely a saprophyte. Clinicians estimate that 25% of isolates of *M. kansassi* represent colonization and that over 50% of MAC isolates reflect such colonization. NTM are considerably more resistant to drugs than *M. tuberculosis.* For the usual case of pulmonary disease from M. avium complex, an initial regime of isoniazid (INH), rifampin (RIF), and ethambutol (EMB) supplemented by an initial two months of streptomycin (SM) is the standard regimen. For the usual case of pulmonary disease from *M. avium complex*, an initial regime of isoniazid (INH), rifampin (RIF), and ethambutol (EMB) supplemented by an initial two months of streptomycin (SM) is the standard regimen.

4. Leprosy or Hansen's disease is to be considered in the differential diagnosis of any skin granulomas. It is endemic in the southern part of the United States and in semitropical and tropical areas the world over. Two definite types of leprosy are recognized: lepromatous and tuberculoid. Lepromatous leprosy is the malignant form, which represents minimal resistance to the disease, with a negative lepromin reaction, characteristic histology, infiltrated cutaneous lesions with ill-defined borders, and progression to death from tuberculosis and secondary amyloidosis. Tuberculoid leprosy is generally benign in its course because of considerable resistance to the disease on the part of the host. This is manifested by a positive lepromin test, histology that is not diagnostic, cutaneous lesions that are frequently erythematous with elevated borders, and minimal effect of the disease on the general health. Early lesions of the lepromatous type include reddish macules with an indefinite border, nasal obstruction, and nosebleeds. Erythema nodosum-like lesions occur commonly. The tuberculoid type of leprosy is diagnosed early by the presence of an area of skin with impaired sensation, polyneuritis, and skin lesions with a sharp border and central atrophy. The causative organisms is *Mycobacterium leprae*. Mycobacteria are pathogenic and saprophytic. *Mycobacterium marinum* can cause the swimming pool granuloma and also granulomas in fishermen and those involved with fish tanks. The source of infection is thought to be from patients

with the lepromatous form. Infectiousness is of a low order. The bacilli are usually uncovered in the lepromatous type but seldom in the tuberculoid type. The lepromin reaction, a delayed reaction test similar to the tuberculin test, is of value in differentiating the lepromatous form for the tuberculoid form of leprosy. False-positive reactions, including tests for syphilis, can occur. Dapsone (diaminodiphenyl sulfone, DDS), rifampin, and isoniazid are all quite effective.

C. Malaria is an infection of the blood by a minute *Anopheles* mosquito borne plasmodium parasite. The parasites multiply rapidly and destroy red cells. Victims normally suffer severe fevers, chills, flu-like illness general malaise, and sometimes death, depending upon the age and general health of the victim and the particular species of plasmodium parasites. Malaria parasites are micro-organisms that belong to the genus *Plasmodium*. There are more than 100 species of *Plasmodium*, which can infect many animal species such as reptiles, birds, and various mammals. Four species of *Plasmodium* have long been recognized to infect humans in nature. *P. falciparum*, which is found worldwide in tropical and subtropical areas, and especially in Africa where this species predominates. *P. falciparum* can cause severe malaria because it multiples rapidly in the blood, and can thus cause severe blood loss (anemia). In addition, the infected parasites can clog small blood vessels. When this occurs in the brain, cerebral malaria results, a complication that can be fatal. *P. vivax*, which is found mostly in Asia, Latin America, and in some parts of Africa. Because of the population densities especially in Asia it is probably the most prevalent human malaria parasite. *P. vivax* as well as *P. ovale*) has dormant liver stages ("hypnozoites") that can activate and invade the blood ("relapse") several months or years after the infecting mosquito bite. *P. ovale* is found mostly in Africa (especially West Africa) and the islands of the western Pacific. It is biologically and morphologically very similar to *P. vivax*. However, differently from *P. vivax*, it can infect individuals who are negative for the Duffy blood group, which is the case for many residents of sub-Saharan Africa. This explains the greater prevalence of *P. ovale* (rather than *P. vivax*) in most of Africa. *P. malariae*, found worldwide, is the only human malaria parasite species that has a quartan cycle (three-day cycle). (The three other species have a tertian, two-day cycle.) If untreated, *P. malariae* causes a long-lasting, chronic infection that in some cases can last a lifetime. In some chronically infected patients *P. malariae* can cause serious complications such as the nephrotic syndrome. *P. knowlesi* is found throughout Southeast Asia as a natural pathogen of long-tailed and pig-tailed macaques. It has recently been shown to be a significant cause of zoonotic malaria in that region, particularly in Malaysia. *P. knowlesi* has a 24-hour replication cycle and so can rapidly progress from an uncomplicated to a severe infection; fatal cases have been reported.

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§360a Climate Change

A. The UN Framework Convention on Climate Change (UNFCC) was signed June 3 to 14, 1992. Since 2000 the growth rate of the world's CO_2 emissions almost trebled to 3 per cent a year and President Bush. refused to sign Kyoto Protocol of 16 February 2005. Emission growth was slowed by the recession that arrived in late 2008, and in some countries reversed, growth in annual carbon emissions, but the volume of greenhouse gases in the atmosphere continues to rise. The Trump administration broke the Paris Agreement regarding rich country emission cuts of 25-40% below 1990 levels by 2020, for the world goal of 450 ppm, reaffirmed by the Biden Administration in 2021 to benefit minorities. Severe prolonged drought is currently affecting California and 17 East African nations, which the United Nations has recently warned that 14 million people are at risk of starvation across the region as it continues to face widespread water shortages as well as reduced crop and livestock production. International economic cooperation to redress a pronounced global warming trend, over the past half century, might be more effective, and less disaster-prone, if the global warming threat, cause and effect of drought and hurricane intensification, were described as arson with the special maritime and territorial jurisdiction under 18USC§81.

1. There is no more certain predictor of triple digit heat than forest fires, the propensity for which is increased by drought, long history of ignorant fire suppression by people who work in the fo-rest, and organized arson of the National Forest by National Park law enforcement aggravated identity theft conspiracy with the FBI. An acre of National Forest is 65 times more likely to burn than an acre of National Park. Sea surface temperature (SST) and Anomaly is one of the most important indicators of climate variability and long-term climate change. The Australian Bureau of Meteorology publishes and the National Oceanic and Atmospheric Administration (NOAA) both

publish current SST anomaly maps. Since California Gov. Newsom began to regularly extinguish self-combusting styrene railcars in the Arctic Ocean and bring them to a refinery for conversion to a more stable hydrocarbon in order to relieve the drought and profit from finder keepers, long ignored NOAA has ceased to provide a recent record and keep track of Arctic ocean waters. Styrene UN2055 and other chemicals that can undergo self-polymerization releasing heat are: Hydrogen cyanide, UN1051, Vinyl acetate, UN1301, Furural or furfuraldehydes, UN1199, Propyleneimine, UN1921, and Ethyleneimine, UN1185, Ethylene oxide, UN1040, and Butadienes, UN1010. Any hydrocarbon can of course be used to create an industrial oceanic heating system, but railcar heating pumps, were determined to be fueled by Styrene polymer, and remotely ignited for Hurricane Katrina, that struck the Gulf Coast August 29, 2005, incidental to a military investigation of legislation similar to the State Department Strategic Climate Fund FY 18. The heat pumps were quickly extinguished and removed by magnet and cable by a Dutch warship. The NOAA SST Anomaly map does not clearly indicate their use in the Gulf at around the time of August 29, 2005.

2. Oceanic hydrocarbon heating pumps need to be detected by the Coast Guard, extinguished and removed by magnet and cable to an oil tanker or warship. Styrene has a flash point of 31 °C (88 °F) and an autoignition temperature of 490 °C (914 °F). Suitable extinguishing media are dry chemical carbon dioxide (CO2) and alcohol-resistant foam. High volume water jet is not sustainable extinguishing media. Do not allow run-off from fire fighting to enter drains or water courses. Styrene has a boiling point of 145 degrees Celsius and exists as a liquid under standard conditions. The vapor pressure is small at 5 hPa = 5 mbar at standard conditions. The flash point is at 31 degrees Celsius and a mixture with air is ignitable within 1 to 9 Vol %. The increase in pressure due to heat generated within the tank can be attributed to polymerization of the styrene monomer within the tank. Normally, a chemical inhibitor such as 15 parts per million of 4-tertiary-butyl-catechol (TBC) is added to the tank during transport to prevent polymerization, but this lasts only three months and tankers can idle longer. This inhibitor scavenges rust and other impurities within the tank that can act to initiate polymerization. Oxygen (about 10 ppm) is also required to be dissolved in the styrene monomer for the TBC to do its job. The TBC concentration decreases with time as it scavenges impurities; 15 ppm concentration would probably be mostly used up in possibly 3 months (even less time if ambient temperatures are warmer).

3. The most reliable method of cooling the ocean for hurricane prevention, rainmaking, or to ameliorate the effects of hostile oceanic warming, has involved converting hydrocarbon heating pumps to A.S. Trust & Holdings blend of pure hydrocarbon refrigerant, that was designated R441A by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) in 2011. R441A has been certified by independent testing laboratory Intertek (an) as having a very low Global Warming Potential (GWP) as well as a zero Ozone Depletion Potential (ODP). HCR188C/R441A was one of the first hydrocarbon refrigerants to be approved for sale by the U.S. Environmental Protection Agency under the Significant New Alternative Policy (SNAP) program for use in household refrigerators and freezers. The European response to global warming and the frequent presence of heating pumps off the US

Atlantic seaboard, between the Potomac River and New York City is a regular and sometimes abusive array of cooling pump in the Arctic, the Biden Administration will need to negotiate with, or around. Short of outlawing heating pumps, and ensuring cooling pumps are only used mitigate hurricanes and oceanic warming, the plan seems to be to turn off the heating pumps in the Atlantic in the spring, summer and fall and ensure minorities have adequate low-income energy assistance and travel benefits to migrate south during significantly colder natural winters. Heating pumps in the Arctic Ocean are totally outlawed to protect sea ice. The southern hemisphere needs better protection against heating pumps stretching from Argentina to a high concentration south of South Africa into the Indian Ocean that is believed to cause African drought.

B. Roughly forty years ago, a small group of scientists and policy makers began to realize that humanity was on a dramatic collision course, as the rapidly growing world economy and population threatened to collide with the planet's finite resources and fragile ecosystems. The danger was first highlighted globally at the 1972 UN Conference on the Human Environment in Stockholm. What was not clearly appreciated back in 1972 was that the real limits were not the minerals, but rather the functioning of the Earth's ecosystems, the biodiversity, and the ability of the atmosphere to absorb greenhouse gases (GHGs) emitted by humanity from fossil fuels and other agricultural and industrial processes. The State of Food Security and Nutrition in the World: Building Climate Resilience for Food Security and Nutrition 2018 was prepared by the Food and Agriculture Organization (FAO). This report monitors progress towards the targets of ending both hunger (SDG Target 2.1) and all forms of malnutrition (SDG Target 2.2). The absolute number of people in the world affected by undernourishment, or chronic food deprivation, is now estimated to have increased from around 804 million in 2016 to nearly 821 million in 2017. Regional droughts, both caused by and causing forest fires, are driving out small family farmers who do not have reliable irrigation and are dependent on rainfall to produce crops or forage for livestock. Flooding is the second leading cause of crop loss. Rice tends to be immune from drought, flood risk is high. Increasing temperatures and changes in precipitation have already resulted in farmers around the world introducing various climate change adaptation strategies such as irrigation, flood-walls, crop diversification, mixed crop-livestock farming systems, changing planting and harvesting dates, and using drought-resistant varieties and high-yield water-sensitive crops.

1. In the last 35 years of the twentieth century the Arctic Ocean ice thinned by 40%. In 2000, the polar ice at the top of the world melted for the first time in human memory. Many scientists believe there had not been so much open water in the polar region in 50 million years. Other scientists predicted that summer ice in the Arctic Ocean could disappear entirely by 2035. In 2000 it was announced that of the 25 hottest years that had occurred since Earth temperature record keeping began in 1866, 23 of them had occurred after 1975. Every one of the past 40 years has been warmer than the 20th century average. 2014, 2015 and 2016 were the hottest years on record, 2017 second. The 13 warmest years on record have all occurred since 1998 despite improved NOAA Sea Surface temperature SST anomaly map records beginning in 1996. The most direct manifestation of human-induced climate change has been the rise in temperatures. For

many locations 2014 and 2015 were the hottest in history. Every one of the past 40 years has been warmer than the 20th century average. 2014, 2015, 2016 and 2017 were the hottest years on record. The 12 warmest years on record have all occurred since 1998. Globally, the average surface temperature has increased more than one degree Fahrenheit since the late 1800s. Most of that increase has occurred over just the past three decades. The global seas have risen an average of 7 to 8 inches (17.8 to 20.3 centimeters) since 1900, with nearly half of that (3 inches, or 7.6 cm) occurring since 1993. Annual average temperatures over the contiguous United States increased by 1.8°F (1°C) between 1901 and 2016. And over the next few decades, scientists predict those temperatures will rise by about 2.5°F (1.3°C) relative to the period of 1976 to 2005. In office, Trump said that the U.S. would withdraw from the Paris Climate Accord, an international agreement that aims to limit global warming to below 3.6°F (2°C) above preindustrial temperatures.

2. The globally averaged temperature over land and ocean surfaces for January 2017 was 0.88°C (1.58°F) above the 20th century average of 12.0°C (53.6°F). This was the third highest January temperature in the 1880–2017 record, behind 2016 (highest) and 2007 (second highest). Separately, the global land surface temperature was also third highest for the month of January at 1.54°C (2.77°F) above the 20th century average of 2.8°C (37.0°F). The first month of the year was characterized by warmer to much-warmer-than-average conditions across much of the world's land surface, with the largest positive temperature departures from average across the eastern half of the contiguous U.S., eastern Asia, and much of Canada where temperature departures were 3.0°C (5.4°F) or greater. Cooler-than-average conditions were observed across New Zealand, the western half of the contiguous U.S., central and western Australia, northern and southern parts of Africa, western and southern Asia, and much of Europe. The most notable below-average temperature departures from average were observed across the northwestern contiguous U.S. and central Europe (-3.0 °C [-5.4°F] or colder). According to NCEI's Regional analysis, three of the six continents had at least a top six warm January, with South America having its second warmest January since continental records began in 1910, behind 2016. Meanwhile, Europe had its coldest January since 2010.

C. The UN says that Africa is the most vulnerable region to climate change and lacks proper early warning systems and contingency plans for such disasters. In 2011 drought plunged East Africa into the worst food security crisis Africa has faced in 20 years. More than 11.5 million people are currently in need of food aid in Djibouti, Kenya, Somalia, and Ethiopia. Short rains, in the right amount and at the right time – from October to December – allow the regeneration of pasture, improve crop conditions and boost casual agricultural labour opportunities for poor households. Too much – if the rains run into January and February – then animals that are already weak from the long dry season will succumb to exposure. Heavy rains can also trigger waterborne diseases like cholera and typhoid. Livestock become susceptible to Rift Valley Fever (RVF) – a viral mosquito-borne disease. Antarctic ice-melt and oceanic cooling pump countermeasures off the Coasts of Australia and South Africa **c**oupled with the warming of the Indian Ocean are generating “highly enhanced rainfall”, according to the Kenya Metrological Department. The government’s contingency plan anticipated one million people at risk from flooding, less than the 14 million at risk from starvation and 36 million affected by the drought.

1. Huge sections of the Great Barrier Reef, stretching across hundreds of miles of its most pristine northern sector, were recently found to be dead, killed last year by overheated seawater. More southerly sections around the middle of the reef that barely escaped then are bleaching now, a potential precursor to another die-off that could rob some of the reef's most visited areas of color and life. Globally, the ocean has warmed by about 1.5 degrees Fahrenheit since the late 19th century, by a conservative calculation, and a bit more in the tropics, home to many reefs. An additional kick was supplied by an El Niño weather pattern that peaked in 2016 and temporarily warmed much of the surface of the planet, causing the hottest year in a historical record dating to 1880. It was obvious last year that the corals on many reefs were likely to die, but now formal scientific assessments are coming in. The paper in Nature documents vast coral bleaching in 2016 along a 500-mile section of the reef north of Cairns, a city on Australia's eastern coast. Bleaching indicates that corals are under heat stress, but they do not always die and cooler water can help them recover. Aerial surveys, combined with underwater measurements, found that 67% of the corals had died in a long stretch north of Port Douglas, and in patches, the mortality reached 83%. By luck, a storm stirred the waters in the central and southern parts of the reef at a critical moment, cooling them, and mortality there was much lower — about 6% in a stretch off Townsville, and even lower in the southernmost part of the reef. Australia is the largest coal exporter in the world. Australia relies on the Great Barrier Reef for about 70,000 jobs and billions of dollars annually in tourism revenue, and it is not yet clear how that economy will be affected by the reef's deterioration. The global reef crisis does not necessarily mean extinction for coral species. Coral reefs are sensitive systems, built by unusual animals. The corals themselves are tiny polyps that act like farmers, capturing colorful single-celled plants called algae that convert sunlight into food. The coral polyps form colonies and build a limestone scaffolding on which to live — a reef. The public was informed that hot water from the dissipation of natural and artificial warming associated with last year's El Niño is bleaching the Great Barrier Reef. In April 2017 Australia was held liable for the rain theft that is causing the prolonged severe drought in East Africa. Within a month, as of May 18, 2017 human caused warming off the coast of Sydney have been turned off, any heating pumps under Australian command in the Indian Ocean appear to have been turned off and oceanic cooling pumps seem to have been deployed in the north Coral Sea to protect the coral polyps from lethal warming.

D. High temperatures continue to shape life on both poles. The globe experienced its second warmest April in recorded history, in 2016 and 2017. Sea ice cover in both the Arctic and Antarctic is near record lows. Antarctic sea ice cover was 18.2%, or 520,000 square miles, below the 1981-2010 average. That is the second lowest April sea ice extent since record-keeping began in 1979. In the Arctic, sea ice cover was down 6.9%, or 394,000 square miles. That's tied for the lowest ever recorded, with April 2016. In regards to the new US Coast Guard icebreaker in Arctic waters the International Maritime Organization has adopted the International Code for Ships Operating in Polar Waters (Polar Code) and related amendments to make it mandatory under both the International Convention for the Safety of Life at Sea (SOLAS) and the International Convention for the Prevention of Pollution from Ships (MARPOL). The Polar Code

entered into force on 1 January 2017. The Polar Code is intended to cover the full range of shipping-related matters relevant to navigation in waters surrounding the two poles – ship design, construction and equipment; operational and training concerns; search and rescue; and, equally important, the protection of the unique environment and eco-systems of the polar regions.

1. The treaty was upheld by the Fairbanks Declaration 2017: On the Occasion of the Tenth Ministerial Meeting of the Arctic Council Reaffirming our commitment to the well-being of the inhabitants of the Arctic, especially including the indigenous, to sustainable development and to the protection of the Arctic environment. Thermal pollution from hydrocarbon heating pumps is clearly prohibited. Use of the new Coast Guard ice-breaker under the Agreement on arctic cooperation between the United States and Canada, that was signed at Ottawa on 11 January 1988, is limited by the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic and Arctic Coast Guard Forum. Northwest Passage? US-Russia Bilateral Agreement on Polar Bear Conservation to protect the shared Alaska-Chukotka polar bear population become effective on September 23, 2007. The agreement calls for the active involvement of native people in both countries in managing the polar bear population. The treaty contains specific protections for females with cubs and cubs less than one year old. The United States and Russia concluded this agreement in 2000 and the U.S. Senate ratified it in 2003. The U.S. Fish and Wildlife Service and the Department of State are the principal U.S. implementing agencies. The application of the first Circumpolar Biodiversity Monitoring Program's State of the Arctic Marine Biodiversity Report to the Arctic Protected Area Indicator Report will help implement the Framework for a Pan-Arctic Network of Marine Protected Areas to strengthen marine ecosystem resilience and to foster the conservation and sustainable use of marine resources.

E. The Northern Hemisphere (Arctic) sea ice extent — which is measured from passive microwave instruments onboard NOAA satellites — averaged for January 2017 was 13.38 million square km (5.17 million square miles), 1.26 million square km (480,000 square miles), or 8.61 percent, below the 1981-2010 average. This was the smallest January Arctic sea ice extent on record, dipping below the previous record of 13.64 million square km (5.27 million square miles) set just last year in 2016. Sea ice extent expanded slowly in early January with ice growth nearly stopping for a week mid-month. During the third week January ice expanded rapidly, but nearly stopped once again the last week January. Below-average sea ice extent was observed in the Barents Sea, Kara Sea, and Gulf of St. Lawrence on the Atlantic side and the Bering Sea on the Pacific side. Near-average sea ice extent was observed in Baffin Bay, Labrador Sea, and Hudson Bay. January Arctic ice extent is decreasing at an average rate of 3.2 percent per decade.

1. In the last 35 years of the twentieth century the Arctic Ocean ice thinned by 40%. In 2000, the polar ice at the top of the world melted for the first time in human memory. Many scientists believe there had not been so much open water in the polar region in 50 million years. Other scientists predicted that summer ice in the Arctic Ocean could disappear entirely by 2035. In 2000 it was announced that of the 25 hottest years that had occurred since Earth temperature record keeping began in 1866, 23 of them had occurred

after 1975. The rapid changes occurring in the Arctic region in the past 10-20 year have become one of the biggest stories in climate change. Temperatures in the Arctic are rising higher than anywhere else on Earth – and more quickly as well. Sea ice has been melting in the summer season at an astonishing rate, and scientists are only beginning to understand the consequences of this thaw for global climate patters, let alone its anthropogenic causes. Less sea ice ostensibly means more opportunities or shipping and resource extraction, and, troublingly for many, it could result in the opening of previously inaccessible offshore oil and gas fields in the Arctic Ocean and its outlying seas. In the first half of 2010, air temperatures in the Arctic were 4 degrees Celsius warmer than during the 1968-96 reference period while, over the past half century, much of the Arctic experienced warming of over 2 degrees Celsius, with relative warming increasing at higher latitudes.

2. The most dramatic consequence of this warming trend has been the loss of summer sea ice, which reached a record low in 2012 of 3.6 million square kilometers, or 52 percent below the 1979-2000 average. Overall, summer ice minimum extent, which occurs every year in September, has declined 13.3 percent per decade relative to the 1981-2010 average. Trends show a loss of 2.6 percent per decade. The major treaties that apply to the Arctic are: the UN Convention on the Law of the Sea, the Basel Convention on the Control of Transboundary Movement of Hazardous Waste and Their Disposal, the UN Framework Convention on Climate Change, the UN Convention on Biological Diversity, its Biosafety and Liability Protocols, a broad range of conventions and other instruments adopted by the International Maritime Organization (IMO), the London (dumping) Convention of 1972 and its 1996 Protocol, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Stockholm convention on Persistent Organic Pollutants, and the Ramsar Convention on Wetlands of International Importance.

F. The January Southern Hemisphere sea ice extent was 4.04 million square km (1.56 million square miles), which was 1.19 million square km (460,000 square miles), or 22.8 percent, below the 1981-2010 average. This was the smallest Southern Hemisphere sea ice extent on record and 280,000 square km (110,000 square miles) smaller than the previous record set in 2006. The record low January Antarctic sea ice extent comes just two years after the largest January Antarctic sea ice extent on record was observed in 2015 at 7.59 million square km (2.93 million square km). Most of the Amundsen Sea off the west coast of Antarctica was ice free by early February with near-average ice across other regions. Southern Hemisphere sea ice extent is increasing at an average rate of 3 percent per decade, with substantial inter-annual variability. A “fast-moving” crack in the Larsen C ice shelf on Tuesday and warned that an iceberg larger than 5,000 square kilometers (1,930 square miles) — bigger than Rhode Island and roughly the size of Trinidad — is likely to break off. The reason for the weakening of the Antarctic ice seems be that the warming off the coast of Rio de Janeiro is exacerbated by heat released by California Governor Brown's slash and burn forest labor whose open burns are prohibited by Antarctic Conservation Act of 1978 16USC§2403(b)(1)(B).

1. Unlike the Arctic—an ocean basin surrounded by land—the Antarctic is a large continent surrounded by an ocean. Because of this geography, sea ice has more room to

expand in the winter. But that ice also stretches into warmer latitudes, leading to more melting in summer. Antarctic sea ice peaks in September (the end of Southern Hemisphere winter) and usually retreats to a minimum in February. Since the start of regular satellite observations in 1979, total Antarctic sea ice has increased by about 1 percent per decade. Whether the increase is a sign of meaningful change is uncertain because ice extents vary considerably from year to year around Antarctica. For three consecutive Septembers from 2012 to 2014, satellites observed new record highs for winter sea ice extent. These highs occurred while the Arctic was seeing record lows. Starting in 2016, prominent decreases in sea ice around Antarctica started to occur. It was too soon to say if the decline marked a shift in the behavior of Antarctic sea ice. Within Antarctic sea ice, there is great variation from place to place around the continent. The Ross Sea sector has had a significant positive trend, while sea ice extent has decreased in the Bellingshausen and Amundsen Seas. In short, Antarctic sea ice shows a small positive trend, but large-scale variations make the trend very noisy.

G. The stratospheric ozone layer protects life on Earth by absorbing ultraviolet light, which damages DNA in plants and animals (including humans) and leads to skin cancer. Prior to 1979, scientists had not observed concentrations below 220 Dobson Units. But in the early 1980s, through a combination of ground-based and satellite measurements, scientists began to realize that Earth's natural sunscreen was thinning dramatically over the South Pole each spring. This large, thin spot in the ozone layer came to be known as the ozone hole. Scientists use the word hole as a metaphor for the area in which ozone concentrations drop below the historical threshold of 220 Dobson Units. Using this metaphor, they can describe the hole's size and depth. The series begins in 1979. The maximum depth of the hole that year was 194 Dobson Units (DU)—not far below the historical low. For several years, the minimum concentrations stayed in the 190s, but beginning in 1983, the minimums got deeper rapidly: 173 DU in 1982, 154 in 1983, 124 in 1985. In 1991, a new threshold was passed; ozone concentration fell below 100 DU for the first time. Since then, concentrations below 100 have been common. The deepest ozone hole occurred in 1994, in the image embedded in this paragraph, when concentrations fell to just 73 DU on September 30, 1994 in the image embedded in this paragraph. Records in depth and size haven't occurred during the same years (the largest ozone hole occurred in 2006), but the long-term trend in both characteristics is consistent: from 1980 through the early 1990s, the hole rapidly grew in size and depth. Since the mid-1990s, area and depth have roughly stabilized, but continue to dip to 100.

1. The ozone hole opened the world's eyes to the global effects of human activity on the atmosphere. It turned out that chlorofluorocarbons (CFCs)—long-lived chemicals that had been used in refrigerators and aerosol sprays since the 1930s—had a dark side. In the layer of the atmosphere closest to Earth (the troposphere), CFCs circulated for decades without degrading or reacting with other chemicals. When they reached the stratosphere, however, their behavior changed. In the upper stratosphere (beyond the protection of the ozone layer), ultraviolet light caused CFCs to break apart, releasing chlorine, a very reactive atom that repeatedly catalyzes ozone destruction. The global recognition of CFCs' destructive potential led to the 1989 Montreal Protocol banning of the production of ozone-depleting chemicals. Scientists estimate that about 80 percent of the chlorine

(and bromine, which has a similar ozone-depleting effect) in the stratosphere over Antarctica today is from human, not natural, sources. Models suggest that the concentration of chlorine and other ozone-depleting substances in the stratosphere will not return to pre-1980 levels until the middle decades of this century. These same models predict that the Antarctic ozone layer will recover around 2040.

§361 Immunization

A. The United States and other industrialized nations have been largely successful in reducing the death rate from, and incidence of, many infectious and diarrheal diseases and has been successful in completely eradicating many persistent and deadly ailments such as polio, plague and smallpox, through vaccination and quarantine. Although many vaccines are effective, or somewhat effective, at preventing disease in inoculated individuals, the success of immunization eliminating a disease from the entire population is historically limited to the eradication of polio, diptheria and smallpox. In the case of the seasonal influenza vaccine, believed to be entirely placebo, and COVID-19 two shot cure, felony monopolization of the news media, censuring the fact that eucalyptus cures both influenza and coronavirus, and government and leaks of live virus into the population, from the publicized and legislated shipments between testing centers and vaccine development laboratories, are the primary reason for the severity and perpetuation of these deadly pandemics. Distribution of new ebolavirus vaccines only to possibly malicious global health workers and not the general population is both encouraging, that promising new life-saving vaccines are being developed, and disturbing that they are unequally distributed and no one knows if they are safe and effective.

1. WHO and UNICEF jointly formulated a draft global strategy on immunization A/58/ 12 in response to expected developments and trends over the next 10 years. In response to the challenges of a rapidly changing and increasingly interdependent world, WHO and UNICEF have jointly drafted a global immunization vision and strategy for the years 2006-2015. The goal of vaccination is to protect more people against more diseases, by expanding the reach of immunization to every eligible person, including those in age groups beyond infancy, within a context in which immunization is high on every health agenda. It aims to sustain existing levels of vaccine coverage, extend immunization services to those who are currently unreached and to age groups beyond infancy, introduce new vaccines and technologies, and link immunization with the delivery of other health interventions and the overall development of the health sector.

2. The establishment of strong national immunization services in many countries over recent years has ensured that today more than 70% of the world's targeted population is reached by those services. Alarmed that globally and in some regions immunization coverage has increased only marginally since the early 1990s, and that in 2003 more than 27 million children worldwide were not immunized during their first year of life; Recognizing that each year 1.4 million children under five years of age die from diseases preventable by currently available vaccines. Further recognizing that each year an additional 2.6 million children under five years of age die because of diseases potentially preventable by new vaccines. Emphasizing the need for all countries to strive towards achieving the United Nations Millennium Development Goal of reducing by two-thirds,

between 1990 and 2015, the under-five child mortality rate. Recalling the target of the United Nations General Assembly's twenty-seventh special session on children (2002) to ensure full immunization of children under one year of age, with at least 90% coverage nationally, and at least 80% coverage in every district or equivalent administrative unit. Efforts are under way to develop new vaccines against major infectious diseases (including malaria, HIV/AIDS and tuberculosis). The global Children's Vaccine Initiative aims to develop affordable new and improved vaccines to be used in the United States and in the developing world that will increase the efficacy and efficiency of the prevention of infectious diseases. To the extent practicable, the program shall develop and make available vaccines that require fewer contacts to deliver, that can be given early in life, that provide long lasting protection, that obviate refrigeration, needles and syringes, and that protect against a larger number of diseases.

3. All US children should receive recommended vaccines against diseases in a continuing and ongoing program. An immunization program should be designed to encourage administration of vaccines as part of a total preventive health care program, so as to provide effective entry into a continuous and comprehensive primary care system. There should be no financial barrier to immunization of children. Existing systems of reimbursement for the costs of administering vaccines and follow-up care should be utilized. Any immunization program should be either (a) part of a continuing physician/patient relationship or (b) the introductory link to a continuing physician/patient relationship wherever possible. Professionals and allied health personnel who administer vaccines and manufacturers should be held harmless for adverse reactions occurring through no fault of the procedure. Provision should be made for a sustained, multi-media promotional campaign designed to educate and motivate the medical profession and the public to expect and demand immunizations for children and share responsibility for their completion. An efficient immunization record-keeping system should be instituted. (Res. 44, A-77; Reaffirmed: CLRPD Rep. C, A-89; Reaffirmed: Sunset Report, A-00).

4. The AMA (1) supports efforts toward the prevention of childhood disease through immunizations; (2) favors using its position in international health organizations to promote appropriate immunization programs for children throughout the world, especially in such critical and cost-effective areas as the prevention of poliomyelitis and measles; and (3) expresses the need for private and public research institutions to help develop more technically advanced products, such as new heat stable vaccines, necessary for the effective immunization of children throughout the world H-440.991 Health and Ethics Policies of the AMA House of Delegates. The AMA believes the following principles are required components of a national immunization program and should be given high priority by the medical profession and all other segments of society interested and/or involved in the prevention and control of communicable disease:

Recommended Immunization Schedule Ages 0-6 Years, US, 2009

Vaccine	Birth	1-2 mos	2 mos	4 mos	6 mos	6-18 mos	12-15 mos	15 mos	4-6 yrs

Pneumococcal			PCV	PCV	PCV	PCV	PCV		
Rotavirus			RV	RV	RV				
Diphtheria-tetanus pertussis			DTP	DTP	DTP			DTP/ DTaP	DTP/ DTaP
Polio, oral and inactivated (option)			OPC IPV	OPV IPV	OPV IPV	IPV	IPV	OPV IPV	OPV IPV
Measles-mumps-rubella							MMR		MMR 12-13 yrs
Haemophilus influenza b conjugate			Hib	Hib	Hib		Hib		
Influenza yearly					Inf.	Inf.	Inf.	Inf.	Inf.
Hepatitis A							HepA 2 dos.	Hep A 2 dos.	HepA series
Hepatitis B (optional schedule)	Hep B	Hep B Hep B		HepB	HepB	HepB			
Varicella-zoster virus (chickenpox)							VZV		VZV
Meningococcal									MCV

Source: Centers for Disease Control

5. Pediatric well child visits center around the vaccination schedule. The CDC recommended immunization schedule. First Hepatitis B (Hep B) is given at birth. 2nd Hep B, and 1st Diptheria and Tetanus [Diphteria, Tetanus and Pertusis (DPT or DtaP acellular Pertussis], Hib, Inactivated Poliovirus (IPV), rotavirus and Pneumococcal are at 2 mo, DPT or DTaP, Hib, IPV at 4 mo., Hep B, DT [DPT or DtaP], Hib, IPV at 6 mo. Hep B, DT [DPT or DTaP], VZV at 12 mo., MMR at 15 mo., DT [DPT] at 18 mo., DPT or DTaP, IPV, MMR at 4-6 years. Hep B, MMR, VZV at 11-12 years. The second dose of MMR is recommended at 4-6 years and should be received no later than 11-12 y. Susceptible children can receive the varicella vaccine at any visit after the first birthday,

and children should be immunized by age 11-12 y. Susceptible children 13 y or older should receive two doses, at least 1 mo apart. Rv (rotavirus vaccine) was removed from the market in 1999, it had been administered at ages 2, 4 and 6 mo. Pneumococcal vaccine recently has been recommended to be administered at 2, 4 and 6 mo with a booster dose as 12-15 mo. Between 18 months and 18 children are also subjected to an annual influenza vaccination, Hep B at 18 mo., DTaP at 18 mo and 4-6 years, IPV 18 mo and 4-6 years, MMR 4-6 years, VAR 4-6 years, Hep A 18 mo and 19-23 mo, Meningococcal HibMenCY at 11-12 and at 16 years, Tdap 11-12 years. 2vHPV females, 4vHPV for males. Polio and smallpox have been eradicated and measles and mumps are been greatly reduced as threats to children.

B. To achieve optimal prevention of human infectious diseases through immunization and to achieve optimal prevention against adverse reactions to vaccines under 42USC§283d the US the Secretary, acting through the Director of the National Vaccine Program in consultation with Directors of the National Institute for Allergy and Infectious Diseases, the National Institute for Child Health and Human Development, the National Institute for Aging, and other public and private programs under subchapter XIX of Public Health Service, shall include information with respect to activities and the progress made achieving the goals of the program. The Director of the Program shall ensure that the governmental and non-governmental production and procurement of safe and effective vaccines by the Public Health Service, the Department of Defense, and the Agency for International Development. The Director of the Program shall prepare and issue a plan on 1 January of every year for the implementation of the responsibilities of the program, the plan shall establish priorities in research and the development, testing, licensing, production, procurement, distribution, and effective use of vaccines, describe an optimal use of resources to carry out such priorities,

1. To this end the program is required under 42USC§300a-2 (a) to develop the techniques needed to produce safe and effective vaccines (b) meet the needs of the United States population and fulfill commitments of the United States to prevent human infectious diseases in other countries. (c) coordinate and provide direction and assistance to States, localities, and health practitioners in the distribution and use of vaccines, including efforts to encourage public acceptance of immunizations and to make health practitioners and the public aware of potential adverse reactions and contraindications to vaccines. To prevent adverse reaction and compensate those people who are victims of adverse reactions to vaccines there is established a National Vaccine Injury Compensation Program to be administered by the Secretary under 42USC§300aa-10. Whereas the Vaccine Injury Table is somewhat outdated most claims are directed to the Secretary to revise the Table under 42USC§300aa-14(c)(1). A civil action against a vaccine manufacturer for damages for a vaccine-related injury or death associated with the administration of a vaccine, shall be tried in three stages. (a) Liability: The first stage of such a civil action shall be held to determine if a vaccine manufacturer is liable. (b) General damages: The second stage of such a civil action shall be held to determine the amount of damages (other than punitive damages) a vaccine manufacturer found to be liable to pay. (c) Punitive damages: If sought by the plaintiff, the third stage of such an action shall be held to determine the amount of punitive damages a vaccine manufacturer found to be liable to pay, for the manufacturer shows that it complied, in all material

respects, with all requirements under the Federal Food, Drug, and Cosmetic Act under 21USC§301 *et seq.*

2. The Vaccine Injury Compensation Program (VICP) has experienced a steady increase in claims in recent years. In total, claims have doubled over FY 2009 levels and are projected to steadily increase through FY 2017 and beyond. At the same time as claims have increased, the appropriated reimbursement from the Vaccine Injury Compensation Trust Fund has not significantly increased since FY 2009. In FY 2009, 400 cases were filed; VICP funded 41 FTE for an average caseload per attorney of 9.7. By 2015, the number of cases significantly increased to over 800 but, currently, the VICP only funds 36 FTE. Cases are expected to further increase to approximately 1,000 in FY 2016 and 1,200 in FY 2017. Without additional relief, the caseload per attorney will be 30 cases; however, with the additional reimbursement requested, the caseload will be 23.1 per attorney. To fully fund the Program in FY 2017 and to add staff to handle the increasing claims, an additional $2.6 million reimbursement from the Vaccine Injury Compensation Trust Fund is required, bringing the total appropriated reimbursement from $9.4 million to $12.0 million. Payments are very high. Payments are so high, few of the many victims are compensated.

C. Oral Polio Vaccine (OPV) is highly effective in producing immunity to poliovirus. A single dose of OPV produces immunity to all three vaccine viruses in about 50% of recipients. Three doses produce immunity to all 3 poliovirus types in more than 95% of recipients. As with other live virus vaccines, immunity from oral poliovirus vaccine is probably lifelong. The risk of Vaccine Associated Paralytic Polio (VAPP) is about one case per 6.2 million doses. It is therefore recommended to eradicate the disease through thorough immunization and then terminate the program after 3 years without infection. Poliovirus is a member of the enterovirus subgroup, family Picornaviridae. Enteroviruses are transient inhabitants of the gastrointestinal tract, and are stable at acid pH. Picornaviruses are small, ether-insensitive viruses with an RNA genome. There are three poliovirus serotypes (P1, P2, and P3). There is minimal heterotypic immunity between the three serotypes. That is, immunity to one serotype does not produce significant immunity to the other serotypes. The poliovirus is rapidly inactivated by heat, formaldehyde, chlorine, and ultraviolet light. The virus enters through the mouth and primary multiplication of the virus occurs at the site of implantation in the pharynx and gastrointestinal tract. The virus is usually present in the throat and in the stool before the onset of illness. One week after onset there is little virus in the throat, but virus continues to be excreted in the stool for several weeks. The virus invades local lymphoid tissue, enters the blood stream, and then may infect cells of the central nervous system. Replication of poliovirus in motor neurons of the anterior horn and brain stem results in cell destruction and causes the typical manifestations of poliomyelitis.

1. Paralytic polio is classified into three types, depending on the level of involvement. Spinal polio is most common, and accounted for 79% of paralytic cases from 1969–1979. It is characterized by asymmetric paralysis that most often involves the legs. Bulbar

polio accounted for 2% of cases and led to weakness of muscles innervated by cranial nerves. Bulbospinal polio accounted for 19% of cases and was a combination of bulbar and spinal paralysis. The death-to-case ratio for paralytic polio is generally 2%–5% in children and up to 15%–30% in adults (depending on age). It increases to 25%–75% with bulbar involvement. Poliovirus is highly infectious, with seroconversion rates in susceptible household contacts of children nearly 100% and more than 90% in susceptible household contacts of adults. Persons infected with poliovirus are most infectious from 7 to 10 days before and after the onset of symptoms, but poliovirus may be present in the stool from 3–6 weeks.

2. WHA58/11 reports that in 1988, wild-type poliovirus was endemic in more than 125 countries and the Health Assembly, called on all Member States to accelerate eradication activities. On 15 January 2004, the Director-General, the spearheading partners of the Global Polio Eradication Initiative and health ministers of the six countries remaining endemic for poliomyelitis signed the Geneva Declaration for the Eradication of Poliomyelitis committing themselves to interrupting the final chains of poliovirus transmission through intensified immunization campaigns. In 2004 there were a total of 1,264 reported cases of polio. The intensified eradication activities made good progress in Asia. Health ministers from countries in Africa and Asia affected by poliomyelitis reconvened on 13 January 2005 and 4 February 2005, respectively, to assess progress in completing the activities set out in the Geneva Declaration and to identify the actions needed to interrupt poliovirus transmission in 2005. The Ad Hoc Advisory Committee on Polio Eradication recommends synchronous cessation of use of the oral vaccine as early as three years after interruption of wild-type poliovirus transmission worldwide.

3. Although records from antiquity mention crippling diseases compatible with poliomyelitis, it was Michael Underwood from England who, in 1789, first described a debility of the lower extremities in children that was recognizable as poliomyelitis. The first outbreaks in Europe were reported in the early 19th century, and outbreaks were reported in the United States a few years later. For the next hundred years, epidemics of polio were reported from developed countries in the northern hemisphere each summer and fall. These epidemics became increasingly severe, and the average age of persons affected rose. The increased age of primary infection increased both the disease severity and number of deaths from polio. Polio reached a peak in the United States in 1952, with more than 21,000 paralytic cases. Polio incidence fell rapidly following introduction of effective vaccines. The last case of wild-virus polio acquired in the United States was in 1979. A polio eradication program conducted by the Pan American Health Organization led to elimination of polio through the Western Hemisphere in 1991. In 2003 only 784 confirmed cases of polio were reported globally and polio was endemic in 6 countries. Owing to the international spread of wild-type poliovirus in central and western Africa, planned supplementary poliomyelitis immunization activities were markedly expanded for 2005 and extended through to the end of 2006. As of 18 March 2005, the funding gap for activities in the second half of the year was US$ 75 million and the gap for activities in 2006 was US$ 200 million.

D. The smallpox vaccine helps the body develop immunity to smallpox. The vaccine is made from a virus called vaccinia which is a "pox"-type virus related to smallpox. The smallpox vaccine contains the "live" vaccinia virus—not dead virus like many other vaccines. For that reason, the vaccination site must be cared for carefully to prevent the virus from spreading. The vaccine does not contain the smallpox virus and cannot give you smallpox. Smallpox vaccination provides high level immunity for 3 to 5 years and decreasing immunity thereafter. If a person is vaccinated again later, immunity lasts even longer. Historically, the vaccine has been effective in preventing smallpox infection in 95% of those vaccinated. Currently, the United States has a big enough stockpile of smallpox vaccine to vaccinate everyone in the United States in the event of a smallpox emergency.

1. Smallpox is a serious, contagious, and sometimes fatal infectious disease. There is no specific treatment for smallpox disease, and the only prevention is vaccination. The name *smallpox* is derived from the Latin word for "spotted" and refers to the raised bumps that appear on the face and body of an infected person. There are two clinical forms of smallpox. Variola major is the severe and most common form of smallpox, with a more extensive rash and higher fever. There are four types of variola major smallpox: ordinary (the most frequent type, accounting for 90% or more of cases); modified (mild and occurring in previously vaccinated persons); flat; and hemorrhagic (both rare and very severe). Historically, variola major has an overall fatality rate of about 30%; however, flat and hemorrhagic smallpox usually are fatal. Variola minor is a less common presentation of smallpox, and a much less severe disease, with death rates historically of 1% or less. Smallpox outbreaks have occurred from time to time for thousands of years, but the disease is now eradicated after a successful worldwide vaccination program. The last case of smallpox in the United States was in 1949. The last naturally occurring case in the world was in Somalia in 1977. After the disease was eliminated from the world, routine vaccination against smallpox among the general public was stopped because it was no longer necessary for prevention.

2. In the Global Smallpox Vaccination Reserve Report by the Secretariat for the World Health Assembly Provisional Agenda 13.6 A/56/9 of 7 April 2005 recommended that whereas the immunity from the elimination campaign had waned and danger from possible bio-terrorist attacks compels first the stock of vaccine in Geneva be increased to 5 million and second the donor nations should increase reserves to 1979 levels and third at least two pharmaceutical factories able to manufacture at least 20 million doses would be discovered. In its final report of 1979, the Global Commission for the Certification of Smallpox Eradication discussed the need to maintain reserve stocks of vaccine and concluded that it would be prudent for WHO and national authorities to be prepared for unforeseen circumstances. At that time, the source of the risk of a reintroduction of smallpox was perceived to be laboratories or natural or animal reservoirs, and that likelihood was considered negligible. The Commission recommended that freeze-dried smallpox vaccine sufficient to vaccinate 200 million people should be maintained by WHO, together with stocks of bifurcated needles. In 1986, the WHO Committee on Orthopoxvirus Infections concluded that an unforeseen emergency was so unlikely that WHO no longer needed to maintain a large global reserve of smallpox vaccine. The

global reserve was gradually reduced to its present level of around 2.5 million doses, held in Geneva and regularly tested for potency. Population immunity following mass vaccination during the eradication era has waned, leaving much of the world's population vulnerable.

E. *Haemophilus influenza* bacterial infections occur frequently in childhood, accounting or a large percentage of common sinus, throat and ear infections. The bacteria has no relationship to influenza. It was named influenziae because early researchers found the bacteria in people with flu, but did not recognize until later than Haemophilus is a normal resident of mucus membranes. They usually resolve on their own without treatment. However, one strain of Haemophilus, the type b encapsulated strain, is capable of causing invasion of infections to deeper levels in the body, particularly the spinal fluid, lungs, heart and blood. Vaccines have been developed because Haemophilus can cause meningitis, pneumonia, epiglottitis, and other complications. Between 20 and 30 percent of children with bacterial meningitis have seizures. Arthritis, pericarditis and pneumonia are common complications. Disease of sudden onset with rapid progression is usually associated with a different bacteria, *Neisseria meningitides*, which has a much higher risk of death. Mortality from Hib meningitis is 3 to 8 percent. Appropriate treatment of Hib meningitis includes the use of antibiotics, particularly penicillin or erythromycin, for resistant strains. The estimated incidence of Hib meningitis is 8,000 to 15,000 cases per year. Native American and Eskimo children are particularly susceptible to Hib meningitis. Incidence has increased over the past three decades, possibly due to the administration of other vaccines. Approximately 1 in 350 children younger than 5 years of age develops Hib meningitis. Children under 6 months are protected by maternal antibodies and breastfeeding reduces incidence rates. The peak incidence of meningitis is is at 6 to 7 months. The attack rate decreases rapidly with increasing age. Fifty percent of cases occur in infants under 1 year, only 25 to 30 percent of cases occur in children over 18 months. The congregation of infants in day are setting creates a significantly higher risk of infection.

1. Several different *Haemophilus influenza* type b (Hib) vaccines are manufactured. Efficacy studies for the newer vaccines have only been published since 1987 and conclusions are tentative. In 1985 the first Hib vaccine, a purified form of the polysaccharide capsule (called PRP, from the chemical name of the capsular substance) was licensed The PRP vaccine was not effective in children under 24 months old, and these children represented 80 percent of Hib meningitis cases. JAMA found that 41 percent of Hib cases occurred in vaccinated children. The vaccine's protective efficacy was minus 58 percent. Children were more likely to get the disease if they received the vaccine. In other studies efficacy ranged from 41 to 88 percent. Vaccine researchers found that when the PRP form of the vaccine was joined to a protein carrier, then the vaccine was more effective and developed antibody responses in younger children. These conjugated forms are now used beginning in infancy. In 1990 the first conjugate vaccines were licensed for used beginning at 2 months of age. The effectiveness of various conjugate vaccines has varied in studies, the PRP-T study was terminated because in favor of the PRP-D conjugate vaccine showed an efficacy of 74 to 96 percent in various studies, but in Alaskan Natives the efficacy was only 35 percent. In another

study 90 percent of children vaccinated with the PRP-D conjugate vaccine responded with antibody levels considered to be protective, but only 60 percent produced levels of antibody indicating long-term protection. Nonetheless, millions of children are vaccinated with PRP-D. Other conjugate vaccines (PRP-OMP [93%] and HbOC [97-100%]) have shown high levels of efficacy. Hib infection has declined.

F. The pertussis vaccine, that was previously included in the DPT (Diptheria Pertussis and Tetanus), has been removed from the DT (Diptheria and Tetanus) vaccine, to prevent adverse reactions causing developmental defects in children. Pertussis is better treated with antibiotics in the first week, while it is an extremely runny nose, to prevent six weeks of whooping cough. There have also been adverse reactions causing developmental defects in children reported from the use of live rotavirus in the MMR (Mumps, Measles and Rubella) vaccine, and attenuation efforts are underway. The rubella vaccine is active, infectious and dangerous to unvaccinated pregnant mothers, the exact population the vaccine is intended to protect. A transient morbilliform rash is an adverse effect associated with the MMR vaccine and developmental defects have been reported in older children. Efforts are underway to attenuate the live rubella virus used in the vaccine. When European countries began suspecting that the pertussis vaccine was dangerous, they eliminated the recommended schedule of childhood vaccinations When parents in the United States have refused to administer this vaccine to their children, however their children have been taken into the protective custody by the state. When vaccine companies began losing million-dollar lawsuits to parents with vaccine-damaged children, the United States government intervened and removed all vaccine manufacturer liability, assuming and limiting damage claims, and removing the possibility of any other compensation. This was the origin of the National Childhood Vaccine Injury Act of 1986 and the Vaccine Compensation Amendments of 1987. The Institute of Medicine Vaccine Safety Committee established thereunder published two reports, titled, Adverse Effects of Pertussis and Rubella Vaccines in 1991 and Adverse Events Associated with Childhood Vaccine: Evidence Bearing on Causality in 1994.

2. The pertussis vaccine is thought to cause death, neurological and polio-like developmental hip disorder in some babies and small infants and is not on the list of routinely administered vaccinations in Europe. Japan has postponed pertussis vaccination until children are two years old. The United States now provides a DT (Diphtheria and Tetanus) vaccine to replace the DTP (with pertussis) and DTaP (activated Pertussis). The typical case involves an initial seizure after the vaccine's administration, followed by recurrent seizures after a few days or weeks. Then mental or motor retardation become apparent over the ensuing months. The estimated risk of persistent neurologic damage 1 year later is estimated at 1:310,000. In the United States the medical profession constantly denies claims for compensation and refuses to report adverse reactions. Due to the advent of antibiotics, that can cure the disease in the first week of infection while still a runny nose, and prevent contagious spread, the incidence of pertussis has declined from at least 100 reported cases per 100,000 population during the period 1930-1945 to an average of 1.5 per 100,000 population during 1984-1993. Several thousand cases occur per year, most during childhood. During the 10 year period 1982-1991 an average of 5 reported deaths per year were associated with pertussis.

Immunity derived from the vaccine wanes after 5 to 10 years and the pertussis vaccine cannot be administered past 7 years of age because of severe reactions. Pertussis occurs regularly in older children and adults who have been fully vaccinated.

3. Vaccination for Measles, Mumps and Rubella is usually given as a single shot of combine live viruses (the MMR vaccine) at 12 months of age or older. Mass vaccination of children for mumps, measles and rubella has resulted in this disease becoming a disease of adolescents and young adults. The vaccines seem to have caused atypical forms of the diseases to appear. Measles was a common disease of childhood prior to the widespread use of measles vaccine. The disease is transmitted by a virus that is highly contagious. The symptoms of measles are cold symptoms, cough, irritated eyes, and high fever, with the appearance of a rash on the fourth day of illness. Encephalitis is reported to occur in one out of 1,000 cases, of these 25 to 30 percent show manifestations of brain damage. Measles was contracted by most children prior to vaccine licensure in 1963. Following the vaccine the incidence of measles decline to an average of 3,000 cases per year in the 1980s. However, in 1989 a resurgence of measles occurred in the United States, constituting an epidemic that brought levels back up to the 1970s rate of 27,000 reported cases per year. In 1990 the epidemic was traced to measles antibodies in young mothers. Epidemics occasionally break-out in vaccinated schools. The measles vaccine is known to cause many problems such as encephalitis, meningitis, subacute sclerosing panencephalitis, seizure disorder, sensorineural deafness, optic neuritis, transverse myelitis, Guillain-Barre syndrome. One of the most dangerous reactions cause by measles vaccine is an inflammatory response in the brain known as subacute sclerosing panencephalitis (SSPE) that causes demyelination of nerve sheaths and slow, progressive deteriorating condition resulting in death, often within 1 to 2 years, since 1968 there have been 575 cases, but incidence has declined since the 1970s accompanying a decline in natural measles, the proportion of cases with an antecedent history of measles vaccination has increased. Mass vaccination has resulted in a dramatic decline in measles incidence, but outbreaks now occur in older populations and in infants born to women whose immunity from vaccination has deteriorated. Periodic epidemics continue to occur.

4. Mumps was a common and very mild disease of childhood that was not even noticed in an estimated 30 percent of cases prior to widespread vaccine use. The illness begins with fever, headache and fatigue, and within 24 hours the child complains of earache near the lobe of the ear. The next day the salivary gland in front of the ear becomes swollen. Within one to six days, the illness has run its course. Infection of the testicles, ovaries, and other organs are not unusual, but occur much more commonly in adults. Infection of the testicle occurs in 20 to 30 percent of mumps cases in adolescent or adult males. Sterility following such an illness is extremely rare. Encephalitis and meningitis complications during epidemic outbreaks occur at a rate of 2 to 4 cases for every 1,000 reported cases of mumps. However only an estimated 70 percent of mumps cases are reported. A live mumps virus vaccine was licensed in 1967 and recommended for routine use in 1977. The number of mumps case decreased during the early 1980s to 3,000 to 5,000 cases per year, a dramatic decline from 100,000 cases per year of the early 1970s. However during 1986, 7,800 cases occurred and during 1987 there were nearly 13,000 reported mumps cases. During the early 1990s the number of reported cases

declined again to around 4,000 cases per year. The vaccine is associated with adverse effects similar to the measles vaccine. The rate of virologically confirmed mumps-vaccine associated aseptic (nonbacterial) meningitis was 1 case in 3,800 doses. Two conditions are associated with the mumps virus and not with measles. These are meningitis and diabetes and other pancreatic disease. Researchers calculated an incidence rate of 1 in 2,000 people who receive the MMR. Many studies have proven that natural mumps infection causes pancreatitis (infection of the pancreas) and stimulates the onset of diabetes. Mumps vaccination has similarly stimulated the onset of diabetes. The Vaccine Safety Committee declined to accept diabetes as a consequence of mumps vaccine.

G. Almost all elderly people and people with chronic disease are highly encouraged to get yearly influenza vaccine or flu shots. Most years these shots are effective, but effectiveness depends not so much on the vaccine development process, as to whether or not there is an outbreak of influenza and how infringed and leaky the vaccine development process. Most viruses which produce epidemics in North America and Europe have previously done so in Asia (Beijing Flu, Taiwan Flu). The Centers for Disease Control in Atlanta develops vaccines for the United States to protect from whatever viruses were in Asia six months earlier. But sometimes new viruses occur in the U.S. without first showing up in Asia, and sometimes the viruses change. Therefore, there is no guarantee, even with vaccination, that the flu can be avoided. Systematic review of 51 studies found no evidence that the flu vaccine is any more effective than a placebo in children. Studies published in 2008 found that influenza vaccination was not associated with a reduced risk of pneumonia in older people. In the winter flu season of 2012-2013 the flu vaccine was only 8% effective. These studies do not indicate that there is any benefit over natural human immunity from receiving a seasonal influenza vaccine, except for the manufacturers and vendors of the placebo, besides the intangible thrill of fooling all the people all the time. More seasonal influenza vaccines are sold than childhood vaccines and pneumovax combined. To make this fraud, felonious, the public and medical community are denied information regarding the effective over-the-counter remedies and prescription drugs that exist for the flu. When pandemics break out, medical staff are reported to not know how to treat the infection and they are reported by the news media to request the development of a new vaccine, that would take a year in the best of circumstances, and the flu vaccine is believed to be placebo, and would not cure an active infection any more than it would prevent infection. It is necessary that the public is informed: Eucalyptus and lavender essential oils are highly effective at curing the influenza. Mentholyptus cough drops are the frontline treatment for wet cough of influenza, prescription Oseltamivir (Tamiflu), Zanamivir (Relenza) and Amantadine (Symmetrel) are also effective.

1. Millions of people died from coronavirus 2 (SARS-CoV-2) waiting for the development of a COVID-19 vaccine that takes two doses to cure a chronic infection and is ineffective at preventing reinfection, contagious spread of the pandemic and death of both vaccinated and unvaccinated individuals who do not know how to treat their “Pinocchio nose”. The news media, government and public health authorities refused to inform the public of readily available overt-the-counter remedies for coronavirus. To advocate for pseudo-scientific testing centers, to facilitate terrorists to leak live viruses

back into the community to sustain the pandemic, public healthy authorities ignorantly continue to fail to accurately describe the immediate onset of the disease as “allergic rhinitis”, before it descends in around three days and begins to fill up the lungs with fluid potentially causing death, from flu-like symptoms, if untreated with a wide-array of curative over-the-counter and prescription corticosteroid remedies. To compound the misinformation combination tests were developed that test positive for “coronavirus” for both coronavirus and influenza. Although the truth of the matter is that eucalyptus cures both influenza and coronavirus, the public has not been informed of this and hospital corticosteroid treatment, if lucky, does not treat the flu, that is pandemic in some areas and isolated cases.

2. The Pfizer and Moderna two shot vaccines are reported to be effective at reducing death and severe illness by the 95% confidence interval, although they admit their true effectiveness is only about 30% at preventing reinfection. The truth of the matter is that these vaccines cure chronic coronavirus in people who do not know how to treat Pinocchio nose. Once curing their allergic rhinitis gives the patient a fair chance to fend off reinfection with sweat and unintentionally medicinal bathing and in particular swimming in chlorinated and saline swimming pools, that were closed during the first year of the pandemic, until CDC wanted, or had the liberty, to prove the effectiveness of their vaccine. There is deep concern that children are not safe to return to school due the pandemic and that the COVID-19 vaccine is not safe for children. There have been a number of reported cases of mild, but hospitalized, pericarditis in adolescents who received the COVID-19 vaccines, initially authorized only for people above 16, reduced to 12, and under investigation for young children. A vaccine that causes pericarditis in adolescents is almost certain to cause developmental heart defects in younger children. There have been a number of cases of thromboembolism clots being caused by the Astra-Zeneca vaccine, used in Europe. The justification that the benefits from the vaccine outweigh the risks, is untrue insofar that so many effective remedies have been censured from the news media and public health information, and the semi-effective vaccines alone are unlikely to completely unable to end the pandemic they started and perpetuate with their propaganda. It would be better said that the curative benefits of the many over-the-counter remedies outweigh the risks of COVID-19 vaccines.

3. Vaccination does not compete with knowing how to treat coronavirus by washing the nose with the large number of effective remedies. Vaccers are not only often the germiest and most contagious people in the room, they are inadvertent supporters of the terrorism that caused the pandemic by media and laboratory leak. A large percentage of health professionals object to being subjected to COVID-19 vaccination. However, their reasoning does not come out in the felony monopolized news media and professional health information. In the malicious intentional absence of precision medicine in official public information, so many health professional slavishly stake their surgeries on, at the expense of their own Pneumovax mental health, some health professionals are assumed to be even more untreated than once cured, two dose vaccers. As a consequence of the highly contagious health care environment, the number of people seeking medical care and treatment, and medical staff reporting to work in physical health facilities, has gone down. Telehealth has increased. Hopelessly untreated coronavirus patients are diverted

to leaky testing centers and thence to the intensive care unit (ICU) to maybe get treated with intravenous corticosteroids and/or dangerously ventilated, despite pneumonia risk. There is a backlog of care that has been deferred due to risk of infection.

4. To end COVID-19 and prevent future SARS and influenza pandemics it is medically necessary that everyone learn their lesson. Coronavirus treatment is safe and cheap. Although vaccination may cure coronavirus in two doses and reduce the risk of further severe infection and death, like the seasonal influenza vaccine, COVID-19 vaccination does not alleviate the need to know how to treat the contagious "Pinocchio nose" nor truly end the pandemic. The lesson everyone must learn to enjoy herd immunity is: Hydrocortisone, eucalyptus, lavender, peppermint or salt helps water cure allergic rhinitis from coronavirus. Eucalyptus or lavender also cure the wet cough of influenza. Mentholyptus cough drops are the front line treatment for both influenza and coronavirus, with a little nose washing. To end the COVID-19 pandemic the most effective strategy is probably to place eucalyptus, lavender or peppermint soap in public restrooms, with instruction to “wash your face and nose”. Lysol is approved for environmental cleaning. In hospital-like conditions it is important that both staff and patients are treated. Intensive care units (ICUs), waiting rooms and public airspaces of all sorts may be sterilized of both influenza and coronavirus with eucalyptus scented humidifiers (diffusers).

§362 Children

A. The United States has the highest birth rate (12.5 per 1,000 population), infant mortality rate (6.1 infant deaths per 1,000 live births and 8 under age 5 deaths per 1,000) and maternal mortality rate (32 deaths per 100,000) of any industrialized nation. The reason for abysmal statistics is that child poverty has increased from 15% to 22% - 33% today. Census data shows that since the Great Recession in 2010, 46.3 million Americans lived below the poverty line, 15.1% of the population and 63 million lived below 130% of the poverty line, SNAP’s gross income limit. In 2010, the poverty rate for the elderly was 9 percent officially but 15.9 percent with the new definition, due primarily to the much higher medical costs borne by older men and women. The working age poverty rate is 10%. The number of children living below the poverty has risen to 22-33%, 16 to 24 million children, from the normal poverty rate of 15.9% in 1996. The plan is to repeal (1) the Adjustment of the contribution and benefit base in Section 230 of the Social Security Act under 42USC§430 and replace it with 'There is created in the Treasury a Supplemental Security Income Trust Fund.' To tax the rich the full 12.4% Old Age Survivor and Disability Insurance (OASDI) Federal Income Contribution Act (FICA) on all their income to pay 16-24 million children growing up poor SSI benefits FY19 and end poverty by 2030. (2) Demonstration Projects and replace it with Maternity Protection at Section 305 of the Social Security Act under 42USC§505 to expedite unemployment compensation claims under State law for 14 weeks of Maternity Protection under International Labor Organization (ILO) Convention No. 183 (2000).

1. Nearly 4 million children are born each year, and childbirth is the No. 1 reason for hospital admissions. Furthermore, hospital costs of a hospital delivery for women who

had no maternal or obstetric risk factors to complicate childbirth ranged from less than $2,000 to nearly $12,000 in 2011. Vaginal births, on average, cost $2,600 without complications, and C-sections cost $4,500, according to the Agency for Healthcare Research and Quality Healthcare Cost and Utilization Project. Vaginal deliveries account for about 7 in 10 childbirths, and C-sections for about 3 in 10. Vaginal delivery with complications requiring an operating room procedure has the highest average price tag of any type of birth, costing parents (and their insurance companies) an average of $6,900, nearly double the average cost per stay for all types of delivery, according to the Project. In 2014, in California alone, the cost of an uncomplicated vaginal birth varied widely — from $3,296 to $37,227 depending on the hospital. Cesarean sections ranged from $8,312 to almost $71,000. Most uncomplicated vaginal deliveries are costing $10,000 these days. The United States needs to set reasonable prices for hospital deliveries that hospitals and all attending obstetricians and midwives cannot exceed combined. A large reason for the high number of poor children takes into consideration the high cost of the hospital delivery bill. 2.5% annual inflation from 2011 prices of $2,600 without complications, $4,500 c-section, $6,900 complicated comes to $2,990 without complications, $5,175 c-section and $7,935 vaginal with complications, after six years in 2017. The Medicaid price for an uncomplicated vaginal birth in Texas is $475. Medicaid pays about $12,000 on average. Pregnant women are expected to pay the doctor about $2,500 for an estimated twenty pre-natal care visits plus expensive hospital births. Medicaid covered prenatal and hospital delivery expenses for low-income beneficiaries. This prenatal care can help to have a healthy baby. Every state in the United States has a program to help. Programs give medical care, information, advice and other services important for a healthy pregnancy. To find out about the state program call 1-800-311-BABY (1-800-311-2229).

2. In 2016 there are estimated to be 77 million children under the age of 18 residing in the Social Security Area Population United States, about 23.33% of the 330 million total area population. In 2016 the US Census Bureau estimates a current total population of 324.5 million. The US Census reports that 22.9% of the population were under the age of 18 in 2015 down from 24.0% in 2010. 22.9% of current 2016/9/28 population estimate by the US Census bureau of 324.5 million comes to 74.19 million children. 24% of the current population is 77.88 million. America's Children in Brief: Key National Indicators of Well-Being 2016 estimates that there are 73.7 million children living in the United States down from a high of 74.1 million in 2010, when the last decennial Census was conducted. America's Children in Brief and the US Census 22.9% (2015) decision dare to question that there are more children under age 18 than any other cohort, even the immortal 74.9 million (2015) post-war Baby Boomer cohort born 1946-1964. If the Census is to estimate only 324.5 million Americans, whereas Social Security estimates 330 million, and there must be >75 million children to outnumber the Baby Boomers, the Census should estimate 23.1% children, whereas there is no reason to believe that there has been any decline in fertility.

B. The United States has the highest birth rate (12.5 per 1,000 population), infant mortality rate (6.1 infant deaths per 1,000 live births and 8 under age 5 deaths per 1,000) and maternal mortality rate (32 deaths per 100,000) of any industrialized nation. Four

statistics are commonly used evaluating disease and quality of obstetric care. Maternal death rate is the number of deaths of obstetric cause per 100,000 live births. Fetal death is synonymous with stillbirth per 1000 infants born. Neonatal death refers to an infant's death within the first 28 days of life and is expressed as the neonatal mortality per 1000 live births. The birth rate is expressed as the number of births per 1000 people in the total population. The fertility rate is the number of live births per 1000 females aged 15 to 45 in the population. Globally, the infant mortality rate has decreased from an estimated rate of 63 deaths per 1000 live births (6300 per 100,000) in 1990 to 32 deaths per 1000 live births (3200 per 100,000) in 2015. Annual infant deaths have declined from 8.9 million in 1990 to 4.5 million in 2015. Correspondingly, the infant mortality rate of the United States (US) declined from approximately 100 per 1,000 live births to (10,000 infant deaths per 100,000 live births in 1900, to 69 per 100,000 live births (689 per 100,000) in 2000 to 6.7 per 100,000 live births (670 per 100,000) in 2006 to 6.1 per 100,000 live births (610 per 100,000) in 2015. Data suggest that mothers with no prenatal care had a very high overall infant death rate (5281.83 and 4262.16 deaths per 100,000 births in Mississippi and Louisiana, respectively, whereas the US average was 3,075 deaths per 100,000 live births. Over 24,000 infants are estimated to have died in the United States in 2014.

Infant and Maternal Mortality in the US 1980-2015

	Live Births, number	Infant deaths, number	Infant deaths per 1,000 live births	Maternal deaths, number	Maternal death per 100,000 live births
1980	3,634,920	45,800	12.6	333	9.2
1990	4,204,565	38,682	9.2	344	8.2
1995	3,931,808	29,882	7.6	279	7.1
2000	4,081,437	28,162	6.9	399	9.8
2005	4,152,888	28,655	6.9	627	15.1
2010	4,007.631	26,450	6.6	714	17.8
2015	3,961,981	24,168	6.1	1418	35.8

Source: Numbers calculated by SSA live birth and US Census infant and maternal mortality rates

1. The U.S. is the only developed country in the world where maternal deaths actually increased between 1993 and 2013, according to the World Health Organization. In 1987, maternal death ratios hit the all-time low of 6.6 deaths per 100,000 live birth. Around 2000, the ratio began to increase and has since nearly doubled, hovering between 12 and 15 deaths per 100,000 live births between 2003 and 2007. There were 28 maternal deaths per 100,000 live births in the United States in 2013, up from 23 in 2005, The United States did not achieve United Nations Millennium Development Goal #5 — the reduction of maternal mortality by three fourths by the year 2015. Statistics released in September of 2010 by the United Nations place the United States 50th in the world for maternal

mortality — with maternal mortality ratios higher than almost all European countries, as well as several countries in Asia and the Middle East. Even more troubling, the United Nations data show that between 1990 and 2008, while the vast majority of countries reduced their maternal mortality ratios for a global decrease of 34%, maternal mortality nearly doubled in the United States. Other countries where maternal mortality increased during that same time period included Afghanistan, Botswana and Chad. Causes of maternal mortality include postpartum hemorrhage, eclampsia, obstructed labor, and sepsis. From 1990 to 2015, the global maternal mortality ratio declined by 44 per cent – from 385 deaths to 216 deaths per 100,000 live births, according to UN inter-agency estimates. This translates into an average annual rate of reduction of 2.3 per cent. While impressive, this is less than half the 5.5 per cent annual rate needed to achieve the three-quarters reduction in maternal mortality targeted for 2015 in Millennium Development Goal 5. Target 3.1 of the Sustainable Development Goals (SDGs) is to reduce the global maternal mortality ratio to to less than 70 per 100, 000 live births by 2030.

2. Maternal mortality was flagged in 3,404 deaths within a year of pregnancy termination, occurred during 2011-2012 and were reported to CDC, 1,329 were found to be pregnancy-related. Statistics for 40 states and the District of Columbia, gleaned from death certificates, indicate that whereas the reported maternal mortality rate from 1999 to 2002 was 9.8 per 100,000 live births, it jumped to 20.8 per 100,000 live births for the period 2010 to 2013. But the numbers in the latter period may have been affected by a small change in the forms that are filed when a person dies. Until relatively recently most states relied on a death certificate form that was created in 1989. A newer version of the form, released in 2003, added a dedicated question asking whether the person who died was currently or recently pregnant—effectively creating a flag for capturing maternal mortality. Specifically, this recently introduced question asks if the woman was pregnant within the past year, at the time of death or within 42 days of death. The statistical increase in maternal mortality is attributed to be mostly the result of more accurate death reporting. There is however grave concern that large numbers of young mothers become addicted to their opiate epidural and die within 42 months to one year of giving birth of opiate overdose.

3. Women who receive no prenatal care are three to four times more likely to die of pregnancy-related complications than women who do. Those with high-risk pregnancies are 5.3 times more likely to die if they do not receive prenatal care. Healthy People 2010 — national health objectives developed in 1998 by US federal health agencies — set a goal of 90% of women receiving “adequate prenatal care” (defined as 13 prenatal visits beginning in the first trimester). However, data suggest that, for 25% of women, their care falls short of this goal. This figure rises to 32% for African American women and 41% for American Indian and Alaska Native women. For the last 50 years, black women who give birth in the United States have been approximately four times as likely to die as white women. The greater risk of death for black women does not simply reflect a greater risk of an underlying complication occurring; in a national study of five medical conditions that are common causes of maternal death and injury (preeclampsia, eclampsia, obstetric hemorrhage, abruption and placenta previa), black women did not have a significantly higher prevalence than white women of any of these conditions.

However, the black women in the study were two to three times more likely to die than the white women who had the same complication. Likewise, a study comparing maternal outcomes for Mexican-born women and White non-Latina women in California found that while Mexican-born women were less likely to suffer complications overall, they did face a greater risk of particular obstetric complications such as postpartum hemorrhage, major puerperal infections and third- and fourth-degree lacerations, suggesting that the intrapartum care they received may have been of poorer quality. White, non-Hispanic children were more likely to have private insurance (68 percent) compared to Hispanic (31 percent) and Black (34 percent). In 2014 Hispanic (57 percent) and Black (59 percent) were more likely than White (25 percent) to have public coverage. From 2000 to 2014, the percentage of children overall with health insurance increased by 7 percentage points to 95 percent. Although the percentage of children with private coverage declined by 13 percentage points during this period to 54 percent, public coverage increased by 20 percentage points to 38 percent.

4. Teen pregnancies were way up in 2006. While the birth rate among 10-to-14-year-old girls continued to fall, the rate for those ages 15 to 19 increased from 40.5 per 1,000 girls to 41.9 births per 1,000 in 2006. The birth rate rose by 3 percent between 2005 and 2006 among 15-to-19-year-old girls, the same as for all women, after plummeting 34 percent between 1991 and 2005. The increase was greatest among black teens, whose birth rate rose 5 percent between 2005 and 2006, reaching 63.7 per 1,000 teens. That was particularly disappointing because black teens had previously made the greatest reductions, with the rate among 15-to-17-year-olds dropping by more than half. The rate rose 2 percent, to 83 births per 1,000, for Hispanic teens, and 3 percent, to 26.6 per 1,000, for white teens (Stein 2007). Older women, in their forties, are also having more children, up to 7 from 4 per 1,000, however the vast majority of the childbirth is done by women in their twenties and thirties. Women ages 20-29 have more than 200 births per 1,000. Teens 18-19 have 90 births per 1,000. In the 1990s women 35-39 overtook teens 15-17 years for the first time since 1967 with 39 versus 31 births 1,000. Women of all ages but those younger than 17 are giving birth to more children than during the seventies and eighties but not as frequently as the Baby Boomers before 1970 and the advent of effective oral contraceptives.

C. In 1940 three out of five white women gave birth in hospitals by 2000 99% of children were born in hospitals. There are more home births now due to high hospital delivery prices but the statistical significance of surge in home-births is unknown. Pre-natal care, offered by obstetricians, is basically a screening program to determine whether or not to abort the pregnancy and the manner they wish to give birth, home or hospital delivery. Pregnant women are usually expected to see the obstetrician each month during the first two trimesters and, twice a month for the seventh and eighth months and weekly for the last month. The visits typically take 10 to 15 minutes or less, in which the woman is weighed, her blood pressure taken, and her urine tested. Blood is drawn for yet more screening and testing. She lies on an examining table and the fetal heart rate is noted as is the position of the baby. If she has symptoms to present, these are noted and remedies may be prescribed. Pre-natal care offered by midwives tends to stress the psychological aspects of motherhood and the visits last 30 minutes. The prevailing medical belief is

that pregnant women should aim for a weight gain of 15 to 20 pounds above their ideal weight. That is a woman 10 pounds overweight would be allowed a weight gain of 5 to 10 pounds in the course of her pregnancy while a woman who is 30 pounds overweight would be asked to lose 10 to 15 pounds. Excessive weight gain can impair health. A correlation exists with high blood pressure complications such as toxemia or eclampsia. However it depends on the mother and no objective measure can be set. Midwifes tend not to count the pounds but focus instead on nutrition as the single most important aspect of pregnancy care. Counsel on pre-natal care is typically to maintain a healthful diet and exercise plan. Do not use tobacco, alcohol, or any illegal drugs. Avoid teratogenic prescription drugs, such as metronidazole in the first trimester and tetracyclines and vaccines such as the MMR that contains active rubella. Do not get addicted to opiate analgesics. Use educational resources to learn as much as possible about the process of pregnancy, labor, and the methods of delivery.

1. A pregnant woman undergoes a number of physiologic changes during pregnancy. Cardiovascular changes: cardiac output increases 43%, heart rate increases 17%, systemic vascular resistance decreases 21%, pulmonary vascular resistance decreases 34%, stroke volume increases 27% and systolic murmurs, split S1 can be heard with a stethoscope. Blood-pressure decreases with a nadir in the second trimester. Hematologic changes: blood volume increases 40-45%, Hemoglobin (Hgb decreases to a mean of 12.5 g/dL at term, fibrinogen increases 300-600 mg/dL, factor VII, VIII, IX and X increase, factor XI and XIII decrease, PTT, PT mildly decrease, antithrombin II, protein C are unchanged, protein S decreases and plasminogen increases. Pulmonary changes: respiratory rate is unchanged, tidal volume increases 39%, minute ventilation increases 42%, functional residual capacity decreases 20% and residual volume decreases 20%. Renal changes: glomerular filtration rate increases 50%, renal plasma flow increases 50-75% and creatinine decreases. Gastrointestinal changes: gastric motility decreases, alkaline phosphatase increases, transaminases are unchanged, LDH, amylase is unchanged, gallbladder contractility decreases and biliary sludge/cholelithiasis increases. Endocrine changes: thyroid-binding globulin increases, T4 increases, total hormones increase, free hormones decrease, T3 increases, TSH is unchanged, thyroid-releasing hormone is unchanged, prolactin increases, cortisol increases, and aldosterone increases. The diagnosis of pregnancy should not be made based solely on the nonspecific symptoms and physical findings common in early pregnancy. The overall incidence of twins in the United States is almost 3% and rising. The natural rate of twinning is approximately 1 in 90 and is slightly higher in blacks than in whites. Twin gestations can be characterized as dizygotic (fraternal) or monozygotic (identical). The incidence of three or more fetuses is approximately 90 raised to the power of the number of fetuses in one uterus, thus triplets occur in 1 in 90^2, 1 in 8100 births, quadruplets 1 in 729,000 and so forth. Compared with singleton pregnancies which deliver at 40 weeks, twins deliver at an average of 37 weeks, triplets at 33 weeks and quadruplets at an average of 29 weeks. A pregnancy test is used to make an accurate diagnosis.

2. After the diagnosis of pregnancy the initial routine of laboratory tests involves 15 tests. (1) complete blood count to determine hematolgic status and rule out anemia. (2) Urinalysis and urine culture and sensitivity to evaluate or UT and renal function. (3)

Blood group, Rh to determine blood type, Rh status, and risk of immunization. (4) Antibody screen to detect maternal antibodies, which may damage fetus to detect previous/current infection; if positive, specific treponemal test is required (e.g., FTA-ABS or MHA-TP). (6) Hepatitis B surface antigen to detect carrier status or active disease if positive, further testing is indicated. (7) Rubella titer shows approximately 85% of mothers have evidence of prior infection; if patient is seronegative, special precautions are needed to avoid infection, which can severely affect the fetus; vaccination is then required postpartum. (8) Cervical cytology (Pap smear) to screen for cervical dysplasia/cancer. (9) Cervical culture for *Neisseria gonorrhoeae* to screen for infection; both cause neonatal and *Chlamydia trachomatis* conjunctivitis; association with premature labor and postpartum endometritis. (10) Hemoglobin electrophoresis to detect sickle-cell trait (HbSA), associated with higher risk for UTI, and sickle-cell disease (HbSS), at risk for multiple fetal and maternal complication. (11) HIV titer by ELISA; Western blot if HIV+ by ELISA should be offered to all patients at risk (multiple sexual partners, drug use or sexual contact with drug users). (12) Glucose screening (usually 1-hour Glucola) to screen for glucose intolerance in high risk patients; usually at 28 weeks in low risk patients. Subsequently, (13) MSAFP at 15 to 18 weeks (usually with hCG, estriol) elevated levels are seen with neural tube defects, gastroschisis and omphalocele; low levels associated with Down syndrome. (14) Hematocrit at 25 to 28 weeks to rule out anemia. (15) Glucose screening (usually 1-hour Glucola) at 24 to 28 weeks. The most common indication for invasive prenatal diagnosis, e.g. amniocentsis is advanced maternal age. In order to detect chromosome abnormalities in younger women, maternal serum analyte screening is offered. Currently pregnancies are screened in the second trimester between 15 and 21 weeks. Several protocols are used. The most common involves measurement of maternal serum levels of α-fetoprotetin (AFP), human chorionic gonadotropin (hCG), and unconjugated estril (uE3). Triple screening detects about 60 % of fetal Down syndrome and about 4% of all women screened will be categorized screen-positive. Patients should be advised of the chance of a false-negative and false positive results. Amniocentesis has been used for prenatal diagnosis for almost 20 years. The procedure involves removing, usually under current ultrasound guidance, 20 to 40 cc. of amniotic fluid. Traditionally, amniocentesis is performed between 15 and 20 week is gestation, and is done for people over the age of 35. Ultrasound may discover malformations such as microcephaly. Chromosome abnormalities also play an important role in spontaneous abortion and infertility; at least 50% to 60% of first-trimester spontaneous abortions, 5% of stillbirths, and 2% to 3% of couples experiencing multiple miscarriage or infertility will be found to have a structural or numerical chromosome alteration. Overall, 0.6% of all live-borns have a chromosome abnormality.

3. Abortion is the termination of a pregnancy before viability, typically defined as 20 weeks from the first day of the last normal menstrual period or a fetus weighing less than 500g. Whether spontaneous (miscarriage) or induced, there are profound medical as well as emotional implications with abortion. The incidence of spontaneous abortion is estimated at 50% of all pregnancies, an estimate based on the assumption that many pregnancies spontaneously terminate without clinical recognition. An incidence of recognized spontaneous abortion of 15% to 25% is commonly cited, with approximately 80% occurring during the first 12 weeks of pregnancy. Approximately 50% of early

spontaneous abortions are attributed to chromosomal abnormalities, of which trisomy accounts for 40% to 50%, monosomy C for 15% to 25% , triploidy for approximately 15% and tetraploidy for approximately 5%. If the first abortus is chromosomally abnormal, a second abortus has an 80% chance of being abnormal as well. Risk factors include increasing parity, increasing maternal age, increasing paternal age, and conception within 3 months of a live birth. Expulsion of the pregnancy is usually preceded by death of the embryo or fetus. Second-trimester abortions are less likely to be chromosomal and more likely to be caused by maternal systemic disease, abnormal placentation, or other anatomic consideration. Maternal systemic conditions that have been associated with spontaneous abortion include infections such as *Listeria monocytogenes*, *Mycoplasma hominis*, *Ureaplasma urealyticum* and toxoplasmosis as well as viral infections including rubella and cytomegalic inclusion disease**.** Insufficient secretion of progesterone by the corpus luteum or the placenta may be associated with spontaneous abortion. Smoking, alcohol and obesity have been linked to miscarriages. Women who smoke more than one pack of cigarettes per day or drink more than 2 days per week have an almost twofold risk of spontaneous abortion.

4. Moderate exercise programs can be continued during pregnancy. Regular, non-weight-bearing activity should be maintained on a three times a week schedule, at minimum. Overly strenuous exercise, especially for prolonged periods, should be avoided, however there are stories of pregnant women going into labor while running a marathon, finishing the marathon before going to the hospital to deliver a healthy baby. Supine exercises should be discontinued after the first trimester to minimize circulatory changes brought on by pressure of the uterus on the vena cava. Any activity should be discontinued if discomfort, significant shortness of breath, or pain in the chest or abdomen appears. Abdominal trauma should be avoided. A complete nutritional assessment is an important part of the initial antepartum assessment. Recommendations for total weight gain during pregnancy and the rate of weight gain per month appropriate to achieve it may be made based on a body mass index (BMI) calculated for the pre-pregancy rate. Underweight mothers with a BMI <19.8 should gain a total of 12.7-18.2 kg (28-40 lb) at a rate of 2.3 kg (5.0 lb) every 4 weeks. Normal weight mothers with a BMI 19.8-26.9 should gain a total of 11.4-15.9 kg (25-35 lb) at a rate of 1.8 kg (4.0 lb) every 4 weeks. Overweight mothers with a BMI of 26.1-29.0 should gain a total of 6.8-11.4 kg (15-25 lb) at a rate of 1.2 kg (2.5 lb) every 4 weeks. Obese mothers with a BMI >29.0 should gain 68 kg (15 lb) at a rate of 0.9 kg (2.0 lb) every 4 weeks. Twin gestation by a normal mother requires a weight gain of 15.9-20.4 kg (35-40 lb) at a rate of 2.7 kg (6.0 lb) every 4 weeks. Published recommended daily allowances (RDAs) for protein, minerals, and vitamins are useful approximations. A balanced, adequate diet usually supplies all the vitamins needed in pregnancy (Beckmann et al '02: 91, 92). Most pregnant women are prescribed a daily multivitamin containing iron and folate. Although women in the past have been told to rest during pregnancy, exercise is now recommended for pregnant women because it has been shown to reduce the risk of complications during pregnancy and can help a woman recover more quickly after giving birth. A University of Montreal study reported at the 2013 Neuroscience conference in San Diego that the babies of 10 women who did as little as 20 minutes of moderate exercise three times a week during pregnancy showed

more advanced brain activity when they were tested at eight to 12 days old than the babies of eight women who did not exercise during pregnancy.

D. Labor is the process by which products of conception (fetus, placenta, cord and membranes) are expelled from the uterus. It is defined as the progressive effacement and dilation of the uterine cervix, resulting from rhythmic contractions of the uterine musculature. Uterine contractions without effacement and dilation of the cervix occur normally in the third trimester of pregnancy and are termed Braxton Hicks contractions, or false labor. Braxton Hicks contractions are typically shorter in duration and less intense than true labor contractions, with the discomfort being characterized as over the lower abdomen and groin areas. These contractions often resolve with ambulation. True labor is associated with contractions that the patient feels over the uterine fundus, with radiation of discomfort to the low back and low abdomen. These contractions become increasingly intense and frequent. The ultimate test of whether the contractions are those of labor is if they are associated with cervical effacement and dilation. Another event of late pregnancy is termed lightening. The patient reports a change of shape of her abdomen and the sensation that the baby has gotten less heavy, the result of the fetal head descending into the pelvis. The patient may also report the baby is "dropping". The patient often notices that the lower abdomen is more prominent and the upper abdomen is flatter and there may be more frequent urination as the bladder is compressed by the fetal head. Patients often report the passage of blood-tinged mucus late in pregnancy. This bloody show results as the cervix begins thinning out (effacement) with the concomitant extrusion of mucus from the endo-cervical glands. Cervical effacement is common before the onset of true labor, as the internal os is slowly drawn into the lower uterine segment. The cervix is often significantly effaced before the onset of labor Approximately 85% of patients undergo spontaneous labor and delivery between 37 and 42 weeks' gestation. Patients are told to report to the hospital if their contractions occur approximately every 5 minutes for at least 1 hour, if there is a sudden gush of fluid or constant leakage of fluid (suggesting rupture of membranes), if there is any significant bleeding, or if there is significant decrease in fetal movement.

1. The initial examination of the gravid abdomen may be accomplished using Leopold maneuvers, a series of four palpations of the fetus through the abdominal wall that helps to accurately determine the fetal lie, presentation and position. The four Leopold maneuvers include: (1) Determining what occupies the fundus. In a longitudinal like the fetal head is differentiated from the fetal breech, the latter being larger and less clearly defined. (2) Determining the location of small parts. Using one hand to steady the fetus, the fingers on the other hand are used to palpate either the firm, long fetal spine or the various shapes and movements indicating fetal hands and feet. (3) Identifying the descent of the presenting part. Suprapubic palpation identifies the presenting part as the fetal head, which is relatively mobile, or breech, which moves the entire body. The extent to which the presenting part is felt to extend below the symphysis suggests the station of the presenting part. (4) Identifying the cephalic prominences. As long as the cephalic prominence is easily palpable, the vertex is not likely to have descended to 0 station. The vaginal examination should be performed using an aseptic technique. Visualization of the cervix with a speculum allows for better identification of the source

of any bleeding. The digital portion of the vaginal examination allows the examiner to determine the consistency and degree of effacement of the cervix. Effacement is the degree to which the cervix has thinned and is expressed as a number of centimeters of cervical length where 4 centimeters is considered un-effaced. The cervix is also palpated for cervical dilation, described as centimeters of dilation. Fetal station is also determined by identifying the relative feel of the foremost part of the fetal presenting part relative to the level of the ischial spines. If the presenting part has reached the level of the ischial spines it is termed 0 station. The distance between the ischial spines to the pelvic inlet above and the distance from the spines to the pelvic outlet below are divided into thirds, and these measurements are used to further define station. If the presenting part is palpable at the pelvic inlet, it is called -3 station, if it has descended one-third of the way to the ishial spines, it is called -2 station, and so on. Descent of the fetal presenting part below the spines is similarly defined as +1 station, +2 station and so on. The clinical significant of the fetal head presenting at 0 station is that the biparietal diameter of the fetal head, the greatest transverse diameter of the fetal skull, has negotiated the pelvic inlet. If the patient is found not be in active (ie., <4 cm dilated) she may be sent home to await the onset of true labor. It has therefore been advised that the patient eat a large meal at home, before going to the hospital, after noticing contractions every five minutes; not only does this give a healthy amount of time for the contractions to slow down, but consuming a large meal helps to occupy abdominal space helping to force the expulsion of uterine contents, hastening delivery and shortening hospitalization.

2. Although labor is a continuous process it is divided into four functional stages The first stage is the interval between the onset of labor and full cervical dilation (10 cm). The first stage is further divided into two phases. The latent phase encompasses cervical effacement and early dilation. The second is the active phase, during which more rapid cervical dilation occurs, usually beginning at approximately 4 cm. In the first stage of labor fetal heart rate and contractions are monitored. The second stage encompasses complete cervical dilation through the delivery of the infant. Once the second stage of labor has been reached (i.e. complete or 10 cm, cervical dilation, voluntary maternal effort (pushing) can be added to the involuntary contractile forces of the uterus to facilitate delivery of the fetus. In a normal delivery the fetal head crowns and distends the perineum. During this stage the fetal head may undergo molding, an alteration in the fetal cranial bones due to disparity between the fetal head and the bony pelvis. Caput succedaneum is the edema of the fetal scalp caused by pressure on the fetal head by the cervix. An extended second stage may last as long as 2 to 3 hours. The dorsal lithotomy position (supine on back, legs bent at knees and elevated) is a common position for vaginal delivery in the United States. Other delivery positions (e.g., lateral, knee-chest, sitting) may also be used to advantage, especially for the normal spontaneous vaginal delivery. Various delivery devices, such as a birthing chair or stool, may also be sed to advantage under similar circumstances. By enlarging the vaginal outlet, an episiotomy facilitates delivery and may be indicated in cases of instrumental delivery and/or protracted or arrested descent. Routine episiotomy is not a part of modern obstetric practice.

3. As the fetal head crowns (ie, distends the vaginal opening), it is delivered by extension to allow the smallest diameter of the fetal head to pass over the perineum, through a modified Ritgen maneuver, where, one hand is placed over the vertex while the other exerts pressure through the perineum to the fetal chin. A sterile towel is used to avoid contamination. After the head is delivered, nasal and oral suction is performed with a bulb syringe. If meconium has been present, suctioning of the pharynx must also be accomplished. The neck should then be evaluated for the possible presence of a nuchal cord, which should be reduced over the fetal head if possible. If the cord is tight, it may be doubly clamped and cut. After delivery of the head, the shoulders descend and rotate to a position in the anterio-posterior diameter of the pelvis. The attendant's hands are placed on the chin and vertex, applying gentle downward pressure, thus delivering the anterior should. To avoid injury to the brachial plexus, are is taken not to put excessive force on the neck. The posterior should is then delivered by upward traction on the fetal head. Delivery of the body now occurs easily. The fetus is then cradled in the attendant's arms, with the head down to maximize drainage of secretions to the oropharynx. Further suctioning is accomplished before clamping the umbilical cord. Is the newborn is stable, he or she may remain with the mother to stat bonding and/or first breast nippling. If the newborn is in some manner unstable, transfer to a radiant warmer and further pediatric care is indicated.

4. The third stage begins immediately after delivery of the infant and ends with the delivery of the placenta within 30 minutes. Immediately after delivery of the infant, the uterus significantly decreases in size. Blood for the umbilical cord should be obtained and sent for type and Rh testing and arterial blood gas determination. Delivery of the placenta is imminent when the uterus rises in the abdomen, becoming globular in configuration, indicating that the placenta has separated and has entered the lower uterine segment; a gush of blood and/or "lengthening" of the umbilical cord also occur these are the three classic signs of placental separation Pulling the placenta from the uterus by excess traction on the cord may result in inversion of the uterus, an obstetric emergency associated with profound blood loss and shock. Instead, it is appropriate to wait for spontaneous extrusion of the placenta, sometimes up to 30 minutes. If spontaneous placental separation does not occur, or as a routine for some physicians, the placenta may be removed manually by passing a hand into the uterine cavity and sing the side of the hand to develop a cleavage plane between the placenta and the uterine wall. The placenta can then be manually removed. Sufficient analgesia should be employed for this maneuver. Lacerations of the birth canal, if present are repaired with an absorbable suture. Vacuum extraction is sometimes used in lieu of obstetric forceps. Lacerations can involve the vagina mucosa in the first degree, the underlying fascia or muscles in the second degree, the anal sphincter in the third degree and extend through rectal mucosa in the fourth degree. Lacerations are repaired with sutures. Cesarean section now accounts for up to 15%-30% of births in some obstetric units. The rate of cesarean section was less than 5% until 1965. With the increasing tendency to attempt vaginal birth after cesarean section with success rates of 70% to 75%, fewer cesarean sections are now being performed for this indication. The maternal mortality rate associated with cesarean delivery is two to four times that of a vaginal birth (i.e., 1 per 2,500 to 2 per 5,000 operations). The fourth stage of labor is defined as the immediate postpartum period of

approximately 2 hours after delivery of the placenta during which time the patient undergoes significant physiologic adjustment. For the first hour or so after delivery, the likelihood of serious postpartum complications is greatest. Postpartum uterine hemorrhage occurs in approximately 1% of patients Both caput and molding resolve in the first few days of life.

5. To physician Soranus of the second century BC, the demands of the profession require a highly competent woman; he implies that some midwives are simply unfit for their work. "A suitable person," Soranus writes, "will be literate, with her wits about her, possessed of a good memory, loving work, respectable and generally not unduly handicapped as regards her senses [i.e., sight, smell, hearing], sound of limb, robust, sympathetic disposition (though she need not herself have borne a child) and keep her hands soft, presumably so she would not cause discomfort to either mother or child. Soranus argues that the best midwives should be literate so that they can be knowledgeable about obstetrics and pediatric theory. Medical writings indicate that obstetrical practice was not limited to midwives; a male physician might attend particularly difficult births. In the Eastern end of the Mediterranean basin, some women advanced beyond the profession of midwife (*maia*) to that of obstetrician (*iatros gynaikeios*), for which formal training was surely required. Moreover, there were some gynecological tracts written by women with Greek names. It would appear that obstetrical care in the East was a respectable profession in which respectable women could earn their livelihoods and enough esteem to publish works read and cited by male physicians.

6. At the onset of labor, the midwife was summoned and the necessary equipment made ready. During labor, the parturient lay on her back on a hard, low bed with support under her hips; her feet were drawn up together, her thighs parted. Soranus directs the midwife to ease the labor pains with gentle massage, with a cloth soaked in warm olive oil laid over the abdomen and genital area, and with the equivalent of hot-water bottles- bladders filled with warm oil- placed against the woman's sides. As the cervix begins to dilate, the midwife is to encourage the process of dilation by gently rubbing the opening with her left forefinger (with its nail cut short); the finger is to be generously smeared with olive oil. When the cervix is dilated to the size of an egg, the parturient is moved to the midwife's stool, unless she has become very weak; in the latter case, the delivery is to be made on the hard bed. For the actual delivery, the midwife needs three assistants to stand on both sides of the chair and at the back. Soranus stresses that these assistants should be "capable of gently allaying the anxiety" of the mother. The woman who stood behind the chair had to be strong enough to keep the parturient from swaying; in addition, she was to hold a small, flat piece of cloth at the anus to avoid hemorrhoids. The midwife herself, covered by an apron, sat in front of the mother and throughout the delivery assured her that all was going well. One of the midwife's duties was to instruct the mother on proper breathing and on how to push downwards during a contraction. Once the baby had been safely delivered, the midwife carefully inspected it for any congenital deformities. After inspecting the child and letting it rest a bit, the midwife severs the umbilical cord. Soranus recommends using a knife and castigates other methods as superstitious Instead of cauterizing the cord, as many midwives do, Soranus directs her to gently squeeze the

blood from it, to ligate the end with a stout woolen (not linen) thread, and finally to gently press the bent cord into the umbilicus or navel. With the umbilical cord tied off properly, the midwife is then to cleanse the newborn. Soranus recommends that the midwife sprinkle the infant with a moderate amount of "fine and powdery salt, or natron or aphronitre." All these chemicals are mildly astringent and were recommended primarily for their ability to cut through the residue of amniotic fluid, vernix, and placenta on the newborn's skin and also to make the skin less prone to develop rashes; however, astringents would also tend to make the baby's skin dry out and flake or crack. The emulsion is to be washed away with warm water and the process repeated a second time. Next, the midwife is to clear any mucus from the nose, mouth, and ears and to clear the anus of any membranes that might impede regular bowel movements.

7. Galen says that infants present feet first, laterally, or with an arm or leg first in only one of many thousands of births (de Usu Partium 15.7). We should properly take this observation with a grain of salt, since neither Galen nor any one else in antiquity ever tried to make an accurate count of such occurrences. But clearly, Galen thought these births unusual. Modern statistics suggest that in about five percent of deliveries, the infant presents in a difficult position- breech, transverse, compound, or face/brow first. By far the most common, breech occurs in about three to four percent of deliveries. Breech presentations are especially associated with prematurity and poor nutrition, conditions at least as likely in the Greco-Roman world as today. As a general rule of thumb, 85-90% of all births in a generally healthy female population are normal and uncomplicated.

E. The United States' under-5 mortality rate (8 per 1,000 live births) is twice that of Belgium, Czech Republic, Finland, France, Italy, Japan and Norway (4 per 1,000 live births) and more than twice that of Iceland and Sweden (3 per 1,000 live births). Over the past 20 years US infant mortality remains high and maternal mortality rates have risen. The US rate of 6.1 infant deaths per 1,000 live births in the first year of life is the highest in any industrialized country. The Infant death rates for poor mothers exceeds 5 per 1,000 in the first year. From 1980-2000, the infant mortality rate in the first year decreased from 7.04 infant deaths per 1,000 live births in 1999 to 6.75 in 2007, and then decreased at a faster rate to 5.96 in 2013. From the mid-1960s through 1980, the poor in the United States made health gains and their infant death rates declined as the survival gap shrank. Since 1980, however disparities between rich and poor in the US have widened and infant death rates among the poor remain higher than among the rich. Trends in infant mortality rates during 1999-2013 varied among the five racial and ethnic groups. During 1999-2013 infants born to black mothers experienced the highest rates of infant mortality (11.11 in 2013) and infants born to Asian or Pacific Islander mothers experienced the lowest rates (3.90 in 2013). In the United States, American-Indian and Alaska Native infants are 1.5 to 2 times more likely to die than white infants and African-American infants are 2.4 times more likely to die than white infants. Hospital care is expensive and mortality rates among infants in their first days and weeks of life are low. But as infants and the medical bills get older, a mortality gap opens between the US and other countries, and widens considerably. In 2013, the infant mortality rates were 11.1 infant deaths per 1,000 live births for Black, non-Hispanics; 7.7 infant deaths per 1,000

live births for American Indian or Alaska Native, non-Hispanics; 5.1 infant deaths per 1,000 live births for White, non- Hispanics; 5.0 infant deaths per 1,000 live births for Hispanics; and 3.9 infant deaths per 1,000 live births for Asian or Pacific Islander, non-Hispanics. From 1999 to 2013, the total infant mortality rate declined by 1 percentage point. During the same time period, the infant mortality rate declined by 3 points for Black, non-Hispanic infants and 1 point for White, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and Hispanic infants. Infant mortality for American Indian or Alaska Native, non- Hispanic infants was stable from 1999 to 2013. Despite the declines in infant mortality between 1999 and 2013, rates for Black, non-Hispanic and American Indian or Alaska Native, non-Hispanic infants remained higher than the rates for White, non-Hispanic; Hispanic; and Asian or Pacific Islander, non- Hispanic infants throughout the entire period.

1. The mortality rate of children younger than 5 is 8 in 1,000 live-births in the United States and 86 in 1,000 live-births for the overall child population of the world. One thousand infants die each hour; 970 of these deaths occur in developing countries. According to the World Health Organization (WHO), 10.5 million children young than 5 years old died in 1999. Of these, 99% lived in developing countries. Causes of death were attributed to malnutrition (54%), perinatal conditions (20%), pneumonia (19%), diarrhea (15%), measles (8%), malaria (7%), HIV/AIDS (3%) and other (28%). One third of births in the developing world are not registered. Malnutrition among pregnant women leads to stunting of an estimated 182 million children. From 1990 to 2000, at least 20 million children were displaced by disasters at any given time. In 2000, more than 10 million children younger than 15 had lost one or both parents to AIDS. Malnutrition, including both calorie and micronutrient deprivation, causes acute and chronic morbidity, contributes to reduced immunity, and increases the likelihood of mortality and morbidity associated with infectious diseases. Doxycycline and tetracycyline antibiotics cause permanent yellowing of developing teeth, wherefore clindamycin (Cleocin) is prescribed to treat staphylococcus aureus in children and pregnant women. For children Clark's rule is to divide the child's weight (in pounds) by 150 to get the fraction of the adult dose to give to the child. Example: For a 50 pound child give 50/150 (or 1/3) of the adult dose.

2. Post-natal infant mortality for the United States 2000 was 2.3 in 1,000 live births (4.7 in 1,000 for black infants and 1.9 in 1,000 for white infants). The leading cause of death in this age groups was sudden infant death syndrome, followed by congenital anomalies, perinatal conditions, respiratory system diseases, accidents and infectious diseases. Maternal risk characteristics include unmarried status, adolescence, high parity and less than 12 years of education. The five most common causes of death amongst children vary at different stages of development. Under 1 years of age these causes of death, from 1 to 5, are perinatal conditions, congenital malformations, sudden infant death syndrome, injuries and infection. Between 1-4 years injuries, congenital malformations, malignant neoplasm, homicide and heart disease. Between 5-9 years injuries (unintentional), malignant neoplasm, congenital malformation, homicide and heart disease. Between 10-14 years injuries (unintentional), homicide, suicide, malignant neoplasm and heart

disease 15-19 years injuries (unintentional), homicide, suicide, malignant neoplasm and heart disease.

3. Unintentional injuries are the leading cause of death for children and adolescents. In 2014, 35 percent of deaths among adolescents ages 15–19 and 30 percent of deaths among children ages 1–14 were due to unintentional injuries. For both age groups, motor-vehicle-related (MVR) injury deaths are the leading type of unintentional injury death. Compared with younger children, adolescents have much higher death rates overall and from injuries, and are much more likely to die from injuries sustained in motor vehicle traffic crashes. In 2014, the reported MVR deaths rates for American Indian or Alaska Native children under age 20 were more than double the rates for White, non-Hispanic; Black, non-Hispanic; Asian or Pacific Islander, non-Hispanic; and Hispanic children under age 20. In 2014, the MVR death rate for children ages 1–14 was 2.2 deaths per 100,000 population, representing 1,234 deaths. MVR death rates for Black, non-Hispanic (2.8); White, non- Hispanic (2.0); and Hispanic (2.2) children ranged from 2 to 3 deaths per 100,000 population. Among adolescents, the MVR death rate in 2014 was 11.9 deaths per 100,000 population, a total of 2,515 deaths. The MVR death rate for White, non-Hispanic (13.0) adolescents was higher than the rates for Black, non-Hispanic (11.4) and Hispanic (10.6) adolescents. Between 1999 and 2014, the total MVR death rate for adolescents ages 15–19 declined from 26 deaths per 100,000 population to 12 deaths per 100,000 population. Throughout 1999 to 2014, White, non-Hispanic adolescents had a higher MVR death rate than Black, non-Hispanic and Hispanic adolescents. This disparity in death rates declined from an 11 point difference in 1999 to about a 2 point difference in 2014.

§363 Developmental Disorders

A. Birth defects are common, costly, and critical conditions that affect 1 in every 33 babies born in the United States each year. Every 4 ½ minutes, a baby is born with a birth defect in the United States. That means nearly 120,000 babies are affected by birth defects each year. Intellectual disability, formerly mental retardation, refers to a low IQ found in many people with certain genetic birth defects. Chromosomal abnormalities occur in 1 in 150 live-births. 50% of stillbirths have chromosomal abnormalities. Turner syndrome (45XO) is most common. The frequency increases with maternal age. Aneuploidy occurs when the number of chromosomes is greater or less than 46. Globally, at least 7.6 million children are born annually with severe genetic or congenital malformations; 90% of these infants are born in mid- and low-income countries. All people are at risk of diseases due to genetic mutations. Maternal age greater than 35 years is associated with higher frequencies of chromosomal abnormalities in the offspring. Some of the most common genetic diseases (thalassaemias, cystic fibrosis, haemophilia and phenylketonuria) can be managed with considerable success. Congenital disorders may be divided into genotypic and phenoptypic abnormalities. Genotypic abnormalities may be caused by a single gene mutation such as a point mutation or dislocation or by a chromosomal abnormality such as trisomy 21. Phenotypic abnormalities are morphologic defects that may be further classified by type and pattern. Types of phenotypic abnormalities include malformations, deformations and disruptions.

Malformations are caused by an abnormal developmental process, such as incomplete morphogenesis (e.g., cleft lip and cleft palate).

1. Malformations initiated earlier in organogenesis produce more severe results than those occurring later. Deformations are abnormal forms or positions of a portion of the body. They generally are caused by restricted fetal movement from intrauterine mechanical forces (e.g. congenital torticollis and clubfoot associated with oligohydramnios). Deformation usually occur late in development and may improve postnatally when the mechanical restriction is eliminated. Disruptions are morphologic defects caused by intrauterine interference with an otherwise normally developing organ or region of the body (e.g., phocomelia associated with thalidomide use). Disruptions are usually sporadic. Patterns of phenotypic abnormalities include sequences, syndromes and associations. Sequences result from one primary developmental defect that causes a chain of secondary anomalies that may lead to another group of defect. For example, in a Robin sequence the hypoplastic mandible (primary defect) prevents the tongue from descending. This prevents closure of the palatal shelves and causes cleft palate (secondary defect). Syndromes are groups of multiple anomalies (malformations or sequences) thought to be patho-genetically related but not represented by a single sequence (e.g., Down syndrome). Associations are nonrandom clusterings of anomalies that are not known to be a sequence or a syndrome. Hearing loss occurs in 1 of 500 live births; severe impairment occurs among about one-half of patients. Cleft palate is a defect in the structures that divide the nasal and oral cavities. It may occur with or without a cleft lip deformity, and is estimated to occur in 1 of 680 births. Genetic counseling and testing are important parts of prenatal care. Chromosome tests (cytogenics) can identify specific genetic diseases including trisomies 13, 18 and 21. DNA analysis (molecular studies) is available for fragile X, sickle-cell disease, cystic fibrosis, Tay-Sachs, Duchenne's muscular dystrophy and hemophilia. Biochemical studies screen for inborn errors of metabolism, such as phenylketonuria and galactosemia.

2. Almost 80% of congenital malformations are genetic in origin and there is an increased risk of recurrence in future children. Less than half of congenital malformations are diagnosed in the neonatal period. Genetic screening should be offered to mother's of all ages, not just those over 35. Approximately 82% are diagnosed by age 6 months. Amniocentesis is the process of aspirating amniotic fluid by a needle puncture through the abdominal wall and anterior portions of the uterus. Usually performed between 16 and 18 weeks of gestation, amniocentesis is used to screen for biochemical, chromosomal, and DNA analysis and AFP. It can detect the same disorders as CVS An elevated AFP may indicate neural tube defects (NTDs). Amniocentesis detects 90% of NTDs and has very good resolution of chromosome structure. Ultrasound (U/S) uses sonar (high-frequency sound waves) directed at the fetus to provide a detailed image of organs and skeletal structures. U/S may be performed trans-abdominally or transvaginally. If problems are found during the first, or level I, a level II, or targeted U/S is performed. It identifies intrauterine growth retardation, abnormal head size, and abnormal or disproportionate fetal structure that may be associated with chromosomal disorders. Maternal serum alpha-fetoprotein (MSAFP) is performed between 16 and 18

weeks of gestation. Elevated levels (>2.5 multiples of the median) are associated with NTDs, multiple pregnancy, Turner's syndrome, omphalocele, cystic hygroma, epidermolysis bullosa, renal agenesis, and incorrect gestational dating. Decreased levels (<0.75 multiples of the median) are associated with intrauterine growth retardation, chromosomal trisomies 13, 18, and 21, and underestimation of gestational age. Triple marker screening has supplanted the use of MSAFP. It includes MSAFP, human chorionic gonadotropin, and unconjugated estriol. Performed at 16 weeks of gestation or beyond, this test screens for Down syndrome, open NTDs, and other defects.

B. In the United States it is now standard obstetric practice to offer all women who are 35 years or older at their estimated day of delivery invasive prenatal diagnostic testing to detect fetal chromosome abnormalities. The incidence of fetal chromosome abnormalities is higher at the sixteenth week of gestation than at term because many chromosomally abnormal fetuses are aborted spontaneously after the sixteenth gestational week. Maternal age is a screen; however, it fails to detect 80% of pregnancies with Down syndrome (because younger women are having most of the babies). In order to detect chromosome abnormalities in younger women, maternal serum analyte screening is offered. Currently pregnancies are screened in the second trimester between 15 and 21 weeks. Several protocols are used. The most common involves measurement of maternal serum levels of α-fetoprotetin (AFP), human chorionic gonadotropin (hCG), and unconjugated estril (uE3). A risk profile is generated by a computer program taking into consideration the patient's age.

Recommended Uniform Screening Panel for Core Heritable Conditions

ACMG Code	Core Condition	Metabolic Disorder			Endocrine Disorder	Hemoglobin Disorder
		Organic acid condition	Fatty acid oxidation disorders	Amino acid disorders		
PROP	Propionic acidemia	X				
MUT	Methylmalonic acidemia (methylmalonyl-CoA mutase)	X				
Cbl A,B	Methylmalonic acidemia (cobalamin disorders)	X				

ACMG Code	Core Condition	Metabolic Disorder			Endocrine Disorder	Hemoglobin Disorder
		Organic acid condition	Fatty acid oxidation disorders	Amino acid disorders		
IVA	Isovaleric acidemia	X				
3-MCC	3-Methylcrotonyl-CoA carboxylase deficiency	X				
HMG	3-Hydroxy-3-methyglutaric aciduria	X				
MCD	Holocarboxylase synthase deficiency	X				
ßKT	ß-Ketothiolase deficiency	X				
GA1	Glutaric acidemia type I	X				
CUD	Carnitine uptake defect/carnitine transport defect		X			
MCAD	Medium-chain acyl-CoA dehydrogenase deficiency		X			

ACMG Code	Core Condition	Metabolic Disorder			Endocrine Disorder	Hemoglobin Disorder
		Organic acid condition	Fatty acid oxidation disorders	Amino acid disorders		
VLCAD	Very long-chain acyl-CoA dehydrogenase deficiency		X			
LCHAD	Long-chain L-3 hydroxyacyl-CoA dehydrogenase deficiency		X			
TFP	Trifunctional protein deficiency		X			
ASA	Argininosuccinic aciduria			X		
CIT	Citrullinemia, type I			X		
MSUD	Maple syrup urine disease			X		
HCY	Homocystinuria			X		
PKU	Classic phenylketonuria			X		
TYR I	Tyrosinemia, type I			X		
CH	Primary congenital				X	

ACMG Code	Core Condition	Metabolic Disorder			Endocrine Disorder	Hemoglobin Disorder
		Organic acid condition	Fatty acid oxidation disorders	Amino acid disorders		
	hypothyroidism					
CAH	Congenital adrenal hyperplasia				X	
Hb SS	S,S disease (Sickle cell anemia)					X
Hb S/ßTh	S, βeta-thalassemia					X
Hb S/C	S,C disease					X
BIOT	Biotinidase deficiency					Other
CCHD	Critical congenital heart disease					
CF	Cystic fibrosis					
GALT	Classic galactosemia					
HEAR	Hearing loss					
SCID	Severe combined immunodeficiences					
	Zika					

Credit: Sebelius, April 2013)

1. Amniocentesis has been used for prenatal diagnosis for almost 20 years. The procedure involves removing, usually under current ultrasound guidance, 20 to 40 cc. of

amniotic fluid. Traditionally, amniocentesis is performed between 15 and 20 week is gestation. Cytogenetic and DNA analyses of amniotic fluid specimens require culture of amniotic fluid cells, because most cells obtained from amniocentesis are not in metaphase and the number of viable cells is relatively small. Direct analysis of the amniotic fluid supernatant (amniotic fluid liquor) is possible for AFP and acetylcholinesterase assays; such analyses permit detection of fetal neural tube defects and other fetal structural defects e.g., omphalocele, gastroschisis. CVS was developed to provide early prenatal diagnosis. CVS is performed by trans-cervical or trans-abdominal aspiration of chorionic villi (immature placenta) under concurrent ultrasound guidance, usually between 10 and 12 weeks gestation and has similar safety and accuracy with the traditional 15 week test. However, disorders that require analysis of amniotic fluid liquor, such as neural tube defects, are not amenable to prenatal diagnosis by CVS. PUBS is usually performed after 20 weeks gestation and is used to obtain fetal blood for blood component analyses (e.g hematocrit, Rh status, platelets), as well as cytogenetic and DNA. One major benefit of PUBS is the ability to obtain rapid (18 to 24 hours) fetal karyotypes. However the safety is undetermined and should not be used when amniocentesis or CVS can obtain similar diagnostic results in a timely fashion. Other prenatal diagnostic procedures include fetal skin sampling, fetal tissue (muscle, liver) biopsy, and fetoscopy for the diagnosis of rare disorders not amenable to diagnosis by less invasive methods.

SACHDNC Recommended Uniform Screening Panel Secondary Conditions

ACMG Code	Secondary Condition	Metabolic Disorder			Hemoglobin Disorder
		Organic acid condition	Fatty acid oxidation disorders	Amino acid disorders	
Cbl C,D	Methylmalonic acidemia with homocystinuria	X			
MAL	Malonic acidemia	X			
IBG	Isobutyrylglycinuria	X			
2MBG	2-Methylbutyrylglycinuria	X			
3MGA	3-Methylglutaconic aciduria	X			
2M3HBA	2-Methyl-3-hydroxybutyric aciduria	X			
SCAD	Short-chain		X		

ACMG Code	Secondary Condition	Metabolic Disorder			Hemoglobin Disorder
		Organic acid condition	Fatty acid oxidation disorders	Amino acid disorders	
	acyl-CoA dehydrogenase deficiency				
M/SCHAD	Medium/short-chain L-3-hydroxyacl-CoA dehydrogenase deficiency		X		
GA2	Glutaric acidemia type II		X		
MCAT	Medium-chain ketoacyl-CoA thiolase deficiency		X		
DE RED	2,4 Dienoyl-CoA reductase deficiency		X		
CPT IA	Carnitine palmitoyltransferase type I deficiency		X		
CPT II	Carnitine palmitoyltransferase type II deficiency		X		
CACT	Carnitine acylcarnitine translocase deficiency		X		
ARG	Argininemia			X	
CIT II	Citrullinemia, type II			X	
MET	Hypermethioninemia			X	
H-PHE	Benign hyperphenylalaninemia			X	

ACMG Code	Secondary Condition	Metabolic Disorder			Hemoglobin Disorder
		Organic acid condition	Fatty acid oxidation disorders	Amino acid disorders	
BIOPT (BS)	Biopterin defect in cofactor biosynthesis			X	
BIOPT (REG)	Biopterin defect in cofactor regeneration			X	
TYR II	Tyrosinemia, type II			X	
TYR III	Tyrosinemia, type III			X	
Var Hb	Various other hemoglobinopathies				X
GALE	Galactoepimerase deficiency				Other
GALK	Galactokinase deficiency				
	T-cell related lymphocyte deficiencies				

Source: Sebelius '13

2. Abortion is the termination of a pregnancy before viability, typically defined as 20 weeks from the first day of the last normal menstrual period or a fetus weighing less than 500g. Whether spontaneous (miscarriage) or induced, there are profound medical as well as emotional implications with abortion. The incidence of spontaneous abortion is estimated at 50% of all pregnancies, an estimate based on the assumption that many pregnancies spontaneously terminate without clinical recognition. An incidence of recognized spontaneous abortion of 15% to 25% is commonly cited, with approximately 80% occurring during the first 12 weeks of pregnancy. Approximately 50% of early spontaneous abortions are attributed to chromosomal abnormalities, of which trisomy accounts for 40% to 50%, monosomy C for 15% to 25% , triploidy for approximately 15% and tetraploidy for approximately 5%. If the first abortus is chromosomally abnormal, a second abortus has an 80% chance of being abnormal as well. Risk factors include increasing parity, increasing maternal age, increasing paternal age, and conception within 3 months of a live birth. Expulsion of the pregnancy is usually preceded by death of the embryo or fetus. Second-trimester abortions are less likely to be chromosomal and more likely to be caused by maternal systemic disease, abnormal placentation, or other anatomic consideration. Maternal systemic conditions that have

been associated with spontaneous abortion include infections such as *Listeria monocytogenes*, *Mycoplasma hominis*, *Ureaplasma urealyticum* and toxoplasmosis as well as viral infections including rubella and cytomegalic inclusion disease**.** Insufficient secretion of progesterone by the corpus luteum or the placenta may be associated with spontaneous abortion Luteal phase inadequacy occurs in 3% of women but more frequently in those suffering spontaneous pregnancy loss. Luteal phase defect is diagnosed by appropriately times endometrial biopsy, treatment may include clomiphene, which acts by increasing follicle-stimulating hormone (FSH) and human chorionic gonadotropin (hCG), which is the physiologic luteotropic stimulus. Although uncommon, uncorrected medical conditions such as hypothyroidism, systemic lupus erythematosus and diabetes mellitus are also associated with an increased incidence of spontaneous. Smoking, alcohol and obesity have been linked to miscarriages. Women who smoke more than one pack of cigarettes per day or drink more than 2 days per week have an almost twofold risk of spontaneous abortion. Leiomyomata uteri, has been associated with spontaneous abortion and should be surgical removed if it is the cause of pregnancy wastage. 20% to 30% of women with a unicornuate or septate uterus have reproductive difficulties, most frequently recurrent pregnancy loss. In utero exposure to diethylstilbestrol (DES) has been associated with abnormally shaped uteri as well as cervical incompetence. Intrauterine synechiae (Asherman's syndrome) has been linked to spontaneous abortion due to inadequate amount of endometrium to support implantation.

3. Threatened abortion occurs in up to 25% of pregnancies with approximately half of these patients proceeding to spontaneous abortion. An inevitable abortion is defined as rupture of the membranes and/or cervical dilation during the first half of pregnancy such that pregnancy loss is unavoidable. Complete abortion refers to a documented pregnancy that spontaneously passes all of the products of conception early in pregnancy – the fetus and placenta are often expelled in toto. In incomplete spontaneous abortions partial expulsion of the pregnacy tissue has occurred, bleeding a pain result; suction curettage of the uterus is usually necessary to remove the remaining products of conception and prevent further bleeding and infection. Post-evacuation treatment with an oxytocic (Methergine, 0.2 mg po Q 4 h for 24 hours) and an antibiotic (doxycycline, 100 mg po bid for 3 days, not for use in pregnant women and children under 8) reduces the risk of further bleeding and infection. A missed abortion is the retention of a failed intrauterine pregnancy for an extended period, usually defined as more than two menstrual cycles. Disseminated intravascular coagulopathy (DIC) can occur when an intrauterine fetal demise in the second trimester has been retained beyond 6 weeks after the death of the fetus. Evacuation of the uterus with suction curettage is recommended for pregnancy in the first trimester, whereas dilation and evacuation (D&E) or the use of prostaglandin suppositories is used form pregnancies that have advanced to the second trimester. Recurrent abortion is a term used when when a patient has had more than two consecutive or a total of three spontaneous abortions. No intervention is necessary for patents with threatened abortion although intercourse is usually proscribed for 2 to 3 weeks due to the bleeding. A follow up office visit is generally scheduled for 2 to 6 weeks after the loss of a pregnancy.

C. Genetic diseases are usually grouped into singlegene disorders (haemoglobinopathies, cystic fibrosis and haemophilia) and chromosomal disorders (Down syndrome, among others). These conditions are described as genetic diseases because a defect in one or more genes or chromosomes leads to a pathological condition according to WHO's Control of Genetic Disease EB116/3. Multifactorial disorders, on the other hand, where genetic and environmental factors interact, have not traditionally been considered to be genetic diseases. Multifactorial disorders are usually categorized as a. congenital malformations, such as neural tube defect, cleft lip and palate, or diseases with a genetic predisposition, such as some chronic, noncommunicable diseases. Congenital malformations are often associated with genetic diseases because they both tend to present during pregnancy, at birth or in early childhood. Clinical genetics services provide care for people with both categories of disease, and registries of birth defects collect information about genetic diseases and congenital malformations. Some genetic diseases, such as haemophilia, are carried on the X-chromosome (these X-linked disorders occur mainly in men). Others can arise from the presence of an abnormal gene in any autosome: if the gene is dominant, it results always in what is called a dominant condition, whereas if it is recessive many of these diseases appear only when the gene is inherited from both parents (and are thus called recessive conditions). Genetic diseases can vary in severity, from being fatal before birth to requiring continuous management; their onset covers all life stages from infancy to old age. Those presenting at birth are particularly burdensome, however, as they may cause early death or life-long chronic morbidity.

1. Mendelian genetic disorders are divided into autosomal dominant and autosomal recessive traits. Autosomal dominant diseases are von Willebrand's disease, neurofibromatosis, Marfan syndrome, adult polycystic kidney disease, Huntington's disease, tuberous sclerosis, osteogenesis imperfecta tarda, familial hypercholesteroloemia; x-linked disorders are hemophilia A and B, fragile X syndrome, testicular feminization, color blindness and Fabry's disease. Autosomal recessive disorders are sickle cell anemia, hemochromatosis, cystic fibrosis, Wilson's disease, Beta thalassemia, phenylketonuria, homocystinuria and alpha1 antitrypsin deficiency. Multifactorial defects do not follow mendelian patterns of inheritance. Common multifactorial disorders are neural tube defects, congenital heart disease, cleft lip/palate. There is a recurrence rate of 1-5%.

1. Chromosomal abnormalities occur in 1 in 150 live-births. 50% of stillbirths have chromosomal abnormalities. Turner syndrome (45XO) is most common. The frequency increases with maternal age. Aneuploidy occurs when the number of chromosomes is greater or less than 46. Trisomy 21 (Down Syndrome) is caused by maternal nondisjunction (95%), translocations or mosaicism (5%). Diagnosis is by fetal karyotype by ultrasound. Counseling offers termination. Features of trisomy 21 are mental retardation, epicanthic folds and flat facial profile, abundant neck skin, congenital heart defects, simian crease in hands, intestinal stenosis, umbilical hernia, hypotonia and predisposition to leukemia. Recurrence rate in subsequent pregnancies is 1-2%. Trisomy 18 (Edward's Syndrome) and Trisomy 13 (Patau Syndrome) cause severe mental retardation. Stillbirths and neonatal deaths are common. Diagnosis is by karyotype by

ultrasound. Features of Trisomy 18 are prominent occiput, mental retardation, low set ears, short neck, micrognathia, overlapping fingers, congenital heart defects, renal malformations, limited hip abduction and rocker-bottom feet. Features of Trisomy 13 are microcephay and mental retardation, microphthalmia, polydactyly, cleft lip and palate, cardiac defects, umbilical herniation, renal defects, and rocker-bottom feet.

2. Singe gene defects include Fragile X Syndrome and Cystic Fibrosis. Fragile X Syndrome is most common cause of mental retardation in the US. 1 in 1200 males and 1 in 2500 females have Fragile X Syndrome. It is caused by genetic expansion of a trinucleotide sequence. Variable number of CGG nucleotide sequences are found on the X chromosome. 50-200 copies of the repeat sequence are asymptomatic, >200 repeats causes clinical effects. The degree of mental retardation is more severe in males. Clinical features are mental retardation, macroorchidism, and narrow facies. Diagnosis is PCR, Southern blot. Cystic fibrosis occurs in 1 in 3300 children as an autosomal recessive trait. Many mutations are possible. 75% of affected individuals have mutations at position 508. Clinical features are meconium ileus, COPD, pancreatic exocrine insufficiency, cirrhosis, and a variable life expectancy from childhood of 50 to 60 years.

3. Common fetal anomalies are gastrointestinal anomalies, nervous system defects, choroid plexus cysts, cardiovascular defects, genitourinary anomalies, thoracic anomalies and facial anomalies. Gastrointestinal anomalies are commonly either abdominal wall defects or duodenal atresia. Abdominal wall defects can be either imphalocele or gastroschisis. Omphalocele occurs in about 2.5 out of 10,000 pregnancies, herniation is through the umbilicus, the peritoneaum is covered there are associated anomalies and survival is about 50%. Gatroschisis occurs in 1.75-2.5 out of 10,000 pregnancies, herniation is to the right of the umbilicus, the peritoneum is not covered, associated anomalies are rare and the survival rate is 80-90%. Patients with abdominal wall defects are subjected to routine follow-up, U/S, route of delivery dictated by obstetric indications, surgical correction after birth. Duodenal atresia occurs in 1 in 10,000 births. Diagnosis of duodenal atresia is made by double bubble sign on U/S indicating a dilated stomach and duodenum and polyhydramnios, 30% of such fetuses have trisomy 21. Nervous system defects can be neural tube defects, anencephaly, spina bifida. Failure of the neural tube to close between days 26 and 28 of gestation is decreased by folate supplementation. Anencephaly is a fatal anomy with absence of cranium, polyhydramnios, malrepresentation often accompanies anencephaly. Spina bifida is an opening in the vertebral column detected by U/S banana sign (exaggerated cerebellar curve), lemon sign (scalloping of frontal bones), cerebellar herniation (Arnold-Chiari malformation). Meningocele happens when the meningeal sac herniates. Meningomyelocele occurs with the herniation of meninges and spinal cord. Meningoencephalocele occur with the herniation of meninges, spinal cord and brain.

4. Choroid plexus cysts (CPCs) occur in 2-4% of pregnancies. Most are normal variants but aneuploidy is found in 2% of fetuses. If other anomalies are visualized on U/S amniocentesis is offered to rule out trisomy 18 and trisomy 21. Cardiovascular defect can structural defects or arrhythmias. The most common structural defects are septal defects (17%), ventricular septal defects (15.5%), tetralogy of Fallo (VSD, right

ventricular obstruction, overriding aorta and right ventricular hypertrophy). Arrythmias can be isolated premature atrial contraction (PACs) or tachyarrhythmias. Isolated premature contractions (PACs) are most common (80%). PACs are transient and require no treatment. Tachyarrhythmias may result in non-immune hydrops. Genitourinary anomalies are detected as fetal renal pelvic dilation >4 mm followed with serial sonography. Most cases of mild pyelectasis are normal variants. Etiology of urinary obstruction may be uretero-pelvic junction obstruction, distal ureteral obstruction, collection system duplication and posterior urethral valves. Thoracic anomalies are caused by fetal pulmonary mass as the result of pulmonary sequestration, cystic adenomatoid malformation, and congenital diaphragmatic hernia. Congenital diaphragmatic hernia occurs in 1-4.5 in 10,000 infants as the result of incomplete fusion of diaphragm wit herniation of abdominal contents into thorax. It is visualized on U/S as loops of bowel in the thorax, small abdominal circumference and mediastinal shift./ 50% have other anomalies. Facial anomalies can include cleft lip and cleft palate most commonly. Recurrence in subsequent births for the mother is 4%.

5. Trisomy 21 (Down syndrome) occurs in 1:800 live-births and causes moderate to severe mental retardation; characteristic mongoloid facies; increased incidence of respiratory infections and leukemia; and cardiac abnormalities, only 2% live beyond 50 years. Down's syndrome, mongolism, is the result of an extra number, trisomy of 21 chromosome, that causes mental retardation and hypotonia as well as systemic problems with congenital heart defects and gastrointestinal anomalies that shorten life-expectancy. About one of every 691 babies born in the United States each year is born with Down syndrome, about 6,000 annually. At maternal age 20 to 24, the probability is one in 1562; at age 35 to 39 the probability is one in 214, and above age 45 the probability is one in 19. Down syndrome is the most common chromosome abnormality in humans. It is typically associated with a delay in cognitive ability (mental retardation, or MR) and physical growth, and a particular set of facial characteristics. The average IQ of young adults with Down syndrome is around 50, whereas young adults without the condition typically have an IQ of 100. (MR has historically been defined as an IQ below 70.). Following improvements to medical care, particularly with heart problems, evident at birth in 50 percent, the life expectancy among persons with Down syndrome has increased from 12 years in 1912, to 60 years and the oldest on record is 87. To prevent heart disease it is important to eat a healthy diet, without salt, fat and sugar and exercise regularly. Down syndrome, mongolism, is the result of an extra number, trisomy of 21 chromosome, that causes mental retardation and hypotonia as well as systemic problems with congenital heart defects and gastrointestinal anomalies that shorten life-expectancy. About one of every 691 babies born in the United States each year is born with Down syndrome, about 6,000 annually. At maternal age 20 to 24, the probability is one in 1562; at age 35 to 39 the probability is one in 214, and above age 45 the probability is one in 19. Down syndrome is the most common chromosome abnormality in humans. It is typically associated with a delay in cognitive ability (mental retardation, or MR) and physical growth, and a particular set of facial characteristics. The average IQ of young adults with Down syndrome is around 50, whereas young adults without the condition typically have an IQ of 100. (MR has historically been defined as an IQ below 70.). Following improvements to medical care, particularly with heart problems, evident

at birth in 50 percent, the life expectancy among persons with Down syndrome has increased from 12 years in 1912, to 60 years and the oldest on record is 87.

6. Trisomy of chromosome 18 occurs in about 1 in 4500 births causing profound psychomotor retardation, spasticity, webbed neck, low-set ears and the second finger overlays the third. The majority of these infants die in their first year. Trisomy 18 (Edwards syndrome) 1:8000 causes severe mental retardation; multiple organic abnormalities; less than 10% survive 1 year. Trisomy 13 (Patau syndrome) 1:20,000 causes severe mental retardation; multiple organic abnormalities; less than 5% survive 3 years. Trisomy 16 is a completely lethal anomaly occurring frequently in first-trimester spontaneous abortions; no infants are known to have trisomy 16.

7. 45, XO occurs in 1:10,000 live-births, occurring frequently in first-trimester (Turner syndrome) is the leading cause of spontaneous abortions; associated primarily with unique somatic features; they have an enlarged clitoris and vestigal male gonads that are best surgically removed in adolescence to prevent cancer. 47,XXX; 47,XYY; 47,XXY (Klinefelter syndrome) occurs in 1:900 live-births causing minimal somatic abnormalities; individuals with Klinefelter syndrome are characterized by a tall, eunochoid habitus and small testes; 47,XXX and 47,XYY individuals do not usually exhibit somatic abnormalities but 47,XYY individuals may be tall. Del(5p) occurs in 1:20,000 live-births and cause severe mental retardation, microcephaly, distinctive facial features, characteristic "cat's cry" sound (cri du chat syndrome). Signs of congenital hypothyroidism are large head, persistent patent posterior fontanel, delayed bone age, hoarse cry, large tongue, umbilical hernia, hypotonia, muscular hypertrophy, and delayed development. Measure serum thyroxine level. Treatment with desiccated thyroid to maintain a euthyroid condition prevents progression of neurological problems.

8. There are many hereditary skin diseases. Ichthyosis is the most common one. There are a number of classifications of ichthyosis – ichthyosis vulgaris, x-linked ichthyosis vulgaris, lamellar ichthyosis (autosomal recessive), nonbullous ichthyosiform erythroderma (autosomal recessive), keratosis palmaris et plantaris, mal de Meleda, keratosis pilaris, keratosis punctate, ichthyosis hystrix, and bullous ichthyosiform erythroderma. Of the many types of ichthyosis, the autosomal dominant ichthyosis vulgaris form is the most common. Small white scales, often in association with keratosis pilaris-type lesions, are seen. Scaling may be deep enough in some diseases. The arms and legs are most severely affected. This common form of icthyosis is worse in the winter. In most cases there is essentially no scaling in the summertime. There is a tendency for improvement after puberty or early adult life. Xerosis or acquired ichthyosis is the most common cause of this dry skin problem in aging individuals. In young adults vitamin A deficiency, hypothyroidism, Hodgkin's disease, lymphosarcoma or carcinomatosis must be ruled out. Advise that there is no cure. Suggest an emollient soap such as Dove. Vitamin A orally appears to be beneficial for some cases. The dose should be 100 to 200 thousand units a day but for not longer than 4 or possibly 6 months at a time. Vitamin A acid (retinoic acid)(Retin-A) locally is helpful for lamellar ichthyosis, and moderately helpful in dominant ichthyosis vulgaris. A-Hydroxy acids locally are quite effective especially for lamellar ichtyosis but also ichthyosis vulgaris

and x-linked ichthyosis. A good preparation is 5% lactic acid in a hydrophilic ointment base. Albinism is a congenital disorder characterized by partial or universal loss of pigment of skin, hair and choroid. Life expectancy is shortened. Piebaldism is a central white forelock overlying a depigmented area of the scalp. Vitiligo are unpigmented patches with highly pigmented borders. Freckles (ephilides) are small, brownish macules developing around the time of puberty that are accentuated by sunlight, they are to be differentiated from lentigine, which develop earlier (around the age of 2) are more widespread on the body and do not disappear in the winter. Seborrheaic keratoses are transmitted as a simple autosomal dominant trait. Keliods are an autosomal dominant trait. Nevi are probably genetically transmitted. Trichoephithelioma are transmitted as an irregular autosomal dominant trait with partial limitation to the female sex.

9. It had been recognized as early as the 19th century that psoriasis was an inherited disease, with the first analysis of the genetic basis carried out in 1931. However it was not until the establishment of the Human Genome Project during the first half of the 1990s that it became feasible to begin a systematic search for the genes determining psoriasis. In 1996, a gene map of the human genome containing 16,000 of the 50,000-100,000 genes then estimated to be present was published. Stronger HLA associations had been found in patients with an age of onset younger than 40 years, and who showed a higher frequency of affected first-degree relatives, than patients with a later onset whose HLA associations were much weaker. The strongest association observed in psoriasis was that of HLA-Cw6, an allele rarely increased in frequency in patients with other inflammatory diseases. However, only a proportion (approximately 10%) of HLA predisposed individuals go on to develop psoriasis, suggesting that inheritance of a particular HLA allele is not sufficient by itself for initiation of the disease. Several additional psoriasis genes, triggered by environmental factors, are involved. The first genome wide linkage study of psoriasis families was published in 1994 and reported a susceptibility locus on chromosome 17q25. None of the families with linkage to chromosome 17q however, showed any association with Cw6, providing the first evidence for the existence of genetic heterogeneity. Two to three years later, susceptibility loci for familial psoriasis were reported on chromosomes 4q21 and 6p. The susceptibility locus on chromosome 6 was located in the MHC region p21.3, close to the HLA-C, as predicted form the HLA association studies. This locus, named PSOR1 (psoriasis susceptibility 1), was subsequently confirmed by several research groups and found to confer significant risk (35-50%) for development of psoriasis. However, since all psoriatic patients carry Cw6, it seems more likely that the PSORS1 gene was a gene close to HLA-Cw6 ratger Cw6 itself; subsequ3nt studies using more precise mapping methods were consistent with this assumption. The identification of 11 further linkage sites on 10 different chromosomes followed and were numbered PSORS-2-PSORS7. It has been established over the last two decades that psoriasis is a T cell mediated disease. $CD4^+$ T cells are essential for initiating and maintaining the psoriatic process, and, when removed by treatment, the disease is temporarily switched off. Both dermal CD4+ T cells and epidermal CD8+ T cells each consist of small numbers of dominant clones that have expanded in situ, suggesting that unidentified antigens drive the disease process, namely Streptococcus and Staphylococcus. It is likely that other components derived from yeasts (*Malassezia* and *Candida albicans*) or viruses (HIV, retroviruses,

papillomaviruses) which are associated with the triggering and/or exacerbation of psoriasis. Peptiglycan is a strong activator of innate immunity, the immediate, non-specific reponse to pathogens which precedes the T cell response. Innate immunity in psoriasis has become a current focus of research as evidence is emerging that the response to pathogens dysregulated, with a marked increase in the production of anti-bacterial peptides. Overall, the findings suggest that psoriasis may be an autoimmune T cell disease, triggered by infection. Psoriasis is treated with hydrocortisone.

10. Certain relatively common disorders result in a 2%-5% recurrence risk if first-degree relative (parents, siblings, children) are affected. Many of these disorders are manifest by anatomic abnormalities. Some examples include cardiac anomalies such as ventral and atrial septal defects and hypoplastic left heart syndrome; gastrointestinal anomalies including omphalocele, small bowel atresia and diaphragmatic hernia and urologic anomalies including renal agenesis and ureteropelvic junction obstruction. An example of a polygenic/multifactorial disorder is neural tube defects, a group of disorders that occurs relatively frequently in the United Kingdom and United States. The spectrum of neural tube defects ranges from anencephaly (absence of a portion or all of the forebrain) to spina bifida (spinal column closure defects). Neural tube defects occur in a approximately 1 in 1500 births in the United States; however certain regions o the United States, neural tube defects occur more frequently (1 in 750 livebirths), wheres in some parts of the United Kingdom, the rate is 1 in 200 live-births. Fetal neural tube defects are prenatally diagnosed by ultrasonography and AFP and acetylcholinesterase assays of amniotic fluid obtained by amniocentesis. However, approximately 85% of newborns with neural tube defects are born to women with no family or medication history that would have indicated them to be at increased risk, resulting in them being offered amniocentesis. Folic acid has been shown to prevent recurrence and occurrence of neural tube defects. All women should be advised to take a prenatal vitamin that contains at least 0.4 mg of folic acid prior to conception. For women who have had a previous child with a neural tube defect, the recommended dose is 4 mg/daily.

11. Congenital heart disease is a general term used to describe abnormalities of the heart or great vessels that are present from birth. Most such disorders arise from faulty embryogenesis, during gestational weeks 3 through 8, when major cardiovascular structures undergo development. Most are associated with live births. Some may produce manifestations soon thereafter but others do not become evident until adulthood (e.g. aorti coarctation or atrial septal defect (ASD). Congenital anomalies of blood vessels may predispose the myocardium to infarction or may cause sudden death. Among these diverse vascular anomalies, two have particular importance: developmental or berry aneurysms (involving the cerebral vessels) and arteriovenous fistulas or aneurysms. Congenital heart disease is the most common type of heart disease among children. The incidence is higher in premature infants and in stillborns. Interestingly, monozygotic twins, despite having identical genes, have only a 10% concordance for ventricular septal defects. Nevertheless, chromosomal abnormalities compose about 5% of cases. Fewer than 1% are attributed to environmental influences. The increased risk in subsequent children is small (probably below 5%). The varied structural anomalies in hearts with congenital defects fall primarily into two major categories: shunts or obstructions. A

shunt is an abnormal communication between changers or blood vessels (or both). The adult congenital heart disease patient population includes those who have never had cardiac surgery, those who have had reparative cardiac surgery and require no further operation, those who have had incomplete or palliative surgery and those who are inoperable, apart from organ transplantation. More than 85% of the estimated 25,000 infants born annually with congenital malformations of the heart are likely to reach adulthood. Many patients with congenital heart disease have an increased risk of endocarditis, those with cuanotic congenital heart disease may have specific difficulties owing to hyperviscosity, abnormal hemostasis and abnormal renal function and urate metabolism. With certain congenital cardiac malformations, childbearing imposes a formidable threat to maternal and fetal survival.

D. About 764,000 people, 500,000 children and 264,000 adults currently have Cerebral Palsy. About two to three children out of every 1,000 have Cerebral Palsy. United States studies have yielded rates as low as 2.3 per 1,000 children to as high as 3.6 per 1,000 children. About 10,000 babies born each year will develop Cerebral Palsy. Around 8,000 to 10,000 babies and infants are diagnosed per year with Cerebral Palsy and around 1,200 to 1,500 preschool-aged children are diagnosed per year with Cerebral Palsy. Spastic Cerebral Palsy is most common, making up 61 percent to 76.0 percent of all Cerebral Palsy cases. Cerebral palsy is a group of disorders that can involve brain and nervous system functions, such as movement, learning, hearing, seeing, and thinking. Cerebral palsy is a lifelong disorder. Long-term care may be required. The disorder does not affect expected length of life. Cerebral palsy is caused by injuries or abnormalities of the brain. Most of these problems occur as the baby grows in the womb, but they can happen at any time during the first 2 years of life, while the baby's brain is still developing. In some people with cerebral palsy, parts of the brain are injured due to low levels of oxygen (hypoxia) in the area.

1. Premature infants have a slightly higher risk of developing cerebral palsy. It typically results from a brief period of anoxia, a lack of oxygen supply, to the brain. Cerebral palsy may also occur during early infancy as a result of several conditions, including: bleeding in the brain, brain infections (encephalitis, meningitis, herpes simplex infections), head injury, infections in the mother during pregnancy (rubella) and severe jaundice. Symptoms of cerebral palsy can be very different between people with this group of disorders. Symptoms may be very mild or very severe, only involve one side of the body or both sides, be more pronounced in either the arms or legs, or involve both the arms and legs. Symptoms are usually seen before a child is 2 years old, and sometimes begin as early as 3 months. Parents may notice that their child is delayed in reaching, and in developmental stages such as sitting, rolling, crawling, or walking. There are several different types of cerebral palsy. Some people have a mixture of symptoms. Symptoms of spastic cerebral palsy, the most common type, include; Muscles that are very tight and do not stretch, that may tighten up even more over time. Abnormal walk (gait): arms tucked in toward the sides, knees crossed or touching, legs make "scissors" movements, walk on the toes. Joints are tight and do not open up all the way (called joint contracture). Muscle weakness or loss of movement in a group of muscles (paralysis). The symptoms may affect one arm or leg, one side of the body, both legs, or both arms

and legs. The following symptoms may occur in other types of cerebral palsy: Abnormal movements (twisting, jerking, or writhing) of the hands, feet, arms, or legs while awake, which gets worse during periods of stress. Tremors. Unsteady gait. Loss of coordination. Floppy muscles, especially at rest, and joints that move around too much. Decreased intelligence or learning disabilities are common, but intelligence can be normal, Speech problems (dysarthria), Hearing or vision problem, Seizures. Pain, especially in adults (can be difficult to manage).

E. The Genetic Information Nondiscrimination Act of 2008 P.L. 110-223 prohibits discrimination in insurance or employment on the basis of genetic information and recalls the eugenics movement that plagued the early science of genetics with theories of genetic superiority that inspired Nazi Aryanism and concentration camp genocide and became the basis of State laws that provided for the sterilization of persons having presumed genetic `defects' such as mental retardation, mental disease, epilepsy, blindness, and hearing loss, among other conditions. The first sterilization law was enacted in the State of Indiana in 1907 and soon a majority of States had adopted sterilization laws to `correct' apparent genetic traits or tendencies. Many of these State laws have since been repealed. Once again, State legislatures began to enact discriminatory laws in the early 1970s mandating genetic screening of all African Americans for sickle cell anemia, leading Congress in 1972 to pass the National Sickle Cell Anemia Control Act, which withholds Federal funding from States unless sickle cell testing is voluntary.

1. Genetic disease has long stalked humanity. Retrospective diagnosis has suggested that George III, the English king whose principal claim to fame is to have lost the American colonies in the Revolutionary War, suffered from an inherited disease, porphyria, which causes periodic bouts of madness, which some historians have attributed his loss of the colonies on. Most genetic diseases have no such geopolitical impact, they nevertheless have brutal consequences for the afflicted families, sometimes for many generations. The drooping Hapsburg lower lip was passed down for at least twenty-three generations that was aggravated by intermarrying. Although arranged marriages between different branches of the Hapsburg clan may have made political sense it was not astute in genetic terms. Inbreeding can result in genetic disease. Charles II, the last of the Hapsburg monarchs in Spain, not only had the family lip but could not chew his own food and was a complete invalid, incapable, despite two marriages, of producing any children.

2. Queen Victoria provides a famous example of sex-linkage. On one of her X chromosomes, she had a mutated gene for hemophilia, the “bleeding disease” in whose victims proper blood clotting fails to occur. Although she herself did not have the disease, she was a carrier. Her daughters did not have the disease either, however each evidently possess at least one copy of the normal version. Victoria’s sons were not so lucky, they had a 50/50 chance of inheriting the disease from their mother’s mutated chromosome. Prince Leopold drew the short straw and he developed hemophilia and died at thirty one, bleeding to death from a minor fall. Princess Alice and Beatrice, were carriers, having inherited the mutated gene from their mother. They each produced carrier daughters and sons with hemophilia. Alice’s grandson Alexis, heir to the Russian

throne, had hemophilia, and would doubtless have died young had the Bolsheviks not gotten to him first.

§364 Obesity, Diet and Exercise

A. More than one billion adults worldwide are overweight, and at least 300 million of these are clinically obese. According the National Center for Health Statistics, who have been tracking obesity problems for over four decades, between 1962 and 2000 the number of obese Americans, with a Body Mass Index (BMI) in excess of 30%, grew from 13% to an alarming 31% of the population. 63% of Americans are overweight with a BMI in excess of 25% in all 50 states. Childhood obesity in the United States has more than tripled in the past two decades. The prevalence of obesity in infants under 6 months had risen 73 percent since 1980. The U.S. Surgeon General estimates obesity is responsible for 300,000 deaths every year. Since the decadence of the automobile and television the number of people struggling with obesity and the related chronic diseases of diabetes, heart disease and cancer have risen. The Global Strategy on Diet, Physical Activity and Health 2003 reports that chronic diseases are now the major cause of death and disability worldwide. Noncommunicable conditions, including cardiovascular diseases (CVD), diabetes, obesity, cancer and respiratory diseases, now account for 59% of the 56.5 million deaths annually and 45.9% of the global burden of disease. Half of the 17 million deaths resulting from chronic disease were from (CVD). Relatively few risk factors – high cholesterol, high blood pressure, obesity, smoking and alcohol – cause the majority of the chronic disease burden. Conversely, relatively few factors benefit a person's health and longevity – a balanced diet, exercise, and freedom from stress.

1. One pound of fat is equivalent to approximately 3,500 kcal of energy (1kg =7,700 kcal). In designing the exercise component of a weight loss program, the balance between intensity and duration of exercise should be manipulated to promote a high total caloric expenditure (300 to 500 kcal per session and 1,000 to 2,000 kcal per week for adults). Overweight people inherently have well-nourished teeth, strong bones and great muscle strength from bearing their heavy weight in daily activities. Obese and overweight people must learn to adopt (1) a formal athletic daily exercise routine and (2) a vegan diet, without any threat of nutritional deficiency until after all their body fat relatively quickly turns into huge, attractive muscles, capable of moving their sturdy skeleton gracefully, and a heart muscle capable of performing competitive sedentary activities, without life-threatening atherosclerosis or cancer. The goal is pain-free running.

Height Weight Tables

Desirable Weights For Men Over 25				Desirable Weights For Women Over 25			
Height	Frame			Height	Frame		
	Small	Medium	Large		Small	Medium	Large
5' 2"	112-120	118-129	126-141	4' 10"	92-98	96-107	104-119
5' 3"	115-123	121-133	129-141	4' 11"	94-101	98-110	105-122
5' 4"	118-126	124-138	132-148	5' 0"	96-104	101-103	109-125
5' 5"	121-129	127-139	135-152	5' 1"	99-107	104-118	112-128
5' 6"	124-133	134-147	142-161	5' 2"	102-110	107-119	115-131
5' 7"	128-137	134-147	142-161	5' 3"	105-113	110-127	118-134
5' 8"	132-141	138-152	147-168	5' 4"	108-118	113-126	121-138
5' 9"	138-145	142-158	151-170	5' 5"	111-119	116-130	125-142
5' 10"	140-150	146-180	155-174	5' 6"	114-123	120-135	129-146
5' 11"	144-154	150-165	159-179	5' 7"	118-127	124-139	133-150
6' 0"	148-158	154-170	164-184	5' 8"	122-131	128-143	137-154
6' 1"	152-162	158-175	168-189	5' 9"	126-135	132-147	141-158
6' 2"	156-167	162-180	173-194	5' 10"	130-140	138-151	145-163
6' 3"	160-171	167-185	178-199	5' 11"	134-144	140-155	149-168
6' 4"	164-175	172-190	182-204	6' 1"	138-148	144-159	153-173

2. In 1942, Louis Dublin, a statistician at Metropolitan Life Insurance Company, grouped some four million people who were insured with Metropolitan Life into categories based on their height, body frame (small, medium or large) and weight. He discovered that the ones who lived the longest were the ones who maintained their body weight at the level for average 25-year-olds. To determine proper caloric intake to achieve a desired weight. First, determine a desired weight according to the following tables: Multiply this weight by 15 calories per pound if sedentary and 20 calories if moderately active to determine proper caloric intake to maintain stasis. Finally, from this amount, subtract 500 calories per day to lose an estimated pound per week. Children and young adults need slightly more calories and elderly people slightly less. For people trying to lose weight there are basically two diets – calorie watching, mostly vegetarian or vegan. The vegan diet is highly recommended for overweight people trying to lose weight. For so long as the person has enough body fat and exercises enough to release some of its stored nutrition, the person should not suffer from diarrhea from iron or B12 deficiency anemia or tooth decay and osteoporosis from a lack of calcium phosphate apatite.

3. A calorie is the heat required to raise the temperature of 1g of water 1ºC. The energy value of food and human energy requirements are expressed as caloric equivalents. Fatty acids are used by the body as a source of energy and are provided for in our diet by animal fat and vegetable oils that when metabolized supply 9 cal/g. Carbohydrates are complex compounds made up of sugars that when metabolized yield 4 cal/g. Proteins, are complex chains of amino acids, supplied in our diet chiefly by animal proteins –meat, milk, cheese and eggs – and to a lesser degree by plants such as rice and legumes and nuts, that when metabolized yield 5 cal/g. Protein requirements vary, with children, pregnant and lactating women, and men undergoing strenuous exercise requiring larger amounts. Beyond infancy, when a child's nutrition is derived from breastmilk or formula, a child requires about 10% of his caloric intake in protein. Protein deficiency, especially during the first year of life, has been associate with decreased brain development and lowered IQ. Diet is extremely important. Nutrition is all about the study of food and how our bodies use food as fuel for growth and daily activities. The macro-nutrients, or

"big" nutrients include proteins, carbohydrates, and fats. The micro-nutrients, or "little" nutrients are the vitamins and minerals needed to be healthy. Calories are the basic unit of food energy. A healthy diet consists exclusively of fruit, vegetables and whole grains. Meat, bread and dairy products are luxury foods that are excessively fattening and should be avoided most of the time, although the fats, proteins, vitamins and minerals are important in moderation. Sweets, junk food, fast food, fried food, processed foods such as hydrogenated fats and oils (trans-fats), white flour, white rice and bread, and high fructose corn syrup, should be avoided all of the time. The adverse health impacts of excessive meat-eating stem in part from what nutritionists call the “great protein fiasco” a mistaken belief of many Westerners that they need to consume twice as much protein as recommended by WHO. The limit for empty calories, swiftly achieved with flour and sugar confections, can also be encountered when eating too much of a particular fruit or vegetable without making a complete protein, are based on estimated calorie needs by age/gender group. Physical activity increases calorie needs, so those who are more physically active need more total calories and have a larger limit for empty calories.

Estimated Caloric Intake For Inactive, By Age

Age and gender	**Estimated calories for those who are not physically active**	
	Total daily calorie needs*	**Daily limit for empty calories**
Children 2-3 yrs	1000 cals	135
Children 4-8 yrs	1200-1400 cals	120
Girls 9-13 yrs	1600 cals	120
Boys 9-13 yrs	1800 cals	160
Girls 14-18 yrs	1800 cals	160
Boys 14-18 yrs	2200 cals	265
Females 19-30 yrs	2000 cals	260
Males 19-30 yrs	2400 cals	330
Females 31-50 yrs	1800 cals	160
Males 31-50 yrs	2200 cals	265

Females 51+ yrs	1600 cals	120
Males 51+ yrs	2000 cals	260

Source: Choosemyplate.gov

4. Diet varies depending on the medical condition that needs to be treated. Stuff a cold, to keep the lungs sealed in grease, and recover endurance. The heart diet is fresh fabrics, vegan diet and exercise, statins treat high cholesterol and antibiotics cure endocarditis. The cancer diet prioritizes weight maintenance, despite cachexia, to prevent the weight loss that precedes death, and offers remission to many of those who derive sufficient calories from a completely organic vegan diet. Recommendations for total weight gain during pregnancy and the rate of weight gain per month appropriate to achieve it may be made based on a body mass index (BMI) calculated for the pre-pregnancy rate. Underweight mothers with a BMI <19.8 should gain a total of 12.7-18.2 kg (28-40 lb) at a rate of 2.3 kg (5.0 lb) every 4 weeks. Normal weight mothers with a BMI 19.8-26.9 should gain a total of 11.4-15.9 kg (25-35 lb) at a rate of 1.8 kg (4.0 lb) every 4 weeks. Overweight mothers with a BMI of 26.1-29.0 should gain a total of 6.8-11.4 kg (15-25 lb) at a rate of 1.2 kg (2.5 lb) every 4 weeks. Obese mothers with a BMI >29.0 should gain 68 kg (15 lb) at a rate of 0.9 kg (2.0 lb) every 4 weeks. Twin gestation by a normal mother requires a weight gain of 15.9-20.4 kg (35-40 lb) at a rate of 2.7 kg (6.0 lb) every 4 weeks. The total caloric expenditure of runners completing a marathon is difficult, if not impossible to measure accurately. However, using a treadmill it has been shown that the energy expended running is approximately 1.5kcal/kg/mile. Therefore, if a marathon were held on a motor-driven treadmill, a 50kg runner would expend 1,970 kcal, a 60kg runner 2,360 kcal, a 70 kg runner 2,750 kcal, and 80 kg runner 3,140 kcal, and so on. However marathons are not run on a treadmill, and in actual running conditions, the caloric cost is not independent of running velocity. Most marathon runners require approximately 2,400 kcal to finish the 26.2 miles in five hours. 5,000 kcal / day is good for eight hours hard physical labor. People who do hard physical labor, such as destroying the slash piles littering the National Forests in the Western states, wildfire fighting, logging or recreational activities such backpacking or ultra-marathons, eight hours or more a day, are not only able to metabolize a 5,000 kcal pound of animal flesh or trail mix, they have a great appetite and consume three times as much food as an overstuffed sedentary person consuming a kilogram of fruits, vegetables, boiled and ground whole grains daily.

Vitamins and Minerals, What they do, Food Source

Vitamin	What the vitamin does	Significant food sources
B1 (thiamin)	Supports energy metabolism and nerve function	spinach, green peas, tomato juice, watermelon, sunflower seeds, lean ham, lean pork chops, soy milk
B2 (riboflavin)	Supports energy metabolism,	spinach, broccoli, mushrooms,

	normal vision and skin health	eggs, milk, liver, oysters, clams
B3 (niacin)	Supports energy metabolism, skin health, nervous system and digestive system	spinach, potatoes, tomato juice, lean ground beef, chicken breast, tuna (canned in water), liver, shrimp
Biotin	Energy metabolism, fat synthesis, amino acid metabolism, glycogen synthesis	widespread in foods
Pantothenic Acid	Supports energy metabolism	widespread in foods
B6 (pyridoxine)	Amino acid and fatty acid metabolism, red blood cell production	bananas, watermelon, tomato juice, broccoli, spinach, acorn squash, potatoes, white rice, chicken breast
Folate	Supports DNA synthesis and new cell formation	tomato juice, green beans, broccoli, spinach, asparagus, okra, black-eyed peas, lentils, navy, pinto and garbanzo beans
B12	Used in new cell synthesis, helps break down fatty acids and amino acids, supports nerve cell maintenance	meats, poultry, fish, shellfish, milk, eggs
C (ascorbic acid)	Collagen synthesis, amino acid metabolism, helps iron absorption, immunity, antioxidant	spinach, broccoli, red bell peppers, snow peas, tomato juice, kiwi, mango, orange, grapefruit juice, strawberries
A (retinol)	Supports vision, skin, bone and tooth growth, immunity and reproduction	mango, broccoli, butternut squash, carrots, tomato juice, sweet potatoes, pumpkin, beef liver
D	Promotes bone mineralization	self-synthesis via sunlight, fortified milk, egg yolk, liver, fatty fish
E	Antioxidant, regulation of oxidation reactions, supports cell membrane stabilization	polyunsaturated plant oils (soybean, corn and canola oils), wheat germ, sunflower seeds, tofu, avocado, sweet potatoes, shrimp, cod
K	Synthesis of blood-clotting proteins, regulates blood calcium	Brussels sprouts, leafy green vegetables, spinach, broccoli,

		cabbage, liver
Mineral	**What the mineral does**	**Significant food sources**
Sodium	Maintains fluid and electrolyte balance, supports muscle contraction and nerve impulse transmissions	salt, soy sauce, bread, milk, meats
Chloride	Maintains fluid and electrolyte balance, aids in digestion	salt, soy sauce, milk, eggs, meats
Potassium	Maintains fluid and electrolyte balance, cell integrity, muscle contractions and nerve impulse transmission	potatoes, acorn squash, artichoke, spinach, broccoli, carrots, green beans, tomato juice, avocado, grapefruit juice, watermelon, banana, strawberries, cod, milk
Calcium	Formation of bones and teeth, supports blood clotting	milk, yogurt, cheddar cheese, Swiss cheese, tofu, sardines, green beans, spinach, broccoli
Phosphorus	Formation of cells, bones and teeth, maintains acid-base balance	all animal foods (meats, fish, poultry, eggs, milk)
Magnesium	Supports bone mineralization, protein building, muscular contraction, nerve impulse transmission, immunity	spinach, broccoli, artichokes, green beans, tomato juice, navy beans, pinto beans, black-eyed peas, sunflower seeds, tofu, cashews, halibut
Iron	Part of the protein hemoglobin (carries oxygen throughout body's cells)	artichoke, parsley, spinach, broccoli, green beans, tomato juice, tofu, clams, shrimp, beef liver
Zinc	A part of many enzymes, involved in production of genetic material and proteins, transports vitamin A, taste perception, wound healing, sperm production and the normal development of the fetus	spinach, broccoli, green peas, green beans, tomato juice,lentils, oysters, shrimp, crab, turkey (dark meat), lean ham, lean ground beef, lean sirloin steak, plain yogurt, Swiss cheese, tofu, ricotta cheese
Selenium	Antioxidant. Works with vitamin E to protect body from oxidation	seafood, meats and grains
Iodine	Component of thyroid hormones that help regulate growth, development and metabolic rate	salt, seafood, bread, milk, cheese

Copper	Necessary for the absorption and utilization of iron, supports formation of hemoglobin and several enzymes	meats, water
Manganese	Facilitates many cell processes	widespread in foods
Fluoride	Involved in the formation of bones and teeth, helps to make teeth resistant to decay	fluoridated drinking water, tea, seafood
Chromium	Associated with insulin and is required for the release of energy from glucose	vegetable oils, liver, brewer's yeast, whole grains, cheese, nuts
Molybdenum	Facilitates many cell processes	legumes, organ meat

Source: Health Check Systems

5. Unlike protein, carbohydrates and fats, vitamins and minerals do not yield usable energy when broken down, a lot like the fad diets of the 20th century. Vitamins and minerals assist the enzymes that release energy from carbohydrates, proteins and fats, but they do not provide energy themselves. Fully metabolized vitamins and minerals, that are not excreted, become human cell tissue. Vitamins and minerals are widely available from natural foods. They are important for maintain health and treating many diseases. One should ideally get all the vitamins and minerals needed from natural food sources to consume what could be construed as a balanced diet. There are also daily multi-vitamins and special vitamins for people recovering from a deficiency or with special needs, but there is no substitute for a healthy, balanced diet. There are only a few things a vegan needs to know, although it doesn't really concern them unless they deplete all their body fat. Teeth and bones are nourished with calcium phosphorus apatite. Vitamin D is necessary to metabolize calcium, that is particularly necessary for vegans and women going through menopause to prevent osteoporosis. Phosphorus is so plentiful in animal products that regular multivitamins do not contain it, unfortunately multivitamins marketed to vegans also do not contain phosphorus, wherefore vegan sources of phosphorus are limited to mushrooms, soy and mung beans. Diarrhea causes general nutritional deficiency. Plain white rice is the home remedy for diarrhea and vomiting. Iron deficiency anemia is the leading cause of diarrhea worldwide, except in American medical literature where it delays ulcer diagnosis. Dietary iron is found in dark green leafy vegetables. The only other thing to know is that rice and beans, corn and tomatoes, and other vegetables combine with brown rice, to make a complete protein that is tasty, filling and more easily digested than gluten.

B. Obese individuals are invariably sedentary and many have had poor experiences with exercise in the past. The initial exercise prescription should be based on low intensity and progressively longer durations of activity. Central obesity, fat deposited primarily in the trunk or abdominal region is particularly problematic. Obesity often carries a negative social stigma and is associated with a reduced physical working capacity but, like pain, is not itself a qualifying disability. Reduction of body fatness is a need or a

goal of many exercise program participants. One pound of fat is equivalent to approximately 3500 kcal of energy (1kg =7700 kcal). In designing the exercise component of a weight loss program, the balance between intensity and duration of exercise should be manipulated to promote a high total caloric expenditure (300 to 500 kcal per session and 1000 to 2000 kcal per week for adults). Obese individuals are at an increased relative risk for injury and thus may require that the intensity of exercise be maintained at or below the intensity recommended or improvement of cardiorespiratory endurance. Although their bones may be strong, they may be clumsy and are probably distracted by chronic disease(s) from achieving the great strength and muscle mass that is required to move their great bulk. Non-weight-bearing activity and rotation of exercise modalities may be necessary and frequent modification in frequency and duration may also be required. Overweight people should dedicate at least an hour of everyday to physical exercise, if only to improve their appetite.

Exercise Calorie Expenditure Chart, by Weight and 1 Hour Activity

Activity	**90 lbs.**	**100 lbs.**	**110 lbs.**	**120 lbs.**	**130 lbs.**	**140 lbs.**	**150 lbs.**	**160 lbs.**	**170 lbs.**	**180 lbs.**	**190 lbs.**	**200 lbs.**	**220 lbs.**	**240 lbs.**	**260 lbs.**	**280 lbs.**	**300 lbs.**
Aerobic dancing	104	115	127	138	149	161	172	184	195	207	218	230	253	276	299	322	345
Aerobics, 4" step	131	145	160	174	189	203	218	232	247	261	276	290	319	348	377	406	435
Aerobics, slide	135	150	165	180	195	210	225	240	255	270	285	300	330	360	390	420	450
Badminton	135	150	165	180	195	210	225	240	255	270	285	300	330	360	390	420	450
Basketball (game)	198	220	242	264	286	308	330	352	374	396	418	440	484	528	572	616	660

Basketball (leisurely)	117	130	143	156	169	182	195	208	221	234	247	260	286	312	338	364	390
Bicycling, 10 mph	112	125	138	150	162	175	188	200	213	225	237	250	275	300	325	350	375
Bicycling, 13 mph	180	200	220	240	260	280	300	320	340	360	380	400	440	480	520	560	600
Billiards	41	45	49	54	58	63	68	72	76	81	85	90	99	108	117	126	135
Bowling	50	55	60	66	72	77	82	88	94	99	105	110	121	132	143	154	165
Canoeing, 2.5 mph	63	70	77	84	91	98	105	112	119	126	133	140	154	168	182	196	210
Canoeing, 4.0 mph	122	135	149	162	175	189	202	216	230	243	257	270	297	324	351	378	405
Croquet	54	60	66	72	78	84	90	96	102	108	114	120	132	144	156	168	180

Cross country ski, hard	297	330	363	396	429	462	495	528	561	594	627	660	726	792	858	924	990
Cross country ski, easy	140	155	171	186	202	217	232	248	263	279	294	310	341	372	403	434	465
Cross country ski, med	198	220	242	264	286	308	330	352	374	396	418	440	484	528	572	616	660
Dancing (noncontact)	90	100	110	120	130	140	150	160	170	180	190	200	220	240	260	280	300
Dancing (slow)	50	55	60	66	72	77	82	88	94	99	105	110	121	132	143	154	165
Gardening, moderate	81	90	99	108	117	126	135	144	153	162	171	180	198	216	234	252	270
Golfing (walkin	90	100	110	120	130	140	150	160	170	180	190	200	220	240	260	280	300

g)																	
Golfing (with a cart)	63	70	77	84	91	98	105	112	119	126	133	140	154	168	182	196	210
Handball	207	230	253	276	299	322	345	368	391	414	437	460	506	552	598	644	690
Hiking 10 lb. load	162	180	198	216	234	252	270	288	306	324	342	360	396	432	468	504	540
Hiking 20 lb. load	180	200	220	240	260	280	300	320	340	360	380	400	440	480	520	560	600
Hiking 30 lb. load	211	235	259	282	306	329	352	376	399	423	446	470	517	564	611	658	705
Hiking, no load	140	155	171	186	202	217	232	248	263	279	294	310	341	372	403	434	465
Housework	81	90	99	108	117	126	135	144	153	162	171	180	198	216	234	252	270
Ironing	45	50	55	60	65	70	75	80	85	90	95	100	110	120	130	140	150
Jogging, 5	167	185	203	222	240	259	278	296	315	333	352	370	407	444	481	518	555

mph																	
Jogging, 6 mph	207	230	253	276	299	322	345	368	391	414	437	460	506	552	598	644	690
Mopping	77	85	94	102	111	119	128	136	144	153	162	170	187	204	221	238	255
Mowing	122	135	149	162	175	189	202	216	230	243	257	270	297	324	351	378	405
Ping Pong	81	90	99	108	117	126	135	144	153	162	171	180	198	216	234	252	270
Raking	68	75	82	90	98	105	112	120	128	135	142	150	165	180	195	210	225
Racquetball	185	205	225	246	266	287	308	328	349	369	389	410	451	492	533	574	615
Rowing (leisurely)	68	75	82	90	98	105	112	120	128	135	142	150	165	180	195	210	225
Rowing machine	162	180	198	216	234	252	270	288	306	324	342	360	396	432	468	504	540
Running, 08	274	305	336	366	396	427	458	488	518	549	579	610	671	732	793	854	915

mph																	
Running, 09 mph	297	330	363	396	429	462	495	528	561	594	627	660	726	792	858	924	990
Running, 10 mph	315	350	385	420	455	490	525	560	595	630	665	700	770	840	910	980	1050
Scrubbing the floor	126	140	154	168	182	196	210	224	238	252	266	280	308	336	364	392	420
Scuba diving	171	190	209	228	247	266	285	304	323	342	361	380	418	456	494	532	570
Shopping for groceries	54	60	66	72	78	84	90	96	102	108	114	120	132	144	156	168	180
Skipping rope	257	285	313	342	370	399	428	456	484	513	541	570	627	684	741	798	855
Snow sho	176	195	215	234	253	273	292	312	332	351	371	390	429	468	507	546	585

veling																	
Snow skiing, downhill	117	130	143	156	169	182	195	208	221	234	247	260	286	312	338	364	390
Soccer	176	195	215	234	253	273	292	312	332	351	371	390	429	468	507	546	585
Squash	185	205	225	246	266	287	308	328	349	369	389	410	451	492	533	574	615
Stair climber machine	144	160	176	192	208	224	240	256	272	288	304	320	352	384	416	448	480
Stair climbing	126	140	154	168	182	196	210	224	238	252	266	280	308	336	364	392	420
Swimming (25 yrd/min)	108	120	132	144	156	168	180	192	204	216	228	240	264	288	312	336	360
Swimming (50 yrd/min)	202	225	248	270	292	315	338	360	382	405	428	450	495	540	585	630	675

Table Tennis	81	90	99	108	117	126	135	144	153	162	171	180	198	216	234	252	270
Tennis	144	160	176	192	208	224	240	256	272	288	304	320	352	384	416	448	480
Tennis (doubles)	99	110	121	132	143	154	165	176	187	198	209	220	242	264	286	308	330
Trimming hedges	94	105	115	126	136	147	158	168	178	189	199	210	231	252	273	294	315
Vacuuming	68	75	82	90	98	105	112	120	128	135	142	150	165	180	195	210	225
Volleyball (game)	108	120	132	144	156	168	180	192	204	216	228	240	264	288	312	336	360
Volleyball (leisurely)	63	70	77	84	91	98	105	112	119	126	133	140	154	168	182	196	210
Walking, 2 mph	54	60	66	72	78	84	90	96	102	108	114	120	132	144	156	168	180
Walkin	72	80	88	96	104	112	120	128	136	144	152	160	176	192	208	224	240

g, 3 mph																	
Walking, 4 mph	90	100	110	120	130	140	150	160	170	180	190	200	220	240	260	280	300
Washing the car	68	75	82	90	98	105	112	120	128	135	142	150	165	180	195	210	225
Waterskiing	144	160	176	192	208	224	240	256	272	288	304	320	352	384	416	448	480
Waxing the car	90	100	110	120	130	140	150	160	170	180	190	200	220	240	260	280	300
Weeding	90	100	110	120	130	140	150	160	170	180	190	200	220	240	260	280	300
Weights (40 sec. down)	230	255	280	306	332	357	382	408	433	459	484	510	561	612	663	714	765
Weights (60 sec. down)	171	190	209	228	247	266	285	304	323	342	361	380	418	456	494	532	570
Weights	112	125	138	150	162	175	188	200	213	225	237	250	275	300	325	350	375

(90 sec. down)																	
Window cleaning	68	75	82	90	98	105	112	120	128	135	142	150	165	180	195	210	225

Source: Nutribase Professional Nutrition and Fitness Software

1. Exercise is necessary to burn off excess calories and to keep the body fit. Most exercise routines involve strength exercises such as push up and sit ups as well as cardiovascular exercise. Cardiovascular exercise is by far the most important part of an exercise routine. Being physically active is one of the most important steps that Americans of all ages can take to improve their health. The *2008 Physical Activity Guidelines for Americans* provides science-based guidance to help Americans aged 6 and older improve their health through appropriate physical activity. Children and adolescents should do 60 minutes (1 hour) or more of physical activity daily. All adults should avoid inactivity. Some physical activity is better than none, and adults who participate in any amount of physical activity gain some health benefits. For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, long enough to break a sweat and increase heart beat and respiration, and, it should be spread throughout the week. For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate intensity, or 150 minutes a week of vigorous intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity. Additional health benefits are gained by engaging in physical activity beyond this amount.

2. Children and adolescents should do 60 minutes (1 hour) or more of physical activity daily. All adults should avoid inactivity. Some physical activity is better than none, and adults who participate in any amount of physical activity gain some health benefits. For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, long enough to break a sweat and increase heart beat and respiration, and, it should be spread throughout the week. For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate intensity, or 150 minutes a week of vigorous intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity.

Additional health benefits are gained by engaging in physical activity beyond this amount. Ideally a person would exercise for at least an hour five days a week. That exercise routine, should include at least 100 push ups, 200 sit ups, and 1-3 miles of jogging. The goal is a flat stomach. Don't do to much when starting out, stop if you are injured, in time, with perseverance all goals can be achieved.

3. Yoga, the ancient Indian physical and spiritual practice is done by more than 20 million people in the United States. Hatha (physical) yoga consists of a series of physical poses, or asanas, meant to stretch the muscles, strengthen them, and improve overall balance. The founder of Pilates, German performer and boxer Joseph Pilates, took his ideas from his study of yoga, Zen, and ancient Greek and roman physical regimens, making changes along the way. Around 1914 he began practicing his technique with exercise done on the floor. In surviving photographs of Pilates and his wife, one can see the beneficial effects of his specific type of regular exercise. Pilates was interned with other German nationals in England at the beginning of World War I and it was then that he invented the machines and props still used in the practice of his method. A standardized physical training session consists of three essential elements: warm-up, activity, and cool-down. Warm-up exercises are strength exercises, most commonly push-ups, crunches and squats to detect injuries that might prevent performance of the activity and to strengthen and protect the body against injuries during vigorous physical activity. Totally tubular – brush teeth within ten minutes of eating table sugar, cuts and scrapes are treated with antibiotic ointment, foot and shin pain is treated with the antifungal clotrimazole (athlete's foot crème) and aspergillosis and allergic rhinitis with hydrocortisone crème. Hip pain is most likely caused by rat urine, that is water soluble if quickly washed off, or antibiotic treatable *Streptococcus pyogenes*. Prescription disease modifying anti-rheumatic drug (DMARDS) may be necessary to treat rheumatism – amantadine for human influenza, ampicillin for pneumonia and meningitis, doxycycline or clindamycine for *Staph* + *Strep* = toxic shock syndrome, and metronidazole for gastroenteritis and joints. A wet cough indicates flu, a dry cough pneumonia. For the diagnosis of gastrointestinal fullness and abdominal ailments crunches are the first warm-up exercise of the day, more than 100 consecutive crunches is needed to keep the stomach muscles tones. Crunches requires a mat or folded blanket to prevent injury to the skin of the back and buttocks. Push-ups repetitions of sets of 50 push-ups, going down to within an inch of the ground and up to lock the elbows, are done in the morning and repeated throughout the day. After doing >100 crunches and two sets of 50 push-ups one is ready for the 3 miles run or other activity. By activity is meant a cardiovascular workout, for at least half an hour or an hour nonstop, so as to break a sweat. Cool down exercises are stretches usually done for only around twenty seconds on affected muscles. For those unable to engage in intense physical activity an hour or two of yoga a day, with breathing exercises and movement while stretching, can help patients to perform their daily tasks independently. Patients must take care to stop their exercise activity quickly if they sense a potential abdominal hernia, or rupture, from overeating, or osteoporosis and/or pulmonary atelactasis from running out of body fat sealing the lung(s). Crunches and supine exercises should be discontinued after the first trimester of pregnancy. Labor and running marathons can be done right until delivery.

4. The American College of Sports Medicine defines physical fitness as a set of attributes that people have, or achieve, that relates to the ability to perform physical activity. The fitness components of cardio-respiratory endurance, muscular strength and endurance, flexibility, and body composition are all inherent within a generalized exercise prescription. The Surgeon General's Report, Physical Activity and Health, states: "… significant health benefits can be obtained by including a moderate amount of physical activity (e.g. brisk walking, running, resistance training, recreational sports) on most, if not all, days of the week. Additional health benefits can be gained through greater amounts of physical activity. People who can maintain a regular regimen of activity that is of longer duration, or of more vigorous intensity, are likely to derive greater benefit." The vast majority of physically active adults are not involved in structure, formal exercise programs, nor do they need to be. There is however excellent evidence that good physical fitness reduces all-cause mortality, and coronary artery disease; good evidence that it reduces disease rates of hypertension, obesity, colon cancer, non-insulin dependent diabetes and osteoporosis; some evidence that it reduces disease rates of stroke, breast, prostate and lung cancer; although there is no apparent difference in disease rates across activity categories in peripheral vascular disease, rectal, stomach or pancreatic cancer, or osteoarthritis.

C. Sudden cardiac death (SCD) is the leading cause of death in athletes. Exercise-related SCD occurs in one to five cases per one million athletes per year. Of the approximately 25 million competitive athletes in the U.S. there are 25-125 document cases of SCD per year, this is likely a significant underestimation because vigorous exercise does not require participation in organized athletics and independent athletes must guard their heart in certain cardiac conditions. It is estimated that there are 10-25 cases of SCD per year in individuals younger than 30 years. The overall occurrence rate of SCD in high school athletes is estimated to be 1: 100,000-1:300,000 athletes/year. SCD in older athletes (>35 years of age) is most often related to atherosclerotic coronary arterial disease with myocardial infarction. However, in younger athletes (<35 years of age) the majority of these cases are caused by defined and hereditary cardiovascular disorders. Cardiac electrical instability, due to an underlying pathology, deteriorating into fatal ventricular tachycardia or ventricular fibrillation appears to be the most common immediate cause of death. In one study of SCD in competitive athletes from 1985 to 1995 it was found that the majority of these athletes were involved in high school sports (62%) with collegiate athletes in a distant second (22%) and professional athletes ranking third (7%). 90% of athletes suffering SCD were male. 68% of these deaths occurred during football and basketball. Ninety percent of athletes collapsed during or immediately after a training session or competition. Although symptoms or a family history may of SCD may precede the event, most episodes of cardiac arrest are the first manifestation of disease in an "apparently healthy" individual. Many athletes are capable of exceptionally high levels of performance for long periods of time, even while harboring occult and potentially lethal cardiovascular malformations.

1. Studies of exercise by apparently healthy adults report an acute event rate of 1 per 187,500 person-hours of exercise and death rate of male joggers of 1 per 396,000 man-hours of jogging. The incidence of cardiac arrest while jogging is approximately 1

episode per year for every 18,000 healthy men, by appears to be lower for men with higher levels of habitual physical activity. While the risk of sudden cardiac death is increased during vigorous exercise, this risk is lower among those habitually active. There are no scientific studies on exercise-related cardiac events in women. The major cause of cardiovascular complications during exercise is coronary artery disease (CAD). During medically supervised cardiac rehabilitation exercise programs , the risk of death in the U.S. is approximately 1 per 60,000 participant hours, maybe one death every four years per program. The risk of SCD in joggers and marathon participants is estimated to 1/15,000 and 1/50,000 respectively. Preparticipation exercise testing should be reserved for men >40-45 years of age and women>50-55 year with moderate to high cardiovascular risk. The probability of an exercise induced cardiac event is greater in athletes with atherosclerotic coronary disease and left ventricular dysfunction and older athletes should be discouraged from participation in high intensity sports if they have left ventricular ejection fraction <50% or evidence of exercise-induced ischemic, ventricular arrhythmia or systolic hypotension. Make sure exercise clothes are cardiac glycoside free. In one study of an athletic department on the use of automated external defibrillators (AEDs) found it has been used on 20% for student athletes, 33% for athletic department staff and 47% for fans, with survival rates of 0% for students, 75% for staff, 57% for fans, and 61% overall.

2. More than 20 cardiac pathologies have been identified as causes of SCD in athletes. Findings at autopsy reveal a predominance of an enlarged heart, hypertrophic cardiomyopathy (HCM) (26%), commotion cordia (20%) and aberrant coronary arteries (13%) as the underlying cause of death. Responsible for 20% o SCD in U.S. athletes commotion cordis can be caused by a sudden forceful impact to the chest wall that can elicit electrical instability leading to asystole or ventricular fibrillation, the mean age of victims is 13 years, and the resuscitation rate is only 15%. Only 18% of fatalities had symptoms attributed to the cardiovascular system in the preceding 36 months prior to death, although as many as 10 of 12 older athletes had symptoms prior to death although all had normal ECG findings. SCD in older athletes (<35 years old) is most often related to coronary artery disease with the incidence of SCD increasing with age, including older populations of vigorous exercisers, estimates of SCD incidence approach 1:15,000-1:18,000. Most of these deaths, of young and old athletes, are thought to be related to electrical instability leading to ventricular tachycardia and eventually, ventricular fibrillation. Inflammation, typically related to Coxsackie B virus in 50% of cases, or bacterial infection in the myocardial tissue can lead to electrical instability leading to fatal complete heart block after considerable chest pain and dizziness.

3. Accounting for only 2% of SCD in U.S. athletes, Marfan's syndrome is an autosomal dominant inherited connective tissue disorder occurring in approximately one in 10,000 individuals, who are characteristically very tall and thin, often with disproportionately long limbs, with an arm span greater than their height and have an increased risk of progressive dilation or the aortic root, potentially leading to dissection or rupture, that should monitored every 6 months by ECG. Approximately one in 10,000 Americans have prolonged QT syndrome exhibited by an abnormal ECG, 60% have a family history of long QT or SCD, one-third of patients present with palpitations, seizures and syncope.

The trigger depends on the mutation, that can be detected by genetic testing, in QT1, the common trigger is swimming, in QT2 it is extreme emotion, in QT3 it is inactivity, in QT4 it is a loud noise, such a an alarm clock. Treatment often involves therapy with Beta-blockers, a pacemaker or ICD, typically then refraining from activity although 70% of athletes with ICDs make a return to play.

4. Arrhythmogenic right ventricular dysplasia or cardiomyopathy (ARVD or ARVC) is characterized by fibrofatty infiltration of the myocardium, estimates range from 2.8% of SCD in athletes in the U.S. to as high as 22% in Europe. Athletes with this condition are disqualified from sports and must investigate the benefits of moderate levels of exercise. A rest period of approximately 6 months is recommended following the onset of myocarditis, an inflammatory disease of the myocardium. Similarly a diagnosis of acute pericarditis disqualifies athletes from participation in competitive sports, however, once the condition is resolved, sports may be allowed. Sinus bradycardias, sinus tachycardia, premature atrial contraction and nonsustained supraventricular arrhythmias are generally manageable non-lethal rhythm disturbances and for symptomatic athletes with no evidence of underlying high-risk disease, all sports are allowed. Athletes with pacemakers however should not participate in collision sports. Sports participation for athletes with aortic stenosis depends on the severity of the stenosis. All sports are allowed for athletes with mild aortic stenosis and moderate and low intensity sports are allowed for athletes with moderate aortic stenosis. However play is not allowed for athletes with severe aortic stenosis or occlusion. Mitral valve prolapse accounts for 2% of SCD in athletes. The solution for dysrhythmia is often an implanted battery-powered pacemaker to jolt the heart and keep it in line.

D. The Marine Corp physical fitness test (PFT) is the exercise program upon which all other formal exercise programs are based. The 1-1-1 Physical Fitness Assessment, consists of one minute of push-ups, one minute of sit-ups, and a timed, one-mile run. Soldiers are allowed a minimum of 5 minutes and a maximum of 10 minutes to recover between events. 50 push-ups in one minute, 50 sit-ups in three minutes and three mile run in less than 28:00 minutes is the goal. Women and people over 40 have slightly lower requirements. Clients often start out doing push-ups on their knees and work up to 40 to 50 regular push-ups without stopping to rest. To enter Marine Corp basic training men have to do 2 pull-ups, 44 sit-ups in two minutes and 1.5 mile run in 13:30 minutes; women do a flexed arm hang for 12 seconds, 44 sit-ups in two minutes and one mile run in 10:30 minutes. The Marine Corp Physical Fitness Requirements for men are three pull-ups, 50 crunches diminishing with age to 40 and 3-mile run in 28:00 minutes diminishing with age to 33:00. For women it is a 15 second flexed arm hang and 50 crunches diminishing to 40 with age and 3-mile run in 31:00 minutes diminishing to 36:00 minutes with age. The Boston marathon is one of the last marathons in the United States to require qualifying times be run before the race,3:05 for men and 3:35 for women between the ages of 18-34, rising five minutes every four year increments to 80+ times of 4:55 for men and 5:25 for women. Most cardiologists tend to agree with the Marine Corp on the three mile minimum daily run. Swimming causes pneumonia.

Marine Corp Sex and Age Adjusted Physical Fitness Requirements

Age	Push-ups 1 minute	Crunches 3 minutes	Pull-ups	3-Mile Run
Goal	Sets of 50-100	Sets of 50-100	**Sets of 10-20**	25:00
Male 17-26	50	50	3	28:00
27-39	45	45	3	29:00
40-45	45	45	3	30:00
46+	40	40	3	33:00
Females 17-26	50	50	Flexed Armed Hang 15 seconds	31:00
27-39	45	45	15 seconds	32:00
40-45	45	45	15 seconds	33:00
46+	40	40	15 seconds	36:00

Source: Army Study Guide

1. The Walk-to-Run Program is for people whose 1-mile time was slower than 8:30 or a female with a 1-mile time slower than 10:30 minutes. During the first four weeks alternate walking and running for 10:30 minutes and repeat the walk-run routine five times in each training session. At week five run continuously for the time period listed on the training schedule. Run at a pace that can be maintained for the entire time or distance without feeling out of breath. The ability to carry on a conversation while running (the talk test), indicates the right pace. Males with 1-mile times 8:30 or faster or a female 10:30 or faster should practice speed running, carry a backpack or increase the distance to the minimal daily distance of 10 km to 10 miles used by most athletes trying to stay healthy and keep the marathon within reach.

2. The recommended rate of progression in an exercise conditioning program has three stages, the initial conditioning stage, improvement stage and maintenance stage. The initial conditioning stage includes light muscular endurance activities and moderate-level cardio respirator endurance activities that produce minimal muscle soreness and control injuries. This stage usually lasts up to four weeks and is dependent upon the individual's adaptation to exercise. The duration of the main activity during the initial stage will begin with approximately fifteen to twenty minutes and may progress to thirty minutes or more. The goal of the improvement stage is to provide a gradual increase in the overall exercise stimulus to allow for more significant improvements in your fitness level. The goal of the maintenance stage is the long-term maintenance of the cardio-respiratory and muscular strength and endurance fitness developed during the weeks spent in the improvement stage. Exercise must be conducted daily at the proper intensity to bring about the desired changes in the body. Missing a whole week of sessions, will probably set the program back a week. If unable to perform certain exercises perform more of those able to do in order to ensure minimal cardiorespiratory exertion. Adequate nutrition, rest and recovery must be studied to optimize health, physical fitness improvement, and control injuries. The military physical training prescription takes approximately 45 minutes per day, and should be done everyday. Training does not require a gym or expensive equipment. It is best to start with just the resistance of the body to develop proper form. Each

standardized physical training session expends approximately 300-400 kilocalories found in a ½ cup of cooked rice, cereal, or pasta about the same size of a fist. Exercising with more than a fistful of food in the stomach is likely to cause indigestion and could lead to ulceration. To be pain free, run at least three miles a day, exercise in the morning and throughout the day, rather than waiting till afternoon.

§365 Addiction

A. The term "drug dependent person" is defined to mean a person who is in a state of psychic or physical dependence, or both, arising from the use of that substance on a continuous basis. Drug dependence is characterized by behavioral and other responses which include a strong compulsion to take the substance on a continuous basis in order to experience its psychic effects or to avoid the discomfort caused by its absence under 42USC§201(q). An estimated 19.3 million American adults had a substance use disorder in 2019, and approximately 841,000 people have died from a drug overdose between 2000 to 2019. After the CDC reported an unprecedented reduction in the second half of 2018, preliminary data suggest that overdose deaths accelerated during the pandemic from 71,130 in 2019 to 85,519 in 2020, a 20% increase. An estimated 21.2 million Americans needed treatment for a serious substance abuse problem in 2018. Substance misuse increases the likelihood of homelessness, loss of employment, loss of family unity, failure to complete education, and suicide.

US drug overdose deaths 1970-2020

Year	Total Deaths	Per 100,000
1970	7,101	3.5
1980	2,492	1.1
1990	4,506	1.8
2000	17,415	6.2
2005	29,813	10.1
2010	38,329	12.4
2015	52,404	16.3
2016	63,632	19.7
2017	70,237	21.6
2018	67,367	20.6
2019	71,130	21.5
2020	85,519	25.8

Source: CDC, HHS FY 22

1. Drug overdose deaths have risen the past two decades, and are the leading cause of death from injury in the United States. From 2000 to 2018, it is estimated that nearly

754,000 people died from drug overdoses. Since 2001 opiate overdoses have increased 1,000%, first in prescription opiate drugs such as Oxycontin, by 2005 the epidemic had spread to methadone treatment, driving 4% of controlled prescription drugs (CPDs) consumers to heroin, that became contaminated by 2013. Nearly 80% of heroin users reported misusing prescription opioids prior to heroin. Opiate overdoses in children have doubled since 2005. Where there were around 1,000 prescription opiate overdose deaths annually before 2000, and less than 10,000 heroin overdoses, there were an estimated 22,000 opiate overdose deaths in 2016, 116 per day. In 2018, after Centers for Disease Control and Prevention's National Center for Health Statistics, reported that provisional overdose mortality fell by 5 percent for the 12 months ending in the second quarter of 2018, the age-adjusted rate of drug overdose deaths in the United States was 4.6 percent lower than the rate in 2017. In 2018, the number of individuals who misused opioids in the past year declined by more than one million. Opioids contribute to over two-thirds of the 192 deaths that occur daily from drug overdose. SAMHSA data released in

2. September of 2019 indicated more than 2 million Americans met diagnostic criteria for opioid use disorder in the past year, including 652,000 who had a heroin use disorder—the highest number recorded in 15 years. Overdose deaths involving methamphetamine and other stimulants are increasing; in a growing number of states, they are responsible for more deaths than opioids. From 2012 through 2018, the rate for deaths involving psychostimulants with abuse potential increased from 0.8 percent to 3.9 percent. FDA has approved medications and clinicians have identified a gold standard treatment protocol for opioid use disorder. However, that is not the case for methamphetamine and other stimulants. Since 2016 synthetic opioids, specifically fentanyl have become far and away the leading cause of fatal drug overdose. In 2019 in order of frequency synthetic opioids accounted for 11 deaths per 100,000 population, cocaine 5 per 100,000, psycho-stimulants with abuse potential 5 per 100,000, heroin 5 per 100,000, and prescription drugs 5 per 100,000.

B. Narcotic Antagonists prevent or abolish excessive respiratory depression caused by the administration of opiates. Naltrexone became clinically available in 1985 as a new narcotic antagonist. Its actions resemble those of naloxone (Narcan), but naltrexone is well is well absorbed orally and is long acting, necessitating only a dose of 50 to 100 mg. Buprenorphine is also used in treating opiate addiction, and has been approved for use in opiate addicted pregnant women. U.S. Food and Drug Administration approved Lucemyra (lofexidine hydrochloride) for the mitigation of withdrawal symptoms to facilitate abrupt discontinuation of opioids in adults on May 16, 2018. Lucemyra is an oral, selective alpha 2-adrenergic receptor agonist that reduces the release of norepinephrine. The actions of norepinephrine in the autonomic nervous system are believed to play a role in many of the symptoms of opioid withdrawal. While Lucemyra may lessen the severity of withdrawal symptoms, it may not completely prevent them and is only approved for treatment for up to 14 days. Lucemyra is not a treatment for opioid use disorder (OUD), but can be used as part of a broader, long-term treatment plan for managing OUD.

1. Opioid withdrawal includes symptoms — such as anxiety, agitation, sleep problems, muscle aches, runny nose, sweating, nausea, vomiting, diarrhea and drug craving — that occur after stopping or reducing the use of opioids in anyone with physical dependence on opioids. Physical dependence to opioids is an expected physiological response to opioid use. These symptoms of opioid withdrawal occur both in patients who have been using opioids appropriately as prescribed and in patients with OUD. The most common side effects from treatment with Lucemyra include hypotension (low blood pressure), bradycardia (slow heart rate), somnolence (sleepiness), sedation and dizziness. Lucemyra was also associated with a few cases of syncope (fainting). Lucemyra effect the heart's electrical activity, which can increase the risk of abnormal heart rhythms. When Lucemyra is stopped, patients can experience a marked increase in blood pressure. The safety and efficacy of Lucemyra have not been established in children or adolescents less than 17 years of age. After a period of not using opioid drugs, patients may be more sensitive to the effects of lower amounts of opioids if relapse does occur, and taking opioids in amounts that were used before withdrawing from opioids can lead to overdose and death.

2. In patients using opioid analgesics appropriately as prescribed, opioid withdrawal is typically managed by slow taper of the medication, which is intended to avoid or lessen the effects of withdrawal while allowing the body to adapt to not having the opioid. In patients with OUD, withdrawal is typically managed by substitution of another opioid medicine, followed by gradual reduction or transition to maintenance therapy with FDA-approved medication-assisted treatment drugs such as methadone, buprenorphine or naltrexone; or by various medications aimed at specific symptoms, such as over-the-counter remedies for upset stomach or aches and pains. There are more than 25 alkaloids obtained from opium and its extracts, the most important are morphine (4-21%) codeine (0.8-2.5%) noscapine or narcotine (4-8%) papaverine (0.5-2.5%) and thebaine (0.5-2%). Prescription Opioids: Morphine sulfate (Avinza, Depodur, Duramorph, Infumorph, Kadian, MS Contin, Morphine sulfate), Hydromophone (Dilaudid, Dilaudid HP, Exalgo), Medperidine (Demerol), Methadone HCl (dolophine), Oxycodone (Oxecta, Oxycontin), Oxymorphone HCl (Opana, Opana ER), Tapentadal HCl (Nucynta, Nucynta ER), Codeine + APAP (Tylenol with Codeine # 3 & 4), Dihydrocodeine +ASA +Caffeine (Synalgos-DC), Hydrocodone + APAP (Hycet, Lorcet, Lortab, Maxidone, Norco, Vicodin, Xodol, Zamicet, Zydone), Hydrocodone + ibufprofen (Ibudone, Reprexam, Vicoprofen), Oxycodone HCl + APAP (Magnacet, Percocet, Roxicet, Tylox), Oxycodone HCl + ASA (Percodan) Synthetic: fentanyl (Abstral, Actiq,Durage SIC, Fentora, Lazanda, Onsolis). Fentanyl is about 100 times more potent than morphine in relieving pain. Opiates are addictive and dying from an overdose of voluntary or involuntary fentanyl exposure is easy for opiate consumers.

3. Fentanyl is available in a number of forms including by injection, as a skin patch, and to be absorbed through the tissues inside the mouth. Fentanyl was first synthesized by Paul Janssen under the label of his relatively newly formed Janssen Pharmaceutica in 1959. The widespread use of fentanyl triggered the production of fentanyl citrate (the salt formed by combining fentanyl and citric acid in a 1:1 stoichiometric ratio), which entered medical use as a general anaesthetic under the trade name Sublimaze in the

1960s. In the mid-1990s, Janssen Pharmaceutica developed and introduced into clinical trials the Duragesic patch, which is a formation of an inert alcohol gel infused with select fentanyl doses, which are worn to provide constant administration of the opioid over a period of 48 to 72 hours. After a set of successful clinical trials, Duragesic fentanyl patches were introduced into medical practice. Following the patch, a flavoured lollipop of fentanyl citrate mixed with inert fillers was introduced in 1998 under the brand name of Actiq, becoming the first quick-acting formation of fentanyl for use with chronic breakthrough pain. In 2016 more than 20,000 deaths are estimated to have occurred in the United States due to overdoses of fentanyl and its analogues. Are tins of opium for smoking immune from fentanyl adulteration?

4. The number of people reporting current heroin use nearly tripled between 2007 (161,000) and 2014 (435,000). Approximately 4 percent of CPD abusers initiate heroin use. Nearly 80% of heroin users reported misusing prescription opioids prior to heroin. About 450,000 used methamphetamine, 1.6 million used cocaine and 4.2 million used prescription pain pills. In 2014, 10,574 Americans died from heroin-related overdoses, more than triple the 3,000 who died in 2010, and 2,000 annually 1999-2006. Heroin, while used by a smaller number of people than other major drugs, is much more deadly to its users. The population that currently uses prescription pain relievers non-medically was approximately 10 times the size of the heroin user population in 2014; however, opioid analgesic-involved overdose deaths in 2014 were less than twice that of heroin-involved deaths. Current cocaine users outnumbered heroin users by approximately 3.5 times in 2014, but heroin-involved overdose deaths were twice those of cocaine. In 1999 an estimated 2,000 people died from heroin overdose, 4,000 from cocaine and 4,000 from opioid analgesics. In 2014 that number of overdose deaths had increased to 10,500 for heroin, 5,800 for cocaine and 19,000 for prescription narcotic pills. Heroin overdoses increased 425% 1999-2014. Opiate adulteration by fentanyl and its analogues is prohibited by Sec. 301 the Food, Drug and Cosmetic Act under 21USC§331.

C. The International Association of the Study of Pain defines pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. Pain is generally gauged on a scale of 0-10 zero being no pain, 3 mild pain, 5 moderate bearable pain, 7 severe but tolerable pain and 10 agonizing unbearable pain. Pain serves as a message of distress, danger or damage. Something will have happened to stimulate or irritate tiny nerve structures called nociceptors (pain receptors) – possibly inflammation, chemical irritation, heat or a mechanical event, such as pressure, stretching, cutting or tearing. The resulting pain messages travel to the brain via mylenated (sheathed) nerves, which carry impulses rapidly at 65 ½ ft (20m) a second, and unmylenated nerves, which carry impulses at 6 ½ ft (2m) a second. Nociceptors are found in most tissues of the body, in greater numbers where we are most sensitive. Each nociceptor has a threshold that has to be exceeded before it reports to the brain that there is a problem. This threshold varies widely, with a number of factors contributing to what the individual "feels" and how he or she interprets that feeling. A major reason for the pain threshold changing is a process known as sensitization. Pain is felt in the brain, by means of a virtual body map (the homunculus). Consider that many amputees feel "phantom" pain in the missing limb, long after it has

been removed. Chronic pain of days may be useful to inform you that injured tissue is red and painful owing to the inflammatory process which is necessary for healing. These healing tissues need to be treated with care so that they remodel themselves properly – the continued hurt is a warning to avoid doing too much too soon.

1. The peripheral nervous system is responsible for conducting messages from all sense organs of the body to the central nervous system, but it also includes two motor divisions, the somatic (voluntary) motor system, which activates the voluntary (skeletal) muscles, and other involuntary muscles, such as the heart and various glands. When someone's finger touches a hot stove, a temperature receptor in the skin is stimulated and initiates an impulse in an afferent neuron. This neuron extends a process into the spinal cord, where it ends in a synapse (junction with an internuncial neuron). This neuron in turn carries the impulse to an appropriate efferent neuron, which extends from the spinal cord, and carries the impulse back to groups of muscle fibers in the forearm and hand. Contraction of the muscle fibers causes you to withdraw you finger from the hot object. The brain and spinal cord function to correlate and integrate information. Neurophysiological pain is a complex sensation-perception interaction that involves simultaneous parallel processing of nociceptive signals from the spinal cord that activate a central network encompassing the pain experience. The two principal effectors of the subjective intensity of pain are the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system. There are four principal categories of pain: nociceptive pain, neuropathic pain, chronic pain of complex etiology and psychogenic pain.

2. Nociceptive pain is due to stimulation of peripheral pain receptors on thinly myelinated Aδ and/or unmyelinated afferent nerves during inflammation, injury, or tissue destruction. The pain experienced generally "matches" the noxious stimulus. However, both peripheral sensitization (reduction in the threshold of nociceptor endings) and central sensitization (amplification of pain in the CNS) with input into the CNS via thickly myelinated Aβ touch afferent nerves can occur in "normal" nociceptive pain. These inputs may result in primary allodynia (pain felt with non-noxious stimuli, such as gentle touching) and primary hyperalgesia (more pain than normal felt with noxious stimuli). In addition to systemic inflammatory or degenerative rheumatic disease, nociceptive pain occurs as regional musculoskeletal pain in tenosynovitis, compressive neuropathies, nerve entrapment syndromes, bursitis, and various localized forms of arthritis (e.g. acromioclavicular osteoarthritis). Usually self-limited with conventional treatment strategies, regional musculoskeletal pain may become chronic and disabling.

3. Both peripheral and central nervous system processes play a role in neuropathic pain, which may follow injuries and diseases that directly affect the nervous system. Examples include trigeminal neuralgia, post-herpetic neuralgia, radiulopathic pain due to injury to spinal nerve roots, sympathetic-related pain conditions (e.g. reflex sympathetic dystrophy) and central pain following strokes. Here the pain may be paroxysmal with electric shock-like, shooting, or burning characteristics. It may be associated with hyperpathia (persistence after the stimulus has ended, spreading or worsening in crescendo-fashion with repeated touching). Central sensitization and ectopic firing of peripheral neurons, either spontaneously or through mechanical forces developed during

movement, contribute to this peculiar type of pain. Management may require special pharmacologic approaches.

4. Of all symptoms, pain is the one that is most likely to drive a person to consult a doctor. As of 2011, the prevalence of chronic pain in the general population of the United States has been estimated to be as high as 116 million adults Acute pain is a warning, a protective signal that alerts the defense and self-regulating mechanisms of the body that the brain senses danger. Without acute pain you would not remove your hand from a flame, nor protect yourself from other potential pain sources. But when pain is chronic, as it often is, the causes are seldom obvious. Chronic pain of complex etiology occurs in fibromyalgia and a large number of regional pain syndromes, such as migraine headache, arthritis, temporomandibular disorders (TMD), irritable bowel syndrome, atypical chest pain, myofascial pain, chronic low-back pain or myofascial pain syndrome. Indeed, there is growing evidence that many or even most overlap, with very close relationships etiologically and pathophysiologically. The diagnostic label applied to an illness in a given patient often depends on which medical specialist evaluates the patient first. Collectively, these chronic pain syndromes constitute huge personal and societal burdens. All too frequently, the problem is not approached effectively by traditional medicine. In fibromyalgia, which can be taken as a prototype for this category, pain diffusely radiates form the axial skeleton over large areas of the body, predominately involving muscles. The patient describes the symptoms as “exhausting” “miserable” or “unbearable”. Altered central nociceptive processing results in a decrease in the pain-perception threshold and in the threshold for pain tolerance. The hallmarks of fibromyalgia-chronic widespread pain, fatigue, and multiple somatic symptoms, have both psychologic and biologic bases that derive, at least in part, from chronic stress and distress. Female gender, adverse experiences during childhood, psychological vulnerability to stress, and a stressful, often frightening environment and culture are important antecedents. Thus fibromyalgia and related syndromes should be viewed from a bio-psychosocial perspective. More purely psychogenic pain is seen in somatoform and somatization disorders and hysteria.

5. Diffuse pain is a defining symptom of fibromyalgia. Diffuse pain that has been present for years is likely to be due to fibromyalgia, especially if accompanied by such subjective complaints as fatigue, memory difficulties, sleep disturbance, and irritable bowel symptoms. The overlap between fibromyalgia and autoimmune disease deserves special attention. Early in the course of autoimmune disorders, many individuals present with symptoms suggesting fibromyalgia. Studies have suggested that approximately 25% of people with systemic inflammatory disorders, such as systemic lupus erythematosus, rheumatoid arthritis and ankylosing spondylitis, also meet American College of Rheumatology (ACR) criteria for fibromyalgia. There is evidence of familial aggregate in in fibromyalgia. First-degree relatives of people with fibromyalgia display a higher than expected frequency of fibromyalgia. One hypothesis holds that, like many rheumatic conditions, fibromyalgia may be expressed when a person who is genetically predisposed comes in contact with certain environmental exposures that can trigger the development of symptoms. Several groups have demonstrated that people with fibromyalgia have approximately threefold higher concentrations of substance P in

cerebrospinal fluid than controls. Substance P is a pro-nociceptive peptide stored in the secretory granules of sensory nerves and released upon axonal stimulation. An elevated substance P level is not specific for fibromyalgia, since this finding has also been noted in people with osteoarthritis of the hip and chronic low back pain. It is likely that these findings are related to the presence of pain, because people with chronic fatigue syndrome do not display this finding. To fulfill the criteria for fibromyalgia published by an ACR committee in 1990, an individual must have a history of chronic widespread pain involving all four quadrants of the body (and the axial skeleton) and the presence of 11 of 18 "tender points" on physical examination.

D. When crippled with pain, that doesn't go away or gets worse with exercise, it is often best to reduce exertion to 40 percent of normal - Marine Corp physical fitness test 50-100 crunches, 50-100 push-ups and three mile run. Stonebreaker (*Chanca piedra*) cures urinary and gallstones overnight. Coffee is the front line hospital treatment for headache. Black and green tea (*Camellia sinensis*) cures 80% of respiratory ailments. The FDA sponsors clinical studies of the curativeness of Hawthorn for the treatment of congestive heart failure, cholesterol, high or low blood pressure and arrhythmia although it is contraindicated for use with high blood pressure medicines and digitalis. Gleevec (Iminitab) tablet combination chemotherapy has a 95% cure rate for lymphoma and leukemia. Treat *Staphylococcus aureus* lesions + airborne *Streptococcus* spp. = toxic shock syndrome with doxycycline or clindamycin under age 8. Disease Modifying Anti-rheumatic Drugs (DMARDs) of least resistance are methotrexate an anti-neoplastic drug approved by the FDA for the treatment of arthritis that costs $1 a week; $1 clotrimazole (athletes foot crème) and hydrocortisone crème; Amantadine (Symmetrel) for flu, Ampicillin (Principen) for pneumonia, Doxycycline or Clindamycin (Cleocin) under age 8 for *Staph*, Metronidazole (Flagyl ER) for infectious diarrhea and joint infections. Studies dating back to the 1980s recommended glucosamine and chondroitin sulfate 1,000 mg to 2,000 mg of glucosamine and 800 mg to 1,600 mg of chondroitin sulfate every day. Because the pills are so large probiotic supplementation is needed for gastrointestinal health. Following dextrose prolotherapy injections, patients experienced statistically significant decreases in pain, sustained improvement of over 75% was reported by 85% of patients. It is essential that the prolotherapy contain dextrose, table sugar, found in none of three unsuccessful random prolotherapy injections, before surgery in two. No side effects of prolotherapy were noted. The average length of time from last prolotherapy session was 14.7 months (range, 6 months to 8 years). Only 3 of 16 knees were still recommended for surgery after prolotherapy. 2 out of three knees receiving non-dextrose (fake) prolotherapy and being informed of the need for dextrose were quickly financed for surgery. Dextrose prolotherapy ameliorates chondromalacia patella symptoms and improves physical ability.

1. Marijuana has beneficial uses for many medical conditions. Marijuana improves appetite, reduces nausea and vomiting, which often accompanies chemotherapy. Marijuana is an effective pain reliever, especially in cases of neuropathic "burning and shooting" types of pain. The anti-inflammatory properties of the active ingredients of the marijuana plant have also proven useful in treating many medical conditions including arthritis and glaucoma. One of the most important factors in choosing marijuana is a

medicine is its safety. There are no known fatalities from marijuana and an overdose usually leads to a desire to lay down and go to sleep. Animal studies have shown that a lethal dose of cannabinoids would be around 40,000 times the typical human dose, around 40 to 80 pounds of buds or their extracts all at once. Adverse effects are described as feeling overwhelmed, panicked, paranoid or experiencing an increased heart rate. Some strains, especially those with extremely high THC content, are more likely to affect new patients in these ways. Strains with high CBD content modulate the effects of THC, so they are less likely to have these adverse affects. Unhygienic practices, such as the use of chemical pesticides, leave harsh residues on the plant that are dangerous to ingest or inhale. Molds and fungus also pose a risk to some patients. So it is best to know where the medicine comes from. Marijuana is a flowering plant with many different varieties sharing many chemical characteristics. However the varieties have different effects that provide targeted benefits for a wide range of medical conditions. Marijuana is a hardy plant with five-fingered leaf. These leaves grow along strong branches that extend laterally form the main stem. The flowers develop along the ends of the branches, forming thick clusters that are usually thin and long or bulky. They produce a sticky crystalline resin and have a strong, sweet-to-pungent aroma. Some varieties grow tall and lanky, while others grow short and bushy. Each variety has its own growth rate, appearance and medical usefulness. Marijuana is different from other annual plants because it is “dioecious” meaning male and female flowers grow on separate plants. When the female plants are not pollinated the flowers remain seedless. These seedless buds are known as “sinsemilla”, Spanish for “without seed” and are distributed as medicine.

§366 Neurology and Mental Illness

A. Neurologic illness affects many millions of people in the United States. Per 1,000 children, estimated prevalence was 5.8 for autism spectrum disorder and 2.4 for cerebral palsy; for Tourette syndrome, the data were insufficient. In the general population, per 1,000, the 1-year prevalence for migraine was 121, 7.1 for epilepsy, and 0.9 for multiple sclerosis. Among the elderly, the prevalence of Alzheimer disease was 67 and that of Parkinson disease was 9.5. For diseases best described by annual incidence per 100,000, the rate for stroke was 183, 101 for major traumatic brain injury, 4.5 for spinal cord injury, and 1.6 for ALS. There are more than 600 neurological diagnosis recognized by the NIH. The DSM-IV listed more than 330 different types of psychiatric disorders. In general patients diagnosed with neurological disorders should be vaccinated against pneumococcal infection with Pneumovax. For mental illness, Pneumovax to prevent meningitis is the only acceptable medical treatment due to a long history of experimentation on prisoners, torture, product adulteration and ineffectiveness of antibiotics to prevent reinfection of brain damage. Autism spectrum disorder, Tourette syndrome and Parkinson's may be caused by the extra-pyramidal side-effect of exposure to antipsychotic drugs, Cogentin or Amantadine cure or just help to treat Parkinson's. A great deal of the idiopathic neuromuscular diseases, such as multiple sclerosis (MS) may be due to tic-borne Lyme disease, cures have been achieved with doxycycline.

1. There is a drug abuse warning that Alzheimer disease may be caused by exposure to brain shrinking pseudo-ephedrine and statin drugs and strokes may be induced with the lucid dreaming drug Galantamine under 42USC§242. Statin consumption is acutely intoxicating and non-curative of the underlying heart condition; without Pneumovax statin drugs invariable cause chronic meningitis for which antibiotics only provide temporary relief. Pseudo-ephedrine, is a stimulant indicated for clearing out the sinuses of viral and bacterial infection, including COVID-19, but causes unacceptable insomnia and complete illiteracy until the brain heals in about a week for one under age 65 exposure, has a long history of malicious use to corrupt the judiciary and foist propaganda and its abuse has been rampant shortly before and during the pandemic, and is the likely cause of most the mental problems that have been associated with people treated for COVID-19 who were probably cruelly sprayed in unlawful infection control measures by equally shrunken brained health professionals in self-defense of not being informed of the safe and effective over-the-counter remedies. There are four million Americans currently diagnosed with Alzheimer's. Age-associated memory impairment (AAMI) has no connection to a specific disease or condition. Nevertheless, it affects nearly 6 percent of the total population and 18.5 percent of people over age 50. This number climbs even higher with advancing years, as about 40 percent of those between ages 60 and 7 show signs of AAMI. Alzheimer's affects about 15 million people worldwide. In the United States, doctors diagnose about 360,000 new cases each year, and that number is rising. Roughly 47 percent of Americans develop the disease after age 85, thought about 3 percent get it by age 65.

2. The most common identified environmental cause of dementia is *E. coli* toxin from cow manure contamination of the groundwater and beef. People with memory loss should consume only bottled or professionally filtered water. Shiga toxin and verocytotoxin contamination cannot be sterilized by conventional methods that kill the *E. coli*. Vasculitis and organophosphate poisoning each occasionally cause a motor neuron disease. Jakob-Creutzfeldt virus (JCV), most commonly presents as progressive dementia with seizures, myoclonus, fasciculations and asymmetrical weakness known as Mad Cow disease. Mad Cow disease is a member of a family of diseases called transmissible spongiform encephalopathies, TSEs, seen in various animal species including humans, sheep, cows, mink, deer and cats – for example, Creutzfeld-Jacob Disease (CJD) in humans, scrapie in sheep, chronic wasting syndrome in deer and elk, and bovine spongiform encephalopathy of BSE in cows. The infectious agent of Mad Cow disease remains infectious even after exposure for an hour to a temperature of 680 degrees – enough to melt lead – and can withstand antibiotics, boiling water, bleach, formaldehyde and a variety of solvents, detergents, and enzymes known to destroy most bacteria and viruses. The expected rate of occurrence of CJD (the human variation of Mad Cow disease) has been 1 in 1 million people. Yet one study found 5.5 percent of the presumed Alzheimer's victims were found actually to have CJD. Another study counted 13 percent. The USDA has written to sell cattle irrigation and has programs to purchase Shiga and verocytotoxin producing *E. coli* contaminated $1 menu food.

B. Headache is the commonest complaint which patients bring to physicians, and migraine is the commonest functional disorder by which patients are afflicted. There are

at least half a dozen neurotransmitters involved in the production of a migraine – noradrenaline, acetylcholine, dopamine, histamine, GABA, enkephalins - and 5-hydroxytryptamine, or serotonin. There is evidence that all of these can be influenced by different drugs. The frontline treatment for headache used by hospitals is coffee. However, coffee withdrawal can cause migraine. NSAIDs non-steroidal anti-inflammatory drugs are effective in reducing the frequency of migraine attacks, especially aspirin, naproxen, tolfenamic acid, and mefenemic acid. Ergotamine tartrate is the best available drug for the treatment of severe migraine headaches available to the clinician. It is neither necessary nor advisable to us it in milder attacks.

1. Three quarters of a million Americans suffer a cerebral vascular accident (CVA), also known as a stroke, each year. One-fifth of them die of the stroke, and at least one-third remain permanently disabled. Stroke ranks as the number four most common cause of death (behind heart disease, cancer and chronic lower respiratory disease) but number one as the cause of disability and a contributor to dementia. Cerebral vascular disease costs the U.S. health care system an estimated $60 billion each year. Stroke symptoms include a sudden numbness or weakness of the face, arm or leg (especially on one side of the body), sudden confusion or difficulty understanding speech, sudden loss of the ability to speak, sudden trouble seeing in one or both eyes, sudden trouble walking, dizziness, or loss of balance or coordination or a sudden severe headache with no known cause. A stroke is a sudden loss of function of part of the brain. Usually the cause is either (1) ischemic stroke; sudden loss of blood flow to part of the brain because an artery that supplies blood to that part of the brain has become blocked (ischemia) due to atherosclerosis, in 87 percent of strokes or (2) hemorrhagic stroke; bleeding (hemorrhage) into the brain because an artery has burst, due to high blood pressure in 7-10 percent of cases. In about 15 percent of individuals who come to an emergency room with the sudden onset of a brain disorder, the cause of stroke turns out to be an epileptic seizure followed by weakness on one side, or something else such as a brain tumor, low blood sugar (hypoglycemia), an abscess in the brain, a blood clot over the surface of the brain caused by head trauma, or some other condition

2. Getting treatment for an ischemic stroke within three hours of the onset of symptoms with recombinant tissue plasminogen activator (rtPA) can dissolve clots and lessen disability by 40 percent if it is administered within three hours of an ischemic stroke. A hemorrhagic stroke caused when a blood vessel breaks and bleeds into the brain is much harder to treat: more than half are fatal. rtPA, a clot-busting drug, is not for home use because it would increase hemorrhaging and a physician must distinguish between ischemic and hemorrhagic stroke. rtPA would probably kill someone presenting with a hemorrhagic stroke. Extensive physical therapy for many months helps many regain function. rtPA (recombinant tissue plasminogen activator) is for mild strokes only <25 on the NIH stroke scale, in patients age <80, without hemorrhage, anticoagulant use or elevated blood pressure. Atropine and pralidoxime (DuoDote®) is indicated for the emergency treatment hemorrhagic strokes caused by poisoning by organophosphorous nerve agents and insecticides and galantamine lucid dreaming pill.

C. Epilepsy is the fourth most common neurological disorder. About 3% of people will be diagnosed with epilepsy at some time in their lives. Epilepsy affects around 2.2 million (1.3 - 2.8 million) Americans and 65 million people worldwide.In the U.S., it affects more than 300,000 children under the age of 15--more than 90,000 of whom have seizures that cannot be adequately treated. The number of epilepsy cases in the elderly is climbing as the baby boom generation reaches retirement age. More than 570,000 adults age 65 and above have the condition. An estimated 60,000 to 150,000 persons in the United States will have at least one episode of convulsive status elepticus (SE) in a given year. States usually require a 1-year period from the time of the last seizure to issue a driver's license and this must be documented by a physician. The underlying pathology may be diffuse or multifocal, such as anoxia, physical trauma (head injury), or infections. Other causes are cerebrovascular disease (stroke arteriovenous malformations, subarachnoid hemorrhage, venous thrombosis) brain tumors (astrocytomas, meningiomas, glioblastomas, metastatic tumors) and mesial temporal sclerosis. Mesial temporal sclerosis may be the most surgically treatable of epilepsies.

1. The mainstay of treatment of epilepsy is anticonvulsant medications. Often, anticonvulsant medication treatment will be lifelong and can have major effects on quality of life. The first effective conventional drug for the treatment epileptic seizures was bromide, with the side-effect of sedation. Currently there are 20 medications approved by the Food and Drug Administration for the use of treatment of epileptic seizures in the US: carbamazepine (Tegretol), clorazepate (Tranxene), clonazepam (Klonopin), ethosuximide (Zarontin), felbamate (Felbatol), fosphenytoin (Cerebyx), gabapentin (Neurontin), lacosamide (Vimpat), lamotrigine (Lamictal), levetiracetam (Keppra), oxcarbazepine (Trileptal), phenobarbital (Luminal), phenytoin (Dilantin), pregabalin (Lyrica), primidone (Mysoline), tiagabine (Gabitril), topiramate (Topamax), valproate semisodium (Depakote), valproic acid (Depakene), and zonisamide (Zonegran). Medications commonly available outside the US but still labelled as "investigational" within the US are clobazam (Frisium) and vigabatrin (Sabril). Medications currently under clinical trial under the supervision of the FDA include retigabine, brivaracetam, and seletracetam. Other drugs are commonly used to abort an active seizure or interrupt a seizure flurry; these include diazepam (Valium, Diastat) and lorazepam (Ativan). Drugs used only in the treatment of refractory status epilepticus include paraldehyde (Paral), midazolam (Versed), and pentobarbital (Nembutal). Some anticonvulsant medication that does not phave primary FDA approval for epileptic use but are under investigation include acetazolamide (Diamox), adrenocorticotropic hormone (ACTH, Acthar), various corticotropic steroid hormones (prednisone), or bromide. Valproic acid (Depakene, Depakote) has been approved by the FDA as mono-therapy for children with epilepsy.

D. Demyelinating disorders are a broad category of diseases of the central nervous system (CNS) in which there is destruction of myelin sheaths with relative preservation of neuronal axons. The primary demyelinating diseases include multiple sclerosis (MS) and its uncommon variants which have been called Devic's optic neuromyelitis, Balo's concentric sclerosis, transitional sclerosis, and Schilder's diffuse sclerosis. There are approximately 123,000 Multiple Sclerosis (MS) cases in the U.S. The mean age of onset of MS is 33 years and age of diagnosis is 37 years. It is more common in the cold and

temperate climates of the higher latitudes in both hemispheres. The mean age of onset of MS is 33 years and age of diagnosis is 37 years. It is more common in the cold and temperate climates of the higher latitudes in both hemispheres. The clinical manifestations relate to the distribution of lesions with the nervous system anywhere in the white matter of the brain. Muscle weakness and spasticity due to corticospinal tract lesions are among the most frequent symptoms of MS. Only 20 percent of MS patients avoid permanent functional disability, but for most it is just a matter of time. In 1936 only 8 percent of patients survived 20 years. By 1961 survival had increased tenfold, with over 80 percent survival rate, of whom approximately 30 percent were gainfully employed. A lesion can be explained by a benign or malignant tumor, basilar impression of the skull, developmental diseases such as Arnold-Chiari malformation, or occasionally by cerebrovascular disease, such as that caused by Lyme disease or methicillin resistant *Staphylococcus aureus* (MRSA) lesions. If an isolated spinal cord lesion is caused by spondylosis, tumor or syrinx, it will be seen with MR or CT myelography. Neuro-imaging tests rule out massive lesions, particularly tumor or spondylosis, in the patient with neurodegenerative illness. Short-term use of either adrenocorticotropic hormone (ACTH) or oral corticosteroids are the only specific therapeutic measure available for the treatment of the patient with acute exacerbations of MS. Prednisone may be given orally on an outpatient basis. Milky oats *Avena sativa, A. fatua* are valuable for multiple sclerosis, in which the mycelium sheath surrounding the nerve endings has been damaged, oats reduce fatigue, strengthen the muscles and improve nerve function. Some studies have found that marijuana provides significant relief from MS. Doxycycline is thought to be curative of MS caused by Lyme disease or *Staphylococcus aureus*.
1. Amytrophic lateral sclerosis (ALS) and other motor system diseases are characterized by selective degeneration of the lower and upper motor neurons upon which volitional movement depends, and may involve bulbar or spinal muscles. ALS is a progressive disease of both upper and lower motor neurons with onset in adult life anywhere from 20 to 90 years (median 65 yrs.) Incidence is about 5 per 100,000 people. ALS symptoms begin with asymmetrical fasciculations and muscle cramps. The patients becomes severely disabled and dies of respiratory failure, infection or some other complication of the disease. Median survival is 22 months, but it varies greatly on the predominant location of the neuropathological involvement. Patients with bulbar palsy have the worst prognosis, while some patients with primary lateral sclerosis may survive for over 20 years. The diagnosis is reasonably certain if the electro-myographer can show evidence of acute and chronic denervation in several muscles innervated by several nerves and roots in at least three extremities. Therapy for ALS is primarily supportive and as weakness progresses, orthotic aids, crutches, cane and eventually wheelchair will be required. A few patients with electromyographic evidence of a defect of neuromuscular transmission may have some increase in strength when they take anticholinesterase medication. Amitriptyline, 75 mg at bedtime, a few drops of tincture of belladonna under tongue as needed, to eliminate drooling and reduce the risk of aspiration. Speech therapy may be helpful

E. Neurotoxicity results in a range of neurologic and psychiatric disorders.
Environmental chemicals associated with subclinical neurotoxicity include lead, organophosphorus pesticides, some chlorinated hydrocarbons, some solvent mixtures and mercury. Of about 70,000 chemicals used in commerce several hundred are known to be

neurotoxins. However, other than pharmaceuticals less than 10 percent of these have been adequately tested. More than one-third of those 197 chemicals had demonstrated the potential, if the doses were large enough, to produce adverse effects on the nervous system. Psychotropic drugs can also be neurotoxic, by nature of the intoxication, and can all cause temporary or permanent brain damage if used in excess. Macroscopic manifestations of neurotoxin exposure can include widespread central nervous system damage such as mental retardation, memory impairments, epilepsy, and dementia. Chemicals in the environment can alter the function of the nervous system. Neurotoxicity is defined as the capacity of chemical, biologic, or physical agents to cause adverse functional or structural changes in the nervous system. Illnesses caused by exposure to neurotoxins include encephalopathy in children who at chips of lead-based paint; blindness in persons who consumed wood alcohol (methanol); and coma, convulsions and respiratory paralysis after exposure to organophosphorus pesticides. Organic solvents such as chloroform, paint thinners, lacquers, enamels, cigarette lighter fluid, polish and spot removers, gasoline and glues have all been used to get high. Uncoordination, restlessness, excitement, confusion, delirium, coma that may last from a few hours to several days, and even death can result. Repeated inhalation induces dizziness, giddiness, hallucinations, and unconsciousness, along with neurological effects such as confusion, ataxis, tremor, itching, neuritis and paralysis of peripheral and cranial nerves. Tricyclic antidepressants have a desired therapeutic activity at low does, but produce life-threatening anticholinergic effects at high doses; antipsychotic drugs can produce dangerous movement disorders; the antineoplastic drug cis-platinum is a valuable chemotherapeutic agent, but can cause toxic neuropathies; and some antibacterial agents can trigger loss of hearing and balance. Some substances valued for their relatively selective neuroactivity, such as ethanol, drinking alcohol, are particularly likely to have simultaneous neurotoxicity. Excessive LSD consumption is known to cause permanent impairment. All addictive drugs cause profound neurological impairment during withrawal. Topical exposure to dimethoxymethylamphetamine (DOM) causes a three panic attack followed by 6 months of recovery from severe mental mental illness, if not washed off with water.

1. Mental illness is the most common ailment affecting 25% of the US population, and 5% suffer severe mental illness in any given year. More than 50% of the population suffers mental illness at least once in their lifetime, and the other 50% are probably not familiar with the language. In 2007 the Missouri Department of Mental Health reported that people with serious mental illness die at age 51, on average, compared with 76 for Americans overall. Their odds of dying from the following causes, compared with the general population. 3.4 times more likely to die of heart disease. 3.4 times more likely to die of diabetes. 3.8 times more likely to die of accidents. 5 times more likely to die of respiratory ailments. 6.6 times more likely to die of pneumonia or influenza. Adults with serious mental illness treated in public systems die about 25 years earlier than Americans overall, a gap that's widened since the early '90s when major mental disorders cut life spans by 10 to 15 years.

2. Antipsychotic drugs and sleep aids are the second leading cause of fatal overdose, taking the lives of about 2,000 annually, antidepressants and childhood stimulants are about the 5th leading cause of fatal drug overdose taking the lives of hundreds annually,

and an equal amount by conventional criminal homicide under the influence of antidepressant withdrawal. A major reason is that third generation antipsychotic are maliciously designed to be potentially lethal with one regular dose, that people are weaned up to while hospitalized, but then take when stressed, causing potentially lethal extra-pyramidal symptoms, a spasm of the jaw, that were treated with Cogentin, that was removed from the market by the producer in the early 2000s, and the anti-flu drug Amantadine (Symmetrel) is now approved by the FDA as an antidote, hospitals tend to prescribe Benadryl. While most people flush these drugs down the toilet when released from the hospital and there is an antidote, this is just an example of the intentional cruelty by 'mental' health professionals, with which people treated in the mental health system are treated. To begin to redress centuries of medical malpractice, it is recommended that people diagnosed with mental illness should be treated with Pneumovax to cure and prevent meningitis and other diseases of pneumococcal origin, of the heart and lung, for 10 years. Pneumovax would be the first time that a genuinely beneficial medicine, a vaccine, would be specifically targeted to treat mental illness, suspected to be caused or aggravated by pneumococcal infection. Pneumovax may not treat all causes of mental illness, but would relieve common infections of damaged brains, and other common organic causes of severe illness and death.

F. Mental illness is the leading cause of disability. The demand for treatment has never been higher, the rate of mental illness in the United States is estimated at 20.1% of the population causing 11% of Global Burden of Disease and if trends continue will cause 15% of all days missed from work. The most prevalent diagnosis of Mental Diseases are; 1. “Major depressive disorder” is the most common mental disorder affecting 9.9 million people or 5% of the U.S. population every year; 2. “ Bi-polar disorder” is a mental disorder affecting 2.3 million U.S. adults or 1.2 % of the U.S. population; 3. ‘Schizophrenia” is a mental disorder affecting 2.2 million U.S. adults about 1.1% of the U.S. population; 4. “Anxiety disorders” are a category of mental disorder affecting 19.1 million U.S. adults; 5. “Panic disorder” is an anxiety disorder that affects 2.4 million U.S. adults, 6. “Generalized Anxiety Disorder” is an anxiety disorder affecting 4.0 million or 2.8% of the populace, 7. “Social Phobia” is an anxiety disorder affecting 5.3 million or 2.8% of the populace. 8. “Agoraphobia and specific phobia” are anxiety disorder affecting 9.5 million people. 9. “Attention Deficit Hyperactivity Disorder” is a disorder that affects 4.6% of school age juveniles. 10. “Alzheimer’s disease” is a disorder that affects an estimated 4 million senior citizens or 10% of the people 65 or older.

2. The World Health Organization Report on Mental Health of November of 2001, estimates that mental illness and psychological disorders stemming from substance abuse affect a combined total of 450 million people, 7.3%, of the global population. WHO recommends that in the future, governments take responsibility for providing treatment for mental disorders within primary care; ensuring that psychotropic drugs are available; replacing large custodial mental hospitals with community care facilities backed by general hospital psychiatric beds and home care support. The Surgeon General’s Report on Mental Health of 1999 stated that 55% of Americans suffered from mental illness at some time in their life and 1 in 5 Americans experience a diagnosable mental disorder in any given year. Mental illness is the second leading cause of disability, after stroke

paralysis, costing disability insurance an estimated $24 billion and medical insurance $65 billion annually. The total cost of mental illness in the U.S. was estimated at $153.5 billion, in 1990. Incidences of mental illness are reported to be twice as common among the poor than the wealthy. The total expenditure on the treatment of mental illness in 1988 was only $23 billion. Psychotropic drugs and psychiatric hospitalization are a story of big money and medical slavery.

3. The numbers show that de-institutionalization policies between 1970 and 1998 have been successful in reducing the supply of totally government funded psychiatric beds by a total of 376,704. State and county mental institutions having reduced their number of inpatient beds from 413,066 in 1970 to 63,525 in 1998. Likewise VA medical center psychiatric beds went down from 50,688 in 1970 to 13,301 in 1998. To compensate private psychiatric hospitals, non-federal general hospital and residential centers for emotionally disturbed children that are funded 68% by private clients' HMO have increased 51,348 beds. Between 1970 and 1998 Private psychiatric hospitals have increased in patient population from 14,295 to 33,635, Non-federal general hospital psychiatric wards have increased from 22,394 to 54,266, residential treatment centers for emotionally disturbed children increased from 15,129 to 33,483. The total number inpatient beds of all "mental institutions" declined from 515,572 in 1970 to 198,195 in 1998. Psychiatric drugs fuel a $330-billion psychiatric industry, without a single cure, kill an estimated 36,000 people every year, more than illegal drugs, with the death toll rising. Drug treatment is the newest torture. Since the Enlightenment the spinning chair, copious bloodletting, removal of possibly infected viscera, extraction of teeth, electric shock, forcible restraint, for days or weeks, wrapping in cold blankets, slicing through the brain with an ice pick, sterilization, female genital mutilation have been used to treat the "mad". Even the most grotesque treatments have often been introduced as humane alternatives to existing options.

G. Suicide was the 10th leading cause of death in 2014 and 2015, with 42,826 fatalities in 2014. 1.6% of all deaths were suicide, 13.4 per 100,000 or 13.0 per 100,000 age adjusted. 50% of suicides were committed with a firearm. 63.7% of firearm deaths were suicide. 6,808 suicides were committed with poison and another 3,014 were undetermined in 2014. Suicide is 3rd leading cause of death among 15 – 24 year olds. In 1997 30,535 people died from suicide in the U.S. Suicide was the 11th leading cause of death in 2000. The highest suicide rates are found in white men over the age of 85. More than 90% of people who kill themselves have a diagnosable mental disorder. Four times as many men as women commit suicide although women attempt to commit suicide 2-3 times more often. Major depressive disorder is the leading cause of suicide, heightened by substance abuse, and conduct disorder. Withdrawal from all psychologically and physically addictive drugs causes a profound mental illness. Suicide is the leading cause of violent death, outnumbering homicide or war related deaths.

1. Suicides have steadily increased since 1999 ion the United States. In 2015 (the most recent year of available death data), suicide was responsible for 44,193 deaths in the U.S., which is approximately one suicide every 12 minutes. In 2015, suicide ranked as the 10th leading cause of death and has been among the top 12 leading causes of death since

1975 in the U.S.7 Overall suicide rates increased 28% from 2000 to 2015. Suicide is a problem throughout the life span; it is the third leading cause of death for youth 10–14 years of age, the second leading cause of death among people 15–24 and 25–34 years of age; the fourth leading cause among people 35 to 44 years of age, the fifth leading cause among people ages 45–54 and eighth leading cause among people 55–64 years of age. Suicide rates vary by race/ethnicity, age, and other population characteristics, with the highest rates across the life span occurring among non-Hispanic American Indian/Alaska Native (AI/AN) and non-Hispanic White population groups. In 2015, the rates for these groups were 19.9 and 16.9 per 100,000 population, respectively. Other population groups disproportionately impacted by suicide include middle-aged adults (whose rates increased 35% from 2000 to 2015, with steep increases seen among both males (29%) and females (53%) aged 35–64 years; Veterans and other military personnel (whose suicide rate nearly doubled from 2003 to 2008, surpassing the rate of suicide among civilians for the first time in decades); workers in certain occupational groups (McIntosh '16), and sexual minority youth, who experience increased suicidal ideation and behavior compared to their non-sexual minority peers.

2. Risk factors include: Individual level: history of depression and other mental illnesses, hopelessness, substance abuse, certain health conditions, previous suicide attempt, violence victimization and perpetration, and genetic and biological determinants • Relationship level: high conflict or violent relationships, sense of isolation and lack of social support, family/ loved one's history of suicide, financial and work stress • Community level: inadequate community connectedness, barriers to health care (e.g., lack of access to providers and medications) • Societal level: availability of lethal means of suicide, unsafe media portrayals of suicide, stigma associated with help-seeking and mental illness. Studies from the U.S. examining historical trends indicate that suicide rates increase during economic recessions marked by high unemployment rates, job losses, and economic instability and decrease during economic expansions and periods marked by low unemployment rates, particularly for working-age individuals 25 to 64 years old. Means of suicide such as firearms, hanging/ suffocation, or jumping from heights provide little opportunity for rescue and, as such, have high case fatality rates (e.g., about 85% of people who use a firearm in a suicide attempt die from their injury). Research also indicates that the interval between deciding to act and attempting suicide can be as short as 5 or 10 minutes.

3. Suicide hotspots, or places where suicides may take place relatively easily, include tall structures (e.g., bridges, cliffs, balconies, and rooftops), railway tracks, and isolated locations such as parks. Efforts to prevent suicide at these locations include erecting barriers or limiting access to prevent jumping, and installing signs and telephones to encourage individuals who are considering suicide, to seek help. After erecting a barrier on the Jacques-Cartier bridge in Canada, the suicide rate from jumping from the bridge decreased from about 10 suicide deaths per year to about 3 deaths per year. Practices that include routine suicide prevention training for all staff; standardized intake screening and risk assessment; provision of shared information between staff members (especially in transitioning or transferring of inmates); varying levels of observation; safe physical environment; emergency response protocols; notification of suicidal behavior/suicide

through the chain of command; and critical incident stress debriefing and death review can potentially reduce suicide.102 When these policies and practices were implemented across 11 state prisons in Louisiana, suicide rates dropped 46%, from a rate of 23.1 per 100,000 before the intervention to 12.4 per 100,000 the following year. Similar programs have seen declines in suicide both in the United States and in other countries.

4. In 2014, 1,053 inmates died in local jails, an 8% increase from 2013 (971) and the largest number of deaths in custody since 2008. Between 2000 and 2014, an average of 82% of jails reported zero deaths. In 2014, 80% of jails reported zero deaths and 14% reported one death. Suicides accounted for 31% of deaths during that period. From 2005 to 2014, the suicide rate increased 28% from 39 per 100,000 local jail inmates to 50 per 100,000 local jail inmates. Heart disease was the second leading cause of death in 2014. Between 2000 and 2014, heart disease made up a quarter (23%) of all deaths, and non-Hispanic white and non-Hispanic black jail inmates died from heart disease at nearly equal rates. Respiratory deaths increased 32% between 2013 (31) and 2014 (41). Deaths due to drug-alcohol intoxication increased from 72 in 2013 to 90 deaths in 2014. Accidental deaths and deaths due to homicide were the least common causes of death, accounting for about 2% of deaths in local jails in 2014. In 2014, there 3,927 inmate deaths in state and federal prisons across the United States. The number of federal prisoner deaths in federal prisons increased 11%, from 400 deaths in 2013 to 444 deaths in 2014. The vast majority of federal prisoner deaths (88%) could be attributed to natural causes. Unnatural deaths— including suicides (4%), homicides (3%), and accidents (1%) —made up less than a tenth of all federal prison deaths. From 2013 (3,479) to 2014 (3,483), the number of deaths in state prisons was relatively stable. Deaths in state prisons declined in both California (down 13%) and Texas (down 7%) from 2013 to 2014. Nearly 9 in 10 (87%) state prisoner deaths were due to illness in 2014, with more than half of those caused by either cancer (30%) or heart disease (26%). From 2013 to 2014, the number of AIDS-related deaths increased 23% and the number of deaths due to a respiratory disease increased 20%. Also up during this period was the number of suicides in state prison. Suicides increased 30% from 2013 to 2014 after a 6% decrease from 2012 to 2013. Suicides accounted for 7% of all state prison deaths in 2014—the largest percentage observed since 2001. Accidental deaths and deaths due to drug or alcohol intoxication were recorded as the cause of death in about 1% of state prison deaths in 2014. The state prisoner mortality rate (256 per 100,000 state prisoners) was 14% higher than the federal prisoner mortality rate (225 per 100,000 federal prisoners) 2001-2014.

H. A court of competent jurisdiction requires a criminal accusation and must be in the jurisdiction where the crime was committed. Psychiatry in federal pre-trial seems to be statistically helpful in reducing the federal prison population under 18USC§4243. However, the federal prison reports that the prosecutor of pre-trial has engaged in a new practice of involuntary antipsychotic drug consumption being accepted as competency to stand trial, and must terminate that particular experiment under the Nuremberg Code, rather than wait for a determination of mental competency to stand trial or undergo post-release proceedings under 18USC§4241. In *Washington v. Harper* 494 US 229 (1990) the Court determined a person could be institutionalized only if they were a harm to

themselves or others, or extremely destructive to the environment. Unwarranted detention for mental illness has been limited to 48 hours under 24USC§326. In *Olmstead v. LC* 527 US 581 (1999) the Court held no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity, or be subjected to discrimination by any such entity under 42USC§12132 of the American with Disabilities Act (ADA). In 2000 at the Conference on the Report of the Surgeon General, then Ohio Director of Mental Health Mike Hogan Phd, promised to, "close all state mental institutions and private psychiatric hospitals to provide unimpeded access to community mental health."

1. On June 18, 2001 President Bush signed E.O. 13217 Community Based Alternatives for Individuals with Disabilities to (1) commit the United States to community based alternatives for individuals with disabilities (2) community programs foster independence (3) unjustified isolation or segregation through institutionalization is prohibited (4) states must take responsibility to place people with mental disabilities in community settings (5) states must ensure that all Americans have the right to live close to their families and friends, to live independently, to engage in productive employment and to participate in community life. Mike Hogan was appointed to the President's New Freedom Commission on Mental Health was established on April 29, 2002 in E.O. 13263. The guiding principles are (1) individual employment, self-care, interpersonal relationships and community participation (2) community models of care (3) utility maximization (4) implementation of research (5) federalism, (6) Independence and full community integration are essential goals of mental health care. Subsequently, the deinstitutionalization movement in the United States has been towards closing all psychiatric hospitals but forensic facilities.

§367 Disability

A. Worldwide more than 600 million people – about one in ten of all human beings – live with some form of significant disability. More than 400 million of them live in developing countries. Furthermore, in the developing world, the disabled are quite often the poorest of the poor in terms of income, but in addition their need for income is greater than that of able-bodied people, since they require money and assistance to try to live normal lives and to attempt to alleviate their handicaps. The impairment of income-earning ability, which can be called the earning handicap tends to be reinforced and much magnified in its effect by 'the conversion handicap' the difficulty in converting incomes and resources into good living, precisely because of disability. 17.9 percent of disabled individuals lived in families with income below the poverty line. Individuals in families with a disabled member lived 23.1 percent below the poverty. The gap of about 5 percentage points largely reflects the income handicap associated with disability.

1. If the conversion handicap is introduced, and note is taken of the need for more income to ameliorate the disadvantages of disability, the proportion of individuals in families with disabled members living below the adjusted poverty line for the respective family jumps to 47.4%, a gap of nearly 30% over the share of individuals living below the poverty line. The extra 30 percentage points for poverty disadvantage for individuals

living in families with a disabled member, only about a sixth can be attribute to income handicap and the rest to conversion handicap due to the added costs imposed by a disability. In determining whether an individual is able to engage in substantial gainful activity by reason of earnings, where disability is sufficiently severe to result in a functional limitation requiring assistance in order to work, there shall be excluded from such earnings an amount equal to the cost to such individual of any attendant care services, medical devices, equipment, prostheses, and similar items and services. The monthly earnings limit for people who are blind is generally higher than the limit that applies to non-blind disabled workers.

B. The term "disability" means, with respect to an individual, a physical or mental impairment that substantially limits one or more of the major life activities of such individual; a record of such an impairment; or being regarded as having such an impairment. Persons with disabilities include those who have long-term physical, mental, intellectual, or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others. The term "qualified individual with a disability" means an individual with a disability who, with or without reasonable accommodation, can perform the essential functions of the employment position that such individual holds or desires. It must be added that to the Social Security Administration the term “disability” means inability to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months in Sec. 223 of the Social Security Act under 42USC§423(d)(1)(A).

1. The term “discrimination on the basis of disability” means any distinction, exclusion or restriction on the basis of disability which has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of all human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field. It includes all forms of discrimination, including denial of reasonable accommodation, service or employment including limiting, segregating, or classifying a job applicant or employee in a way that adversely affects the opportunities or status of such applicant or employee because of the disability of such applicant or employee. The convention recognizes that discrimination against any person on the basis of disability is a violation of the inherent dignity and worth of the human person, that there is a diversity of people with disabilities and that there is a need to promote and protect the human rights of all persons with disabilities, including those who require more intensive support. People with disabilities must have the freedom to make their own choices and be enabled to enjoy full access to the physical, social, economic and cultural environment, to health and education and to information and communication, so as to fully enjoy all their human rights and fundamental freedoms.

C. An entity may not engage in a discriminatory pattern or practice on the basis of race, color, or national origin under title VI of the Civil Rights Act of 1964 under 42USC§2000d. On the basis of age under the Age Discrimination Act of 1975 under 42 USC§6101. On the basis of handicap under section 504 of the Rehabilitation Act of 1973

under 29USC§794. On the basis of sex under title IX of the Education Amendments of 1972 under 20USC§1681. On 3 December 1982, the UN adopted the World Program of Action concerning Disabled Persons. And in 1990 disability was specifically protected against discrimination or on the basis of physical or mental disability under the Americans with Disabilities Act (ADA) of 1990 under 42USC§12101. In *Olmstead v. LC* 527 US 581 (1999) the Court held no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity, or be subjected to discrimination by any such entity under 42USC§12132 of the ADA. The Millennium Declaration stressed the need to promote and protect the full enjoyment of all human rights and fundamental freedoms by persons with disabilities. UN General Assembly Resolution Implementing the World Program of Action concerning Disabled Persons of 26 January 2006; realizes the Millennium Development Goals for persons with disabilities aware of the fact that there are at least 600 million persons with disabilities worldwide, of whom approximately 80 per cent live in developing countries and recognizes that the important role of the World Program of Action is congruent with economic and social redistribution of resources and income to improve the living standards of the population.

1. The accessibility of both of the physical environment and of information and communication is important in enabling persons with disabilities to enjoy fully their human rights and to play an active part in the development of society. Governments and intergovernmental and non-governmental organizations are urged to promote effective measures, as elaborated in the World Program of Action, for the prevention of disability and the provision of appropriate habilitation and rehabilitation services for persons with disabilities in a manner respectful of the dignity and integrity of persons with disabilities for the full enjoyment of their human rights by non- discrimination and the intention to integrate persons with disabilities in technical cooperation activities, both as beneficiaries and as decision makers. The International Day of Disabled Persons is 3 December. The observance of the Day aims to promote an understanding of disability issues and mobilize support for the dignity, rights and well-being of persons with disabilities. It also seeks to increase awareness of gains to be derived from the integration of persons with disabilities in every aspect of political, social, economic and cultural life. UN Enable finished drafting the Convention on the Rights of Persons with Disabilities and opened it for signature on 30 March 2007.

Disability Beneficiaries by Diagnostic Group, 2009 and 2015

Diagnostic Group	Number 2015	Percent 2015	Number 2009	Percent 2009	Average Benefit 2009
Total	829,430	100	7,788,013	100	$1,014.30
Congenital anomalies	3,170	0.4	13,614	0.3	793.40
Endocrine, nutritional and metabolic disease	22,402	2.7	278,565	3.3	1,010.20

Infectious and parasitic diseases	6,726	0.8	119,753	1.4	1,033.50
Injuries	24,972	3.0	330,708	3.9	1,079.90
Mental disorders (sub-total)	160,615	20.4	2,579,127	36.4	902.25
Autistic disorders	7,304	0.9			
Developmental disorders	1,368	0.2			
Childhood and adolescent disorders not elsewhere classified	1,413	0.2			
Intellectual disability	35,874	4.3	358,737	8.9	668.00
Mood disorders	60,659	7.2			
Organic mental disorders	20,979	2.5	2,220,390	27.5	940.10
Schizophrenic and other psychotic disorders	7,943	2.1			
Other	25,075	3.0			
Neoplasms	84,710	10.1	237,589	2.7	1,210.90
Diseases of the -					
Blood and blood-forming organs	2,715	0.3	19,977	0.3	942.60
Circulatory system	84,869	10.1	683,834	7.9	1,187.70
Digestive system	17,511	2.1	125,725	1.5	1,114.40
Genitourinary system	20,841	2.5	132,797	1.5	1,109.30
Musculoskeletal system and connective system	281,980	33.6	2,146,952	24.9	1,121.20
Nervous system and sense organs	73,533	8.8	734,496	9.4	1,053.70
Respiratory system	32,350	3.9	227,385	2.7	1,087.90
Skin and	1,866	0.2	18,713	0.2	1,020.80

subcutaneous tissue					
Other	1,481	0.2	18,030	0.2	1,097.50
Unknown	9,689	1.2	120,748	3.2	853.10

Source: SSA Statistical Sample of 829,430 beneficiaries 2015; Table 6: distribution by sex and diagnostic group and Table 7 Average Monthly Benefit Amount. Annual Statistical Report on the Social Security Disability Insurance Program December 2009

D. Of the 7.78 million disabled workers earning DI benefits in 2009 4.1 million men earned an average of $1,189 a month and 3.69 million women earned an average benefit of $925. Those with musculoskeletal diseases earned significantly more on average $1,121.20 than those with a diagnosis of mental illness $940.10. Cancer was the highest earning diagnostic group with an average benefit of $1,210.90 a month. Of those who worked the least before becoming disabled and unable to work, those with congenital abnormalities earned an average of $793.40 and those who were mentally retarded who earned $668.00 in December 2009 when SSI was $674. Racial discrimination is so pervasive in the disability and SSI programs that Social Security does not have any reliable statistics. Benefits must not be less than SSI. A survey of beneficiaries by race is needed to redress suspected racial disparities in disability and SSI benefits under the Civil Rights Act of 1964 42USC(21)V§2000d.

1. Statistics relating to disability beneficiaries must recognize the existence of two programs - DI and SSI. The number of beneficiaries in both programs have never been publicly added together to explain official estimates regarding 16-17 million disability beneficiaries receiving 19 million social security benefits, the sum of 10.6 million DI benefits plus 8.3 million SSI benefits. Requirements for both programs is the same. SSA issues more than $960 billion in payments to nearly 66 million people each year. SSA employs 64,000 civilians serving in more than 1,500 offices across the country and around the world +16,000 state employees = total staff of 80,000 employees making disability determinations, with a federal budget $12 billion. There were estimated to be 10,639,833 DI beneficiaries receiving an aggregate of $143 billion a year when DI paid 8,841,345 disabled workers receiving $1,166.51 monthly, 136,145 spouses receiving an average of $323. 26 a month and 1,662,343 children receiving an average of $352.25 a month on September 2016. The number of DI beneficiaries is believed to be down to 10.6 million from as high as 14 million during the period of 2011 to 2016 due to the retirement of the Baby Boomers.

2. January 2015, 8.3 million individuals are estimated received federally administered monthly Supplemental Security Income (SSI) benefits averaging $541 January 2015. Of these, 8.2 million received monthly Federal SSI payments averaging $526, and 1.5 million received monthly State supplementation payments averaging $142. SSI program population growth is calculated to have been only 0.1% 2014-15 and without a 2016 Annual Report is believed to have a population growth rate even more negligible than the 0.3% COLA 2016-17. 0.1% growth does not change the estimate of 8.3 million SSI beneficiaries rounded off to the nearest hundred thousand beneficiaries. The 1%

population growth professed in 2015 would round the SSI beneficiary population to 8.4 million, disregarding the overlap as the result of duplicate SSI/OASDI benefit payments. Without any new taxes on the rich, the total number of disability beneficiaries in calendar year 2017 is estimated to be 8.3 to 8.4 million SSI beneficiaries + 10.6 million DI beneficiaries = 18.9 – 19.0 million social security disability beneficiaries. SSA also paid a total of 43 million retired workers and dependents of retired workers + 6 million survivors of deceased workers = 49 million OASI beneficiaries. At a high 4% rate of population growth, due to the retirement of the Baby Boomers who nearly bankrupted the DI trust fund, the OASI population is expected to increase to 51 million OASI beneficiaries in 2017, a year from the annual report of January 22, 2016. Therefore, 51 million OASI beneficiaries + 19.0 million disability beneficiaries = a total of 70 million SSA benefits for more than 67 million US social security beneficiaries.

E. The International Classification of Functioning, Disability and Health, is commonly known as ICF. It is the WHO framework for measuring health and disability. ICF was officially endorsed by all 191 WHO Member States in the Fifty-fourth World Health Assembly on 22 May 2001(resolution WHA 54.21). ICF is operationalized through the WHO Disability Assessment Schedule (WHODAS 2.0). WHODAS 2.0 was developed through a collaborative international approach with the aim of developing a single generic instrument for assessing health status and disability across different cultures and settings. The scoring of WHODAS 2.0 short (12-item) and full (36-item) versions. The scoring of the full version of WHODAS 2.0 takes into account the paid-work status of the respondent, with 32 items being used if the respondent is not in gainful employment. The 12 item questionnaire needs to be multiplied by 3 and 32 item questionnaire by 1.125 to. The simple sum of the scores of the items across all domains constitutes a statistic that is sufficient to describe the degree of functional limitations. The scoring has three steps: Step 1 – Summing of recoded item scores within each domain. Step 2 – Summing of all six domain scores. Step 3 – Converting the summary score into a metric ranging from 0 to 100 (where 0 = no disability; 100 = full disability). An individual with zero disabilities would be in the 40th or 50th percentile depending on two different grading systems. An individual with one mild disability would be in the 47th or 55th percentile. An individual with 22 positive item responses would correspond to the 80th or 93rd percentile. An individual with 100 points would correspond with the 100th percentile (Üstün '10: 43-44). With 8 or 9 points for the unemployment related questions the ICF checklist is a fairly accurate gauge of the disabled worker for social security benefit payment and long-term relationship purposes.

1. Part 1 The first qualifier is the extent of impairments of mental function, sensory functions and pain, voice and speech functions; functions of the cardiovascular, heamatological, immunological and respiratory systems, functions of the digestive; metabolic and endocrine systems; genitourinary and reproductive functions; neuromusculoskeletal and movement related functions; functions of the skin and related structures; any other body functions. 0 No impairment means the person has no problem. 1 Mild impairment means a problem that is present less than 25% of the time, with an intensity a person can tolerate and which happens rarely over the last 30 days. 2 Moderate impairment means that a problem that is present less than 50% of the time, with an

intensity, which is interfering in the persons day to day life and which happens occasionally over the last 30 days. 3 Severe impairment means that a problem that is present more than 50% of the time, with an intensity, which is partially disrupting the persons day to day life and which happens frequently over the last 30 days. 4 Complete impairment means that a problem that is present more than 95% of the time, with an intensity, which is totally disrupting the persons day to day life and which happens every day over the last 30 days. 8 Not specified means there is insufficient information to specify the severity of the impairment. 9 Not applicable means it is inappropriate to apply a particular code (e.g. b650 Menstruation functions for woman in pre-menarche or post-menopause age).

2. The second qualifier is the nature of the change to the short list of body structures – structure of the nervous system; the eye, ear and related structures; structures involved in voice and speech; structure of the cardiovascular, immunological and respiratory systems; structures related to the digestive, metabolism and endocrine systems; structure related to genitourinary and reproductive system; structure related to movement; skin and related structures; any other body structures. 0 No change in structure; 1 Total absence; 2 Partial absence; 3 Additional part; 4 Aberrant dimensions; 5 Discontinuity; 6 Deviating position; 7 Qualitative changes in structure, including accumulation of fluid; 8 Not specified; 9 Not applicable.

3. Part 2 The performance qualifier indicates the extent of participation restriction by describing the persons actual performance of a task or action in his or her current environment. The capacity qualifier indicates the extent of activity limitation by describing the person's ability to execute a task or an action. The capacity qualifier focuses on limitations that are inherent or intrinsic features of the person themselves. These limitations should be direct manifestations of the respondent's health state, without the assistance. By assistance we mean the help of another person, or assistance provided by an adapted or specially designed tool or vehicle, or any form of environmental modification to a room, home, workplace etc. In evaluating participation and capacity without assistance the criteria of the first qualifier is used for both columns relating to learning and applying knowledge; general tasks and demands; communication; mobility; self care; domestic life; domestic life; interpersonal interactions and relationships; school and work; community, social and civic life; any other activity or participation. Part 3 Environmental factors make up the physical, social and attitudinal environment in which people live and conduct their lives. The qualifier in environment relates to barriers or facilitator relating to products and technology; natural environment and human made changes to the environment; support and relationships; attitudes; housing, communication, transportation, legal services, social security, health education and employment; any other environmental factors. 0 No barriers; 1 Mild barriers; 2 Moderate barriers; 3 Severe barriers; 4 Complete barriers. 0 No facilitator; +1 Mild facilitator; +2 Moderate facilitator; +3 Substantial facilitator; +4 Complete facilitator

4. The interview is facilitated with suggested questions: Do you use any assistive device such as glasses, hearing aid, wheelchair, etc.? Do you have any person assisting you with your self care, shopping or other daily activities? Are you receiving any kind of treatment for your health? Have you recently cut back (i.e. reduced) your usual activities

or work because of your health condition? Have you recently been totally unable to carry out your usual activities or work because of your health condition? In your present state of health, how much difficulty do you have walking long distances (such as a kilometer or more) without assistance? In your home how much difficulty do you have washing yourself, without assistance? In your present state of health, how much difficulty do you have cleaning the floor of your where you live, without assistance? In your present situation, how much of a problem do you actually have making friends? In your present state of health, how much difficulty do you have getting done all the work you need to do for your job, without assistance? How does this compare with someone, just like yourself only without your health condition? In your present state of health, how much difficulty do you have participating in community gatherings, festivals or other local events, without assistance?

§368 Aging

A. The US is aging rapidly. Older people now account for one in seven Americans, almost 50 million people. The number of older Americans is expected to double by 2060. The number of Americans with Alzheimer's disease, the most common form of dementia, is expected to increase from 5 million today to 15 million in 2050. Primarily as the result of improvements in water purity and sewage treatment, but also because of technological advancements in medical treatment, pharmaceutical drugs and government regulation between 1900 and 2000, life expectancy at birth in the United States increased from 47 to 77 years. Age adjusted life expectancy for people aged 65 increased more than 6 years during the twentieth century, in 2002 a 65 year old American woman could expect to live almost 20 more years and a man an additional 16.6 years. Most of recent progress in life expectancy is attributed to the public becoming increasingly aware of the impact of smoking, excessive drinking, uncontrolled hypertension, lack of exercise and poor diet on the incidence of disease and injury. The life expectancy for Americans was nearly 78 years in 2005, the longest in U.S. history. Between 2005 and 2015, the country's population aged 65 and over increased by 30 percent. Older people now account for one in seven Americans: almost 50 million people, over 26 million women and over 21 million men. By 2060, the number of older Americans (age 65 and older) is expected to double to almost 100 million, or one in four Americans. The population aged 85 and over is growing particularly rapidly and is expected to triple by 2050. The US population will include so many older people in the coming decades because the baby boom generation is aging while fertility rates continue to decline and life expectancy rates have increased. As the older population increases, more people will experience age-related disabilities, and dementia in particular. Today, over 5 million Americans have Alzheimer's disease or another form of dementia, involving the loss of cognitive abilities, memory, and language. By 2050, as many as 16 million Americans could have Alzheimer's disease; currently, one person in the United States develops the condition almost every minute of every day. increasing age is the "greatest known risk factor" for Alzheimer's disease.

1. Between 2019 and 2030, the number of persons aged 60 years or over is projected to grow by 38%, from 1 billion to 1.4 billion, globally outnumbering youth, and this increase will be the greatest and the most rapid in the developing world. Following up on

the United Nations Principles for Older Persons of 1991, the Second World Assembly on Aging in 2002 produced a *Political Declaration and Madrid International Plan of Action on Aging* focusing on on three priority directions: older persons and development; advancing health and well- being into old age; and ensuring enabling and supportive environments. The aim of the International Plan of Action is to ensure that persons everywhere are able to age with security and dignity and to continue to participate in their societies as citizens with full rights. By 2050 the number of persons aged 60 years and over will increase from 600 million to almost 2 billion and that the proportion of persons aged 60 years and over is expected to double from 10 to 21 per cent. The increase will be greatest and most rapid in developing countries where the older population is expected to quadruple during the next 50 years. The twentieth century saw a revolution in longevity. Average life expectancy at birth has increased by 20 years since 1950 to 66 years and is expected to extend a further 10 years by 2050. This demographic triumph and the fast growth of the population in the first half of the twenty-first century mean that the number of persons over 60 will increase from about 600 million in 2000 to almost 2 billion in 2050 and the proportion of persons defined as older is projected to increase globally from 10 per cent in 1998 to 15 per cent in 2025. The increase will be greatest and most rapid in developing countries where the older population is expected to quadruple during the next 50 years. In Asia and Latin America, the proportion of persons classified as older will increase from 8 to 15 per cent between 1998 and 2025, although in Africa the proportion is only expected to grow from 5 to 6 per cent during the period but then doubling by 2050. In sub-Saharan Africa, where the struggle with the HIV/AIDS pandemic and with economic and social hardship continues, the percentage will reach half that level. In Europe and North America, between 1998 and 2025 the proportion of persons classified as older will increase from 20 to 28 per cent and 16 to 26 per cent, respectively. Globally, the proportion of persons aged 60 years and older is expected to double between 2000 and 2050, from 10 to 21 per cent, whereas the proportion of children is projected to drop by a third, from 30 to 21 per cent. In some developed countries, the number of older persons will be more than twice that of children by 2050. In developed countries the average of 71 men per 100 women is expected to increase to 78. In the less developed regions, older women do not outnumber older men. Current sex ratios in developing countries average 88 men per 100 women among those 60 and older. The fastest growing group of the older population is the oldest old, that is, those who are 80 old years or more. In 2000, the oldest old numbered 70 million and their numbers are projected to increase to more than five times that over the next 50 years. Older women outnumber older men, increasingly so as age increases.

B. Menarche, the first onset of menstruation, that can be delayed by athletes who deplete their body fat, and menopause, the cessation of menstruation requiring adequate dietary intake of vitamin D, calcium and phosphorus to prevent osteoporosis, and amenhorrea, the cessation of ovulation, during child bearing years, require women to be slightly than men of the same height and frame. Cancer screening is a powerful tool to detect cancer in its early stages when treatments and lifestyle changes are more likely to be successful, but they also come with a high risk of false diagnosis and associated unnecessary harmful medical treatment and a grave risk of exposure to the professional malevolent distributors of carcinogens. Early detection of cancer can mean a better prognosis. Some cancers,

like ovarian cancer, don't have routine screening tests, but even when screening tests exist, not everyone uses them. For instance, the American Cancer Society notes that mammography usage hasn't increased since 2000, and that less than half -- 47% -- of Americans 50 and older have gotten a colorectal cancer screening test. Whatever the results of new studies, cancer screening is an important part of preventive medicine, particularly to detect deadly forms of cancer when the odds of survival are good. Cancer screening is however dangerous because a false positive can lead a person with nothing or a mild growth the body would eliminate on its own to subject themselves to unnecessary, unpleasant and life threatening treatment. On the other hand cancer screening is important for the person to take steps to combat cancer and monitor the effectiveness of their lifestyle changes.

1. Pancreatic cancer comes with one of the worst prognoses. The American Cancer Society puts the odds of surviving five years after being diagnosed in the early stages with the disease at 37 percent rather than 15-20 percent for all people suffering pancreatic cancer. In comparison, the five-year survival rate for early-stage breast cancer and early-stage prostate cancer is virtually 100 percent rather than 79 and 89 percent respectively. Early-stage colon cancer, carries a 93 percent five-year survival rate rather than 66 percent. It would therefore seem that it is a good idea to be regularly screened for cancer. Many scientists have however argued against routine widespread cancer screening and improvements in cancer rates in the past two decades could be the general ethical reluctance to engage in unnecessary cancer screening and treatment.

2. Breast self-exams have long been recommended as a simple way for women to keep track of anything unusual in their breasts. Now, after studies have found that such exams do not reduce breast cancer death rates, and actually increase the rate of unnecessary biopsies, many experts are recommending a more relaxed approach known as “breast awareness.” The U.S. Preventive Services Task Force recommends women get a mammogram every year or two after age 40 (before 2001 it was women over 50). The technology however carries a first-time false positive rate of up to 6 percent. False positives can lead to expensive repeat screenings and can sometimes result in unnecessary invasive procedures including biopsies and surgeries. Women have unnecessarily undergone mastectomies, radiation and chemotherapy after receiving false positives on a mammogram. Mammograms expose your body to radiation that can be 1,000 times greater than that from a chest x-ray, which poses risks of cancer. Mammography also compresses your breasts tightly, and often painfully, which could lead to a lethal spread of cancerous cells, should they exist. The premenopausal breast is highly sensitive to radiation, and it is estimated that each 1 rad exposure increasing breast cancer risk by about 1 percent, with a cumulative 10 percent increased risk for each breast over a decade's screening. The high sensitivity of the breast, especially in young women, to radiation-induced cancer was known by 1970. Nevertheless, the establishment then screened some 300,000 women with Xray dosages so high as to increase breast cancer risk by up to 20 percent in women aged 40 to 50 who were mammogramed annually. Most doctors however continue to recommend mammograms for fear of being sued if they do not and the woman develops breast cancer.

3. The establishment ignores safe and effective alternatives to mammography, particularly trans illumination with infrared scanning known as thermographic breast screening that the radiation of infrared heat from your body and translates this information into anatomical images. Your normal blood circulation is under the control of your autonomic nervous system, which governs your body functions. Thermography uses no mechanical pressure or ionizing radiation, and can detect signs of breast cancer years earlier than either mammography or a physical exam. Mammography cannot detect a tumor until after it has been growing for years and reaches a certain size. Thermography is able to detect the possibility of breast cancer much earlier, because it can image the early stages of angiogenesis (the formation of a direct supply of blood to cancer cells, which is a necessary step before they can grow into tumors of size). A group of researchers who track breast cancer rates have proposed the controversial notion that some tumors found with mammograms might naturally disappear on their own if left undetected. Invasive breast cancer rates among nearly 120,000 women age 50 to 64 who had a mammogram over a six-year period. They compared the number of breast cancers detected with another group of about 110,000 women of the same age who were screened just once at the end of the six-year period. The researchers said they expected to find no differences in breast cancer rates -- but instead, they found 22 percent more invasive breast tumors in the group who had mammograms every two years. This raises the possibility that some cancers somehow disappear naturally. Mastectomies have not been proven to improve survival and decrease reason to live. $1 Hydrocortisone crème might cure aspergillosis and antibiotic ointment *Actinomyces israelii* of the breast.

4. The Prostate-Specific-Antigen (PSA) blood test — the screening test for prostate cancer — has been found in two new studies to save few if any lives and exposes large numbers of men to risky and unnecessary treatment. The findings raise new questions about the rapid and widespread adoption of the test, which measures a protein released by prostate cells. It was introduced in 1987 and quickly became a routine part of preventive health care. With the new data, cancer experts said men should carefully consider the test's risks and benefits before deciding to be screened. Both reports were published online on Wednesday by The New England Journal of Medicine. One involved 182,000 men in seven European countries the other, by the National Cancer Institute involved nearly 77,000 men at 10 medical centers in the United States. Taken together, the studies found that screening was associated with a 20 percent relative reduction in the prostate cancer death rate. But the number of lives saved was small — seven fewer prostate cancer deaths for every 10,000 men screened and followed for nine years. The American study, which had a single design, found no reduction in deaths from prostate cancer after most of the men had been followed for 10 years. Every man has been followed for at least seven years. By seven years, the death rate was 13 percent lower for the unscreened group. The European study saw no benefit of screening in the first seven years of follow-up. The reason screening saved so few lives, cancer experts say, is that prostate cancers often grow very slowly, if at all, and most never endanger a man if left alone. But when doctors find an early-stage prostate tumor, they cannot tell with confidence whether it will be dangerous so they usually treat all early cancers as if they were life-threatening. As a result, the majority of men, whose early-stage cancers would not harm them, suffer

serious effects of cancer therapy but get no benefit. Others, with very aggressive tumors, may not be helped by screening because their cancer has spread by the time it is detected.

5. Prostate cancers often are less dangerous than breast cancers, so screening and subsequent therapy can result in more harm. In the European study, 48 men were told they had prostate cancer, and needlessly treated for it, for every man whose death was prevented. With mammography, about 10 women receive a diagnosis and needless treatment for breast cancer to prevent one death. One way to think of the data is to suppose he has a PSA test today. It leads to a biopsy that reveals he has prostate cancer, and he is treated for it. There is a one in 50 chance that, in 2019 or later, he will be spared death from a cancer that would otherwise have killed him. And there is a 49 in 50 chance that he will have been treated unnecessarily for a cancer that was never a threat to his life or health. Whatever the results of new studies, cancer screening is an important part of preventive medicine, particularly to detect deadly forms of cancer when the odds of survival are good. Cancer screening is however dangerous because a false positive can lead a person with nothing or a mild growth the body would eliminate on its own to subject themselves to unnecessary, unpleasant and life threatening treatment. On the other hand cancer screening is important for the person to take steps to combat cancer and monitor the effectiveness of their lifestyle changes.

B. The reason for the significant uptick in annual deaths 2010-1015 is that the large cohort of 74.9 million Baby Boomers born are passing through their peak disability years and reaching retirement age, Being over the age of 65 is the primary risk factor for death. In 2015 the age-adjusted death rate was estimated to be 781.4 per 100,000 - 240 per 100,000 under the age of 65 and 4,393 per 100,000 over the age of 65. National death rate statistics maintained by the SSA Actuary slightly improve, go down at an average rate of 99.93% annually from a death rate of 781.4 per 100,000 for all ages, 239.8 per 100,000 under the age of 65 and 4,392.3 per 100,000 over the age of 65 in 2015. According to the Social Security Actuary the total age-sex-adjusted death rate declined at an average annual rate of 1.05 percent between 1900 and 2013. Between 1979 and 2013, the period for which death rates were analyzed by cause, the total age-sex-adjusted death rate, for all causes combined, declined at an average rate of 0.93 percent per year. Death rates have declined substantially in the U.S. since 1900, with rapid declines over some periods and slow or no improvement over the other periods. Historical death rates generally declined more slowly for older ages and more rapidly for children and infants than for the rest of the population. Between 1900 and 2013, the age-sex-adjusted death rate for ages 65 and over declined at an average rate of 0.78 percent per year, while declining at an average rate of 3.08 percent per year for ages under 15. The only career more dangerous than logging is retiree. Occupational Health and Safety Administration (OSHA) reports that logging has the highest death rate of any career at a rate of about 100 per 100,000 per year, since the Mining Safety and Health Act of 1977 reduced the rate of mining accidents to less than 20 per 100,000 labor years. The average death rate for all careers studied by OSHA is about 3 deaths per 100,000. In peacetime there have been years where the entire 2.8 million US military did not report a single casualty – 50 crunches, 50 push-ups and 3 mile run.

Death Rate Per 100,000, by Age 1940-2020

	Total	Under 65	65 and Over
1940	1,919.8	750.1	9,718.8
1950	1,561.9	570.2	8,173.7
1960	1,454.3	503.2	7,795.4
1970	1,340.0	485.7	8,036.3
1980	1,136.9	384.3	6,154.3
1990	1,021.3	333.6	5,606.3
2000	960.7	281.0	5,492.3
2010	820.8	248.5	4,636.1
2015	815,3	255.2	4,549.7
2016	808.7	260.8	4,495.1
2017	812.5	261.5	4,461.0
2018	800.5	255.8	4,431.9
2019	795.5	255.3	4,397.1
2020	828.7	317.6	4,531.0

Source: SSA. Farida et al. Provisional Mortality Data — United States, 2020. Morbidity and Mortality Weekly / April 9, 2021 / 70(14);519–522

1. Older persons should remain integrated in society, participate actively in the formulation and implementation of policies that directly affect their well-being and share their knowledge and skills with younger generations. According to Child Trends Databank death rates for children have fallen dramatically since 1980. Deaths rates for infants under 1 year fell from 1,288 to 588 per 100,000 between 1980 and 2014. Between 1980 and 2014 the death rate of children ages 1 to 4 dropped from 64 to 24 per 100,000. Between 1980 and 2014 the death rate of children ages five to 14 went down from 31 to 13 per 100,000. Between 1980 and 2014 the death rate for teens between the ages of 15 and 19 went down from 98 to 46 per 100,000. Risk of dying increases for high school students mostly because of driving accidents. Males between the ages of 15 and 19 are twice as likely to die as females 63 versus 29 deaths per 100,000 in 2014. The death rate for disability beneficiaries is estimated to be about 10 per 100,000, more than three times higher than the national occupational average of 3 per 100,000. More boy than girl babies have been issued social security cards every year since 1940. In 2015 51.2% of babies were boys and 48.8% were girls. However 50.9% of the 2010 census population are female and 49.1% are male. Reason being, more males die at any age.

2. Mortality differs significantly by race or ethnic group as measured by age adjusted death rates. In 2004 death rates per 100,000 for non-hispanic whites was 949.3, non-Latino African American 1,281.7, Hispanic 702.7, American Indian 750.2, Asian or

Pacific Islander 534.1. The overall death rate for African American men is 1.3, 1.8, 1.7 and 2.4 times that of White, Hispanic, American Indian/Alaska Native, and Asian or Pacific Islander men respectively. In 1998 these death rates per 100,000 people from heart disease alone in the United States were 211.8 for black non-Hispanics, compared to 145.3 for white non-Hispanics, 101.5 for Hispanics, 106 for American Indians and 78 for Asians. African American men have the lowest life expectancy and highest death rate compared to men and women in other racial/ethnic groups in the United States. Homicide is the leading cause of death for African American men between the ages of 18 and 34, and the 4th leading cause of death for African American men between the ages of 18 and 64. Among non-Hispanic White men in the same age groups, homicide is the 5th and 10th leading cause of death respectively. African American males also have higher death rates than men from other racial groups for heart disease, HIV/AIDS, and certain cancers, including prostate, lung, and colon.

C. Children and older persons are more susceptible to various forms of environmental pollution than individuals in the intermediate ages and are more likely to be affected by even the lowest pollution levels. Medical conditions due to environmental pollution reduce productivity and affect quality of life of persons as they age. Malnutrition and poor nutrition also place older persons at disproportionate risk and can adversely affect their health and vitality. The leading causes of disease, disability and mortality in older persons can be alleviated through health promotion and disease prevention measures that focus, inter alia, on nutrition, physical activity and cessation of smoking. Pay attention to the dangers arising from social isolation and mental illness and reduce the risk they pose to the health of older persons by sup- porting community empowerment and mutual aid groups, including peer out- reach and neighborhood visiting programs and by facilitating the active participation of older persons in voluntary activities. Rigorously implement and reinforce, where applicable, national and international safety standards that aim at preventing injuries at all ages. Prevent unintentional injuries - safeguard pedestrians to minimize fall hazard in the home and forest. Increase quality of care and access to long-term caregiving and house calls by skilled nurses, for older persons, as a possible alternative to hospitalization and nursing home placement. Experts estimate that approximately 70 percent of people aged 65 and over will require long-term services and support, ranging from limited support in their own homes and communities to around-the-clock care in institutional settings. Of the 6 million older people receiving long-term care, about 4 million receive care from a home health agency at home. About 1.2 million people aged 65 and over lived in 15,600 nursing facilities in 2014, and almost 780,000 people lived in other residential care communities. The proportion of people living in institutional settings increases with age because care needs become more intensive. The leading cause of admission to nursing homes is pelvic fracture.

1. Medicare is the primary provider of health insurance to people aged 65 and older in the US. It includes four parts: Parts A, B, C, and D, covering hospital insurance (including the first 100 days in a skilled nursing facility), medical insurance (such as doctors, outpatient care, medical equipment, and preventive services), private companies' health plans (Medicare Advantage), and prescription drugs (including long-stay nursing facility residents' drug prescriptions), respectively. Medicaid is the primary public health

insurance program in the US for people with low incomes, jointly administered by the federal government and the states. It is the primary payer for long- term care, accounting for 51 percent of the nursing home industry's expenditures. Consequently, to receive institutional long-term care outside of a nursing facility requires significant private resources, estimated at over US $3,000 per month. The total cost of long-term care varies by context. In 2015, the median annual cost of living in a nursing facility was over $90,000, roughly twice the cost of having a home health aide and five times the cost of an adult day health care program (almost $18,000). Long-term care costs vary significantly by state. For example, a semi-private skilled nursing home room in the most expensive states (Alaska, Connecticut, and Massachusetts) costs almost three times as much as in the least expensive states (Texas, Missouri, and Louisiana), $143,000–$168,000 compared to $56,000–$61,000 annually. Moreover, home health aides in the most expensive states (Massachusetts, Alaska, and New Jersey) cost almost twice as much as in the least expensive states (Alabama, Louisiana, and West Virginia), $28–$31 versus $17–$19 hourly. In 2013, approximately half of Medicare beneficiaries, which include older people and younger people with disabilities, earned less than $23,500 per year. Despite the common perception that Medicare is for older people and Medicaid is for the poor, many people in the middle class in nursing facilities depend on Medicaid. Many people who saved for assisted living or other non-nursing facility care spend down their savings rapidly. In 2012, paying privately for the median cost of a nursing home ($81,030) would cost 252 percent of the median household income ($34,381) for people aged 65 and up. One in three people turning 65 may require care from a nursing facility at some point in their life, and three-quarters of long-term nursing facility residents will be covered by Medicaid at some point.

2. In 2015, the nursing facility industry, assisted living, and other types of long-term care recorded annual revenues of $156.8 billion, 41 percent of which came from Medicaid and 21 percent from Medicare. Medicare and Medicaid have provided the financial foundation of the nursing facility industry since their creation. The federal government regulates the nursing facility industry through the Nursing Home Reform Act of 1987, requiring facilities to meet certain standards to be certified and paid by Medicare and Medicaid. CMS contracts with state agencies to certify facilities and to ensure "substantial compliance" with minimum health and safety requirements. Seventy percent of nursing facilities in the US—about 11,000—are owned by for-profit companies, and almost 25 percent are nonprofit. About 6 percent are publicly owned, most of which (46 percent) are owned by counties, followed by hospital districts (21 percent), states (14 percent), city-county (9 percent), city (8 percent), and the federal government (1 percent). In 2014, almost three in five nursing facilities were part of a chain, meaning they were owned by an entity that owns multiple facilities. Private equity firms own about 12 percent of all nursing facilities (18 percent of for-profit ones). Ten chains own the facilities in which 14 percent of the nation's residents live, the largest concentration.

D. The 1987 Omnibus Budget Reconciliation Act, was the federal law that amended the Social Security Act to regulate skilled nursing facilities and nursing facilities and established a residents' bill of rights. Associated federal regulations promulgated by the US Department of Health and Human Services, revised in 2016, set out comprehensive

and detailed minimum health and safety standards as well as the parameters of federal and state enforcement of the federal regulations. US federal and state laws protect against abuse and neglect in skilled nursing facilities, primarily through the Nursing Home Reform Act of 1987 and associated regulations. Some of these protections on the quality of care and quality of life a person is entitled to receive while living in a nursing facility are listed explicitly as "resident rights." Many enumerated rights pertain to antipsychotic medications. These rights include: the facility's promotion of residents' dignity; the provision of activities to meet individual needs; the provision of medically-related social services; resident assessments as the foundation for all care comprehensive care planning that involves the resident; professional quality services; availability of psychosocial services; sufficient nursing staff; care supervised by a physician; pharmacist reviews of drug regimens; effective administration of facilities; competence of nursing staff; and facilities' supervision by a medical director.

1. US federal regulations, including revised regulations that intended to go into effect on November 28, 2017, state that nursing home residents have the right to be fully informed in advance of their treatment and have the right to refuse treatment. A resident and/or representative(s) has the right to be informed about the resident's condition; treatment options, relative risks and benefits of treatment, required monitoring, expected outcomes of the treatment; and has the right to refuse care and treatment. If a resident refuses treatment, the facility staff and physician should inform the resident about the risks related to the refusal, and discuss appropriate alternatives such as offering the medication at another time or in another dosage form, or offer an alternative medication or non-pharmacological approach, if available. Under US regulations, the rights to be fully informed in advance about treatment and to refuse treatment apply only to residents that have not been formally "adjudged incompetent" under 42 CFR §483.10(c)(6).

2. In 2016, the DOJ created Elder Justice Task Forces to penalize nursing facilities for grossly substandard care. Every 15 months at most, state surveyors conduct unannounced inspections to evaluate facilities' compliance with health and safety regulations. Surveyors used a detailed protocol—the State Operations Manual produced by CMS, which includes detailed investigative protocols on particular subjects—to conduct surveys and determine the scope and severity of a deficiency. Human Rights Watch quantitative analysis of fines assessed in all states between 2014 and 2016 found that 80 percent were less than $10,000 and 20 percent between $10,000 and $100,000. As of July 2017, a citation that is "no actual harm" with potential for more than minimal harm that is widespread can garner a fine of $405 per day or a per instance fine of $5,000. "Actual harm" citations (Levels G, H, and I, depending on scope) can garner a fine between $505 and $2,055 per day and between $10,000 and $15,000 per instance, depending on scope. "Immediate jeopardy" level citations (Levels J, K, and L, depending on scope) can garner a fine between $6,394 and $10,494 per day or between $10,000 and $20,000 per instance, depending on scope. Only the highest level deficiency is now eligible for the top civil money penalties. Antipsychotic drug abuse was considered to not cause any actual harm 80% of the time it was stopped in time.

3. In 2016, CMS rejected a minimum staffing level or ratio. A review of the data in 2017 shows that almost a thousand nursing facilities reported that they were providing less than three hours of staff time to residents per day—almost 40 percent below the recommended level. Human Rights Watch analysis found that state-level averages of total reported nurse staffing hours vary: Illinois and Texas have two of the lowest levels, at 3.80 and 3.83 hours respectively; California and Florida have two of the highest, at 4.63 and 4.59 respectively. Moreover, CMS has stated that those numbers are likely inflated because nursing facilities tend to over-report their staffing levels. Facilities reduced their antipsychotic drug use by 1.57 percentage points on average in the year following a citation, but those same facilities were already reducing their rates by 1.60 percentage points during periods where they were not cited, and facilities that were not cited at all were reducing their rates by 1.29 percentage points. Between 2014 and the first quarter of 2016, the average reduction in antipsychotic use rates was only 0.031 percentage points greater in facilities that received an antipsychotic related citation compared with those that were not cited. The 2016 Annual Report of the Board of Trustees of the Federal Old Age and Survivor Insurance Trust Fund and Federal Disability Insurance Trust Fund held that penalties dissuade volunteers. In November 2017, CMS reduced enforcement requirements further, including placing a moratorium on the issuance of financial sanctions for noncompliance with Obama-era regulatory requirements. In a letter to US Department of Health and Human Services Secretary Thomas Price, AHCA pointed out that "a punitive approach by survey teams across the country has threatened to shut down even the best operators in our profession."

E. Between 1903 and 1940 the number of people in state hospitals rose from 150,000 to 450,000 reaching a peak in 1955 with over 550,000 patients. State hospitals began admitting people with a greater range of illnesses than they had traditionally admitted including an increase in the number of elderly who were senile. Modern nursing homes need to avoid new and invasive medical treatments for mental illness and punishments for mis-prescribing psychiatric drugs for dementia and learn to treat mental illness with appropriate volunteer opportunities under Madrid Political Declaration and Plan of Action on Aging of 2002. Antipsychotic use in nursing homes has gone down by 25%-35% since 2012 when CMS created the National Partnership to Improve Dementia Care in Nursing Homes, in recognition of the unacceptably high prevalence of antipsychotic drug use. The US Food and Drug Administration (FDA) has approved some antipsychotic drugs for treatment of conditions, which might effect some older people, such as Tourette syndrome, Huntington's disease and bipolar disorder. The FDA has not approved antipsychotic drugs for treating symptoms of dementia. In an average week, nursing facilities in the United States administer antipsychotic drugs to over 179,000 people who do not have diagnoses for which the drugs are approved. The drugs are often given without free and informed consent, which requires a decision based on a discussion of the purpose, risks, benefits, and alternatives to the medical intervention as well as the absence of pressure or coercion in making the decision. Most of these individuals—like most people in nursing homes—have Alzheimer's disease or another form of dementia. The US Food and Drug Administration (FDA) never approved them for this use and has warned against its use for these symptoms. People in nursing facilities are often at heightened risk of neglect and abuse. Many individuals in nursing facilities are physically

frail, have cognitive disabilities, and are isolated from their communities. Many individuals in nursing facilities are physically frail, have cognitive disabilities, and are isolated from their communities. Often, they are unable or not permitted to leave the facility alone. Many depend entirely on the institution's good faith and have no realistic avenues to help or safety when that good faith is violated. Such nonconsensual use and use without an appropriate medical indication are inconsistent with human rights norms. The drugs' use as a chemical restraint—for staff convenience or to discipline or punish a resident—could constitute abuse under domestic law and cruel, inhuman, and degrading treatment under international law.

1. The boxed warning on antipsychotic drugs for use in older people with dementia is based on findings that the drugs increase the risk of death in older people with dementia. Elderly patients with dementia-related psychosis treated with atypical antipsychotic drugs are at an increased risk of death compared to placebo. Analyses of seventeen placebo-controlled trials . . . in these patients revealed a risk of death in the drug-treated patients of between 1.6 and 1.7 times that seen in placebo-treated patients. Over the course of a typical 10-week controlled trial, the rate of death in drug-treated patients was about 4.5%, compared to a rate of about 2.6% in the placebo group. Aside from raising the risk of death, the drugs' side effects include severe nervous system problems; neuroleptic malignant syndrome (a life-threatening reaction associated with severe muscular rigidity, fever, and altered mental status); tardive dyskinesia (characterized by stiff, jerking movements that may be permanent once they start and whose likelihood of onset increases the longer antipsychotic drugs are taken); high blood sugar and diabetes; and low blood pressure, which causes dizziness and fainting. Other side effects include increased mortality, cerebrovascular events (stroke), cardiovascular effects, blood clots, central and autonomic nervous system problems, visual disturbances, metabolic effects, extrapyramidal symptoms, fall risk and hip fracture, irreversible cognitive decompensation, and pneumonia. A 2012 Office of Inspector General investigation found that Medicare processed 1.4 million claims for atypical antipsychotic drugs from nursing facilities in 2007. Older people with dementia accounted for 88 percent of the 1.4 million claims, but somehow only 22 percent were considered inappropriate. Due to the elaboration of a waterborne toxin of forgetfulness by some *E. coli* subspecies ejected from concentrated animal feeding operations unlawfully contaminating the watershed into the groundwater, the prescription for both dementia, and a propensity for psychiatric drug abuse of elders, is bottled water for drinking and cooking.

F. 90% of retired people earn their income in part or totally from social security. In the USA the percentage of elders living in poverty is at an all time low, while the percentage who are rich has reached an all time high. A person will not be eligible for full retirement benefits for such a time they have a monthly income above $2,500.00 from employment, annuities, investments, and royalties in Sec. 203 of the Social Security Act under 42USC§403 (f-D). Residents of public institutions are ineligible for Supplemental Security Income (SSI). However, Sec. 1611(e)(1) of the Social Security Act under 42USC§1382(e)(1) (A) provides an exception to that rule. Residents of medical treatment facilities that receive substantial Medicaid payments on the recipient's behalf can be eligible for a reduced Federal SSI monthly benefit of no more than $30. Those who

reside throughout a month in a public institution that is a medical treatment facility where Medicaid (title XIX of the Social Security Act) pays a substantial part (more than 50 percent) of the cost of care; for children under the age of 18 residing throughout a month in a public institution that is a medical treatment facility where a substantial part (more than 50 percent) of the cost of care is paid under a health insurance policy issued by a private provider of such insurance; or, a child under the age of 18 residing throughout a month in a public institution that is a medical treatment facility where a substantial part (more than 50 percent) of the cost of care is paid by a combination of Medicaid payments and payments made under a health insurance policy issued by a private provider of such insurance under 20CFR§416.211...see *Schweiker v. Wilson et al*, 101 S.Ct. 1074 (1981).

1. A nursing facility must care for its residents in such a manner and in such an environment as will promote maintenance or enhancement of the quality of life of each resident. A nursing facility must provide (or arrange for the provision of) nursing and related services and specialized rehabilitative services to attain or maintain the highest practicable physical, mental, dental and fiscal well-being of each resident, without resorting to involuntary psychiatric treatment at Sec. 1919 of the Social Security Act under 42USC§1396r. If the United States wants nursing homes to reduce the dementia, irritability, agitation, aggression, hallucinations, delusions, wandering, disinhibition, anxiety, and depression—what some medical professionals call "behavioral and psychological symptoms of dementia" nursing homes are going to have leave their patients with more money. Nursing homes need to leave their resident SSI beneficiaries with more than $30 a month. Second World Assembly on Aging in 2002 produced a Political Declaration and Madrid International Plan of Action on Aging pays attention to the dangers arising from social isolation and mental illness and reduce the risk they pose to the health of older persons by supporting community empowerment and mutual aid groups, including peer out-reach and neighborhood visiting programs and by facilitating the active participation of older persons in voluntary activities, such as buying and smoking marijuana. The custom of taking of all but $30 from SSI beneficiaries while they are in the long-term care of a hospital or nursing facility needs to be abolished under Sec. 1161(e)(1) of the Social Security Act under 42USC§1382(e)(1). SSI beneficiaries in nursing homes are due at least 30% of their benefits and the nursing home 70% whereby the residents own the home under Housing and Urban Development (HUD) guidelines - the greater of $300 or 30% of social security benefits, by Treasury under 24USC§14a or fee under 24USC§414.

§369 Medical Record

A. To do the identity theft of precision medicine in Title II of the 21st Century Cures Act justice and put information blocking to good use, it is important to emphasize that researchers are to search the history books and store shelves for safe and effective curative medical treatments that may have been forgotten, or otherwise fallen out of use due to anti-competitive tactics associated with pharmaceutical development advertisement and felony monopolization of "research" by unethical experimental laboratories. The first physicians were generalists. For thousands of years, generalists provided all of the medical care available. They diagnosed and treated illnesses,

performed surgery, and delivered babies. Many of skeletal remains prove without doubt that Neanderthal man was often afflicted with arthritis. During the last centuries of the Ice Age and the first of the Old Stone Age, Neanderthal man was replaced by a new race, the direct ancestor of homo sapiens. And, judging by his remains he too was plagued by a multitude of bone disease such as arthritis, tumors, spinal tuberculosis, sinusitis, congenital dislocation of the hip-joint, osteomyelitis and deformities such as cleft spine. Rickets probably also existed. There is evidence dating back to those times of well-healed fractures which would seem to indicate experiences in setting at rest or in splints. A surprisingly large number of prehistoric skulls with bored holes have been found in New Stone Age excavations in France, Spain, Germany, Austria, Russia and Poland, occasional examples have also come to light in England and Peru. Probably these early doctors tackled such an operation by boring a series of small holes in a circle to that they eventually met and made it possible for a circular disc of bone to be lifted out. After its removal, this disc was often given an additional hole and worn round the neck as an amulet.

1. Agriculture arose roughly ten thousand years ago and its expansion was the dominant force of ecological change over most of the Holocene beginning around 10,000 B.C., the relatively warm and stable geological epoch from the end of the last ice age that began around twelve thousand years ago. The invention of cities from agricultural surpluses enabled 10% of the population to live in cities with the side-effect of war with the neighbors by 6000 B.C. Paradise lost, food forests were burned, trails became roads and the urban workforce became increasingly reliant upon agricultural commodities that regrow in one year. Agriculture arose roughly ten thousand years ago and its expansion was the dominant force of ecological change over most of the Holocene, the relatively warm and stable geological epoch from the end of the last ice age that began around twelve thousand years ago. Agricultural surpluses enabled 10% of the population to live in cities around 6000 B.C. who learned war. Food forests were slashed and burned and the population became increasingly reliant upon agricultural commodities that regrow in one year. The oldest medical textbook is *Theory of the Body's Interior*, Nei-ching, by Huang Ti, the third legendary emperor over the Middle Kingdom from 2697 to 2597 B.C. The oldest known clay tablets and clay fragments which were found in Abraham's town, the Chaldean town of Ur in Mesopotamia, dating from 2000 B.C. during excavations made after the First World War.

2. The curtain first rises on the history of Ancient Egypt in 3400 BC when King Menes united the two kingdoms of Upper and Lower Egypt and founded the fortified town of Memphis where they met. Memphis was to become one of the most famous distinguished and populated cities of the ancient world. Memphis reached its peak as the political center of Egypt during the period of the Old Kingdom, which dates from about 2980 to 2475 B.C. Pharaoh Zoser was born in this city of the white walls, not surprisingly he ordered that his tomb, the stepped pyramid, should be erected not far from his birthplace. The man whom he commissioned to build it in about 2800 B.C. must have been an all-round genius by our standards, he was an architect, a versatile scholar, poet, artist, astronomer, priest, master of ceremonies, administrator, reader to the king and doctor. His name, Imhotep, means literally "giver of inner peace". Imhotep is the first doctor figure to emerge in clear outline from the shadows of history, what history tells us

about him establishes him as one of the most model members of his profession. He combined wisdom and constant helpfulness with kindness of heart, the great value which the Pharaoh and his people placed on him outlasted his lifetime and caused Zoser to have his gifted vizier buried near his own tomb in the necropolis of Memphis. However, the people venerated him so much that a temple was built over his grave and, year after year, the sick came on pilgrimage to be cured. As time went on, Imhotep came to be regarded as a god, this doctor, who had shown in his work such a perfect combination of wisdom and humanity, became the Ancient Egyptian's god of healing almost two thousand five hundred years before the birth of the great Hippocrates of Greece.

3. Arthritis was an extremely common complaint. Most surprising of all, is probably the fact that paradentosis, tooth-root decay, which we life to blame on modern processed food, was common throughout the pyramid era, that is to say, during the first half of the third millennium BC. In addition, according to American Egyptologists who have examined thousands of skulls, caries were just as common during the early days of the Nile Valley civilization as they are today. Arteriosclerosis is most frequently discovered in mummies of high officials and those of the Pharaohs themselves. Tutankhamen and Remses V both died of a heart infection, as the English doctor, Peter Gray, was able to establish when he examined X-rays of the mummies of these two Pharaohs. Stomach and intestinal troubles, appendicitis, gall-stones and kidney stones were not uncommon, the worst toll, however was exacted by the infectious diseases, especially among the poorer sections of the community living in primitive conditions, plague and cholera, smallpox and leprosy, typhus and amoebic dysentery, malaria, tuberculosis and not least, that Egyptian eye disease, caused by a virus trachoma, which so often led to blindness. Particularly widespread, and especially prevalent among farm workers was the parasitic disease, schistomiasis haemoatobium, which produces a tormenting type of nettle rash, pelvic pains, haematuria, stones, anaemia and general physical decline. The kidneys of some mummies have been found to contain the calcified eggs of the parasite that causes this disease.

4. Herodotus, the Greek historian, made the following report based on personal observation of the habits and way of life of the Egyptians. "The practice of medicine is so divided among them, that each physician is a healer of one disease and no more. All the country is full of physicians, some of the eye, some of the teeth, some of what pertains to the belly and some of the hidden diseases". One of the most instructive papyrus scrolls, one of the oldest known handbooks of Egyptian medicine is the Edwin Smith papyrus. This scroll, which was found in a grave near Luxor in 1862, is a copy which was probably made during the middle of the sixteenth century BC, Egyptologists assumed however that the original dates back to the time of the pyramids, between 3000 and 2500 BC. This papyrus discusses all the measures that were taken in the care of injuries thousands of years ago, the treatment of wounds by sutures and plasters, the placing of broken bones into splints made from hollowed-out ox bones, supporting straps made of bandages soaked in quick-setting resin, the laying of flesh on wounds cauterization and many other methods of treatment. On the other hand, the knife, is not mentioned, therapy was conservative. Their knowledge of the skeleton was good but that of the internal organs, despite the practice of embalming, was deficient.

5. Ancient Egyptian medicine came to light when the Kahun Papyrus was discovered by Flinders Petrie in April of 1889 at the Fayum site of Lahun. The town itself flourished during the Middle Kingdom, principally under the reign of Amenenhat II and his immediate successor. The papyrus is dated to this period by a note on the recto which states the date as being the 29th year of the reign of Amenenhat III (c. 1825 B.C.E.). The text was published in facsimile, with hieroglyphic transcription and translation into English, by Griffith in 1898, and is now housed in the University College London. The Ebers papyrus, bought by George Ebers, in 1873 from an Arab in Luxor and which, in the opinion of Egyptologists was written, at the latest around 1555 BC, once again, a copy of various older texts. Surgery, the science of the internal organs and the science of medicines, are dealt with and it is just as amazing to observe that almost nine hundred medical prescriptions existed as it is to find that many of the medical substances are still in everyday use. Fennel, senna leaves, castor oil, gentian, mandragora, mandrake, henbane, hemlock, squill, thorn-apple, poppy juice (for soothing crying children), opium for pain and countless other drugs. Among animal substances still in the modern pharmacopocia, were Spanish fly (Cantharides) and both goat and goose fat. Among the minerals used in making up the many prescriptions were magnesium, lead and copper salts, sulphur, crushed alabaster and antimony, compounds of which were considered until quite recently to be the best remedies for worms. Here again we have evidence of surprisingly advanced and rational methods of treatment overlapping a confused mass of demonology, magic and invocations to produce a strange amalgam in Ancient Egyptian medicine. Three-and-a-half thousand years ago, the compiler of the Edwin Smith papyrus described the relationship between the two in the following surprisingly sensible words, Magic spells complement the effect of medicines and medicines on the other hand, support the effect of incantations. That is a tenet which *mutatis mutandis* is still completely valid in medical practice today.

6. Of the three main species of the platyhelminth worm *Schistosoma*, the most important for Egypt are *S. mansoni* and *S. haematobium*. There is a complex life cycle alternating between two hosts, humans and the fresh water snail of the genus *Bulinus*. The infection is caught by humans who come into contact with the free swimming worm which the snail releases in the water. The worm penetrates the intact skin and enters the veins of the human host. The main symptom of the presence of the parasite is hematuria which results in serious anemia, loss of appetite, urinary infection, and loss of resistance to other diseases. There may also be interference with liver functions. One of the finest archaeological examples for the existence of schistosomiasis in ancient Egypt was the discovery of calcified ova in the unembalmed 21st Dynasty mummy of Nakht. Upon medical examination, the mummy not only exhibited a preserved tapeworm, but also ova of the *Schistosoma haematobium* and displayed changes in the liver resulting from a schistosomal infection.

C. According to the teachings of Ancient Chinese pathology, illness develops as a result of alienation from the natural order of the universe. Legend tells of three emperors, who are said to have lived during the first half of the third millennium BC. All three, the legend relates, were not merely rulers but also scholars, doctors, discoverers and inventors, all three took a high measure of interest in physiological and medical affairs.

The oldest of them, Fu His, who is said to have lived around 3000 BC is supposed to have put forward the view that every event is the result of antagonism between two opposing moving principles. One of these, Yang, is the masculine, illuminating, creative, firm, constructive principle, the other, called Yin, is the feminine, soft, receptive, dark and empty one. Man's health depends upon the existence of harmony between both. The next emperor, Shen Nung, so the legend says, was born around the year 2820 BC and died about 2,697 BC. According to tradition, he studied the human intestines and their functions with true passion and, in particular, the action on the body of a variety of herbs. It is said that he had a transparent stomach and abdominal wall and so could observe everything that happened inside his abdomen, so he was able to make numerous experiments with poisons and their antidotes until he was gathered to his ancestors at the age of one hundred and twenty-three. Huang Ti was the third legendary emperor. He only managed to live to the age of a hundred and is said to have reigned over the Middle Kingdom from 2697 to 2597 BC. Among other discoveries, he is credited with the invention of the Ancient Chinese system of pathology according to which illness is the result of alienation form the natural order of the universe. He studied the influence of the weather on the human body and is thought to have been the author of the famous book, The Theory of the Body's Interior, known as Nei-ching. This work which was later furnished with detailed examples and commentaries, dealt with all the branch of medicine, surgery, it is true, was given pretty niggardly treatment. All discussion of Ancient Chinese pathology, however, culminates in the view that it is the doctor's chief task to restore his patient's natural balance which has been disturbed.

1.The Ancient Chinese recorded their texts on bones and sometimes on strips of bamboo. Illnesses of the head, the sensory organs, the limbs, the intestines, the kidneys and bladder were described. Infectious disease and epidemics also took up a lot of room on the oracle bones. Magic and demonology also held sway. The most famous of all Ancient Chinese doctors, Pien Ch'io by name, lived during the time of the Chou dynasty, between 500 and 600 BC. Tradition has it that he practiced his art while wandering about the country. He was particularly experienced in the treatment of women's and children's diseases. Pien Ch'io is regarded as the author of the famous medical work Nan-ching. It was he, too, who founded the extremely complicated old Chinese system of sphygmology, according to which a doctor was supposed to be able to diagnose and illness solely by the condition of the pulse. The classification of people who, in Pien Ch'io's view, cannot be treated, seems extremely shrewd and sensible. This includes, among other, those vainglorious and arrogant people with whom no conversation is possible, those who value their money more than they do their bodies, those who are addicted to overeating and dissipation, and finally, those patients who believe more in magicians and enchanters than they do in doctors. Every general practitioner will instantly recognize that these classifications are still completely valid today – two-and-a-half thousand years later.

2. A surprisingly extensive number of drugs was used in Ancient Chinese medicine according to a pharmacopoeia whose sources date from the second millennium BC. The sea-grap (Ephedra) whose alkaloid, Ephedrine, is still in favour today as a treatment for asthmas and allergies, was already in use during the third millennium BC against lung

diseases, coughs, repsiratory disorders and inflammation of the eyes. Of the numerous other vegetable remedies, the most important are euphorbinum, aconite, clamus, shestnut, aloe, angelica, wormwood, ginseng, vetch, bamboo, senna, clematis, spurge-laurel, fennel, gentian, nutmeg, lotus, knot-grass, pomegranate, black alder, rhubarb, castor oil, sage and ginger. Poppy juice was given to soothe crying children. Fresh blood and liver were recommended in cases of anaemia. Under the Manchu or Tsing dynasty which lasted from 1644 to 1912, Chinese medicine made little progress for, as a result of the autopsy prohibition the most mistaken ideas about the anatomy of the human body prevailed. Yet even before this, news of the great achievements in Western medicine had penetrated to China, so that interest in Euro-American medical science grew steadily keener. Furthermore, with the destruction of the monarchical/patriarchal system of government on 12 February 1912, when the son of heaven abdicated his throne and the Republic of China was established under Sun Yat-Sen, the founding of Western-style medical schools began. The medical culture of Ancient China still flourish, the Middle Kingdom now has two systems of medicine, that founded on Chinese and Western origins. The present rulers intend that both systems shall remain equally valid. In Peking there is an Institute of Ancient Chinese and Modern medicine, whoever falls ill and is sent to hospital can himself decide, of his own free will, whether to be treated by the old Chinese folk methods or in accordance with Euro-American principles. Acupuncture advertises high cure rates for many acute and chronic painful conditions.

D. The first list of medical fees and punishments for malpractice is contained in the Codex of Laws of King Hammurabi of Babylon known as the Hammurapi Code (2500 BC). The codex, which evidently incorporated most of the Ancient Sumerian body of ideas, then more than a thousand years old, is chiseled in a cuneiform script approximately seven-and-a-half feet high, into a block of diorite. Apart from the criminal and civil laws, the laws regarding official duties, marriage and divorce, jurisdiction, farming trade and shipping, it contains the oldest tariff of charges to survive, amongst which can be found fixed fees for various services, including nine paragraphs devoted to medical fees These do not merely deal with the fee which the medical practitioner received for work of one kind or another, they also lay down the penalties for the doctor's mistakes, and expressly take into account whether the doctor had been treating a man with a metal knife for a severe wound, and has cured the man, or has opened a man's tumor with a metal knife and cured a man's eye, then he shall receive ten shekels of silver However, if he performed the same operation on the son of a plebian, the doctor was paid five shekels and if on a slave only two shekels. If a doctor has treated a man with a mental knife for a severe wound, and has caused the man to die, or has opened a man' tumor with a mental knife and destroyed the man's eye, his hands shall be cut off. The doctor was awarded the same punishment if, as a result of an operation, the patient lost his eyesight. If a doctor has treated the slave of a plebian with a mental knife for a severe and caused him to die, he shall render slave for slave. If he has opened his tumor with a metal knife, and destroyed his eye, he shall pay half his price in silver. The treatment of broken limbs or intestinal complaints cost five shekels for a master, three shekels for a plebian and two shekels for a slave.

1. Excavations prove, beyond all doubt, that there were doctors in the Mesopotamian river valley civilization of 2000 BC. The existence of an indigenous medical profession in Mesopotamia is proved by the discovery of medical roll-seals containing descriptions of healing divinities and medical instruments, which were found in the innumerable mounds of potsherds excavated in Mesopotamia. The most important part of this medical text was a collection of prescriptions, together with a list of drugs and chemical substances which, in those days thousands of years ago, were used for medical purposes. All in all the doctors of Ancient Mesopotamia recognized hundreds of medicinal plants of which many are still in use today, as for example, opium poppy, mandragora, henbane, linseed, licorice roots, myrrh, thyme, cassia, colocynth, asafetida, Indian hemp and belladonna. These vegetable medicines were augmented by such minerals as alum, sulphur, saltpeter and copper.

2. Most of the information available to modern scholars comes from cuneiform tablets. There are no useful pictorial representations that have survived in ancient Mesopotamian art, nor has a significant amount of skeletal material yet been analyzed. Unfortunately, while an abundance of cuneiform tablets have survived from ancient Mesopotamia, relatively few are concerned with medical issues. Many of the tablets that do mention medical practices have survived from the library of Asshurbanipal, the last great king of Assyria. The library of Asshurbanipal was housed in the king's palace at Nineveh, and when the palace was burned by invaders, around 20,000 clay tablets were baked (and thereby preserved) by the great fire. In the early 1920's, the 660 medical tablets from the library of Asshurbanipal were published by Cambell Thompson. Other medical texts have been published more recently. For example, Franz Kocher has published a series of volumes called Die Babylonishch-Assyrische Medizin. The first four of these contain 420 tablets found from sites other than Assurbanipal's library, including the library of a medical practitioner (an asipu) from Neo-Assyrian Assur, as well as Middle Assyrian and Middle Babylonian texts. The remaining two volumes of Kocher's work augment Campbell Thompson, providing new joins of broken fragments and much material uncovered in the British Museum. At least one more volume of Nineveh texts has been announced. In addition, the series Spaet Babylonische Texte aus Uruk contains some 30 medical texts not included in Kocher's work. The vast majority of these tablets are prescriptions, but there are a few series of tablets that contained entries that were directly related to one another, and these have been labeled "treatises." The largest surviving such medical treatise from ancient Mesopotamia is known as "Treatise of Medical Diagnosis and Prognoses." The text of this treatise consists of 40 tablets collected and studied by the French scholar R. Labat. Although the oldest surviving copy of this treatise dates to around 1600 B.C. The information contained in the text is an amalgamation of several centuries of Mesopotamian medical knowledge. The diagnostic treatise is organized in head to toe order with separate subsections covering convulsive disorders, gynecology and pediatrics.

3. By examining the surviving medical tablets it is clear that there is a historical background for two distinct types of professional medical practitioners in ancient Mesopotamia. When treating wounds the asu generally relied on three fundamental techniques: (1) washing, (2) bandaging, and (3) making plasters and soaps. The first type

of practitioner was the ashipu, in older accounts of Mesopotamian medicine often called a "sorcerer." One of the most important roles of the ashipu was to diagnose the ailment. In the case of internal diseases, this most often meant that the ashipu determined which god or demon was causing the illness. The ashipu also attempted to determine if the disease was the result of some error or sin on the part of the patient. The ashipu could also attempt to cure the patient by means of charms and spells, regimens, designed to entice away or drive out the spirit causing the disease. The ashipu could also refer the patient to a different type of healer called an asu. He was a specialist in herbal remedies, and in older treatments of Mesopotamian medicine was frequently called "physician" because he dealt in what were often classifiable as empirical applications of medication.

4. The majority of health care was provided at the patient's own house, with the family acting as care givers in whatever capacity their lay knowledge afforded them. Outside of the home, other important sites for religious healing were nearby rivers. The Mesopotamian believed that the rivers had the power to care away evil substances and forces that were causing the illness. Sometimes a small hut was set up for the afflicted person either near the home or the river to aid in the family centralized home health care. Herodotus (born 490 BC) visited Babylon, and set down his impressions for posterity. He wrote, having no use for physicians, they carry the sick into the marketplace, then those who have been afflicted themselves by the same ill as the sick man's, or seen others in like case, come near and advise him about his disease and comfort him, telling him by what means they have themselves recovered of it or seen others so recover. None may pass by the sick man without speaking and asking what is his sickness. Herodotus was however prone to exaggeration.

5. The Ancient Mesopotamians also knew how to make a kind of soap thousands of years before soap factories were thought of in the civilized countries of Europe. Ashes of plants noted for their soda content were mixed with fats and the result was an ointment of a soapy nature. When in about the thirteenth century BC, the Assyrian kingdom gained supremacy in the land between the two rivers, surprisingly modern ideas and a sometimes quite remarkable gift for observation turned up in Mesopotamian medicine. Assyrian doctors knew there was a connection between some general illnesses and some dental disease, that the appearance of plague was preceded by a mass-death of rats, they suspected the connection between mosquitoes and several different kinds of fever, and even the infrequent appearance of oriental boils, whose virus is transmitted by flies, established the belief that the flies were identified with harmful demons. The doctors also knew the clinical aspects of tuberculosis, pellagra, pneumonia, jaundice, inflammation of the gastric mucosa, intestinal obstructions, strokes, abscesses of the middle ear, lithiases and urogenital diseases. They knew, too, that cancer of the breast was a destructive illness. Mesopotamian doctors certainly carried out operations for cataract using bronze needles as long ago as 2000 BC. Catheters have also been found. Most surprising of all seems the extensive pharmacopoeia. Enemas, suppositories and advice on diets completed the medical panoply. In addition to a mass of demon-worship, magic and enchantment, those ancient practitioners also developed thoroughly rational methods of treating illness.

E. Two time periods in Indian History particularly contributed to the development of contemporary medical practice the Vedic Age (until 800 B.C.) Brahmanic Age (800-1000 B.C.). Ayurvedic medicine-- "the knowledge needed for longevity"--emerges from the Vedic age. Around 1500 B.C., Ayurveda was delineated into eight specific branches of medicine. There were two main schools of Ayurveda at that time, Atreya- the school of physicians; and Dhanvantari- the school of surgeons. These two schools made Ayurveda a more scientifically verifiable and classifiable medical system. Swami Sada Shiva Tirtha History of Ayurveda explains passages related to Ayurveda from the various Vedas were compiled to make separate books, dealing only with Ayurveda. Among the Rik Veda's 10,572 hymns, are found discussions on organ transplants, and artificial limbs, the use of herbs to heal the diseases of the mind and body and to foster longevity. Within the Atharva Veda's 5,977 hymns, are discussions of anatomy, physiology and surgery. The Brahmanic Age occurred after Indian was submitted to Islamic Rule and Arab doctors had taken over practice. It was based on the caste of Hindu priests. There was a highly-developed sense of hygiene in the Vedic and Brahmin science of medicine in ancient India. Anatomy and surgery reached a higher level of development in Ancient Indian than in other ancient civilizations. However with colonial intervention in the 1800s people abandoned the Ayurvedic "no open defecation laws" to develop slums at low cost and cholera epidemics are common and the Ganges is source of the world's epidemics.

1. The Indus Valley civilization, according to most recent discoveries, reached its peak around the year 2000 B.C. The cities of that time, which were excavated after the Second World War, bear witness to the surprisingly highly developed system of hygiene which far surpasses any similar arrangements brought to light in Egypt and Mesopotamia. Tiled drainage canals and drainpipes carried away waste water and excrement, magnificent bathing establishments, whose swimming pools survived undamaged for four thousand years, steam baths, changing and rest rooms, show the highly civilized level which had been reached in those far-off times. About the middle of the twentieth century B.C., the Indus Valley kingdom, that thousands of years earlier had anticipated so many of the hygienic achievements or our own day, began to decline. Light-skinned Indo-Germanic invaders were responsible. They called themselves Hindu, and penetrated into the river valleys of the Indus and Ganges. The Vedic era begins in about 1500 B.C with the intermingling of dark skinned inhabitants and light skinned invaders, and owes its name to the Veda, the four holy Sanskrit books of the Indians, which represent the earliest record of Indian literature to come down to us. The Veda are of special interest to the history of medicine because, as the oldest Indian literary monuments, they transmit the earliest information about the diseases of Ancient India and their medical treatment. We encounter the view that disease is a punishment for sins committed and confession is a healing measure.

2. Ayurveda is made up of two Sanskrit words: Ayu which means life and Veda which means the knowledge of. Ayurveda is a wholistic system of medicine from India that uses a constitutional model. Its aim is to provide guidance regarding food and lifestyle so that healthy people can stay healthy and folks with health challenges can improve their health. There are several aspects to Ayurveda that are quite unique: Its recommendations will

often be different for each person regarding which foods and which lifestyle they should follow in order to be completely healthy. This is due to the use of a constitutional model. Everything in Ayurveda is validated by observation, inquiry, direct examination and knowledge derived from the ancient texts. It understands that there are energetic forces that influence nature and human beings. These forces are called the Tridoshas. Because Ayurveda sees a strong connection between the mind and the body, a huge amount of information is available regarding this relationship. Ayurvedic procedure involves questioning the patient, inspection, touch, examination. Pulse-taking: attributed to Indian medicine: one of techniques applied to patient.

3. Epidemic diseases such as malaria, bubonic plague, cholera, leprosy and smallpox play an important part in the ancient texts. The Vedic books provide evidence of the existence of a highly developed science of healing in Ancient India. The Vedicv doctors knew about many healing herbs, they knew how to cauterize wounds and cases of snake-bite, they used an instrument like a catheter to treat cases of urine retention and they even constructed artificial limbs and eyes. A further text contains descriptions of tuberculosis, rheumatism, arthritis, epilepsy, the swelling of elephantiasis, dropsy and numerous other afflictions, as well as the plagues of tropical infections. The Vedic era of Indian medicine continued until about 800 B.C. It was superseded by the Brahmin era, which was to last until the end of the first millennium A.D. This era is named after the caste of wise men, or Brahmins who determined the whole cultural trend and, with it, that of medical science.

4. Brahma represented the ever-present, godlike, true and unchanging essence of all things, the world-soul, this all-one essence was, above all, inherent in the priestly man, the Brahmin. The doctors stood far below them. Below even the caste of warriors and they were awarded none of the usual honours. Doctors were not trained in temples and schools of priesthood but had to pass through regular years of apprenticeship. Such a training, based on practical experience, necessarily meant that the science of healing was predominantly organized on a rational basis. A student's apprenticeship lasted from his twelfth to his eighteenth year during which time he had not only to read medical texts but also to acquire practical experience in nursing, surgical treatment, visiting patients and preparing medicines. Alexander the Great's expedition to India, between 327 and 325 BC, created additional points of contact between India and Europe. During the first centuries AD, medical knowledge in Ancient India attained glittering heights and the position of doctor, which had once been so low, now acquired great prestige. Three doctors stand out in particular: Charana, who lived at about the beginning of the Christian era, Susruta, who practiced about five hundred years after Christ's birth, and Vaghbata, who lived during the seventh century A.D.

5. One principle highly regarded by the doctors of Ancient India was giving as much attention to the prevention of illness as to its cure. Accordingly, certain diets prescribed for various illnesses, breathing exercise, general cleanliness and brushing of teeth recommended. However the rules of health did not just restrict themselves to the physical plane, there was even a regular psycho-hygiene of rules of the health of the soul, which rested on the modern premise that without peace of mind or inner harmony there

can be no true state of health. No fewer than 1,120 different diseases were known to the Ancient Indian doctors. They were familiar with diabetes, which they recognized by the sweet honey taste of the patient's urine. They pondered the causes of epidemics, in a land of epidemics. They suspected that malaria was transmitted by mosquitoes, that food contaminated by flies could bring about intestinal diseases, and they observed,quite correctly, that the appearance of bubonic plague was always preceded by mass death of rats. The great number of plants used for medicinal purposes is conspicuous in the Ancient Indian system, where more than seven hundred different herbs were used. In addition, there were also numerous medicines made from animal and mineral products, quite extraordinary healing powers were ascribed to mercury. One of the healing plants of Ancient India Rauwolfia serpentine, has acquired a high reputation in modern medicine. Its alkaloid, reserpin, was rediscovered as recently as 1949, as a successful remedy for high blood pressure. The Ancient Indians also use this plant, which, because of its crescent-shaped fruit, was called 'moon plant' as a sedative in cases of anxiety. This treatment experienced a remarkable resurrection in 1954 when it was realized that reserpin could be used to alleviate many psychotic conditions.

6. The moral code governing the practice of the doctor's profession was exemplary, "a doctor must care for the curing of his patient with his whole heart even if his life should be in jeopardy. He may not move too near another man's wife, even in thought, he may not treat women unless their master or supervisor is present. In his clothing and general outward appearance he must be simple and modest and he must keep himself free of bad company. The extremely thorough and conscientious doctor's training ended with the swearing of an oath which, in several respects, resembled Hippocrates, in fact to such an extent that some people think the oath of the sage of Kios bears some kind of relationship to that sworn by Ancient Indian doctors. Special mention was made of the doctor's obligation to preserve silence about the patient's affairs and not to tell the patient if his death was imminent, never to boast of his knowledge but use every opportunity to extend his skills and during examinations, to preserve all the rules of decency, always to be more solicitous for the patient's welfare than his own gain, the precepts remind one strongly of the Hippocratic Oath. The establishment of hospitals took place about a thousand years earlier in India than it did in the lands of the West. With the prophet Gautama Buddha, who lived from about 560 to about 480 B.C, a wave of religious fervor swept through India, hospitals were founded as a result of his teaching as they were later, during the Middle Ages, to be found in Europe by the Christian orders. Modern Western-oriented medical practices are only very gradually gaining a foothold among the broader strata of people living in the Indian sub-continent.

F. The Mayan chronology begins with 3113 B.C. by our own method of reckoning. According to the ancient pictograms, especially those of the Tizmin chronicle, which have now been completely deciphered, an epidemic of yellow fever raged among the Maya people two centuries and it was so virulent that the greater part of the population, especially the upper stratum died of the plague. The fluctuating waves of yellow fever had already been weakening the ancient high civilization for almost a century and as they marched into the interior, the Spaniards could not but marvel at the many towns full of monumental ruins which had already been largely reclaimed by the jungle. Houses have

been found which once served as steam baths, containing hot and cold rooms, and one has every right to assume that a people who had such excellent hygienic arrangements at their disposal would also possess a high standard of medical knowledge. However, here we can only rely on guesswork for, by order of the third bishop of Yucatan, Diego de Landa, in the year 1562, all the historical books of the Maya were publicly burnt as works of the devil and as a result, the sole, irreplaceable source material about he early period of Maya civilization was destroyed for ever. Only a few scanty fragments, which can scarcely be said to deal with the Maya medical science, miraculously escaped the general conflagration and later turned up in Spain. They are now in Dresden, Paris, and Madrid. The belief is that water by the coast is brackish and the Mayans contaminated inland drinking water sources by throwing ceremonial human sacrifice victims in the waters of the cenotes, such as the winners or losers, depending on the rules of the time, of ceremonial pelota, ball games, and abandoned the cities in pursuit of wild game in the jungle, to cure the diarrhea from iron deficiency anemia from their diet of tomatoes, chiles, beans and corn.

1. South Americans raised lamas and alpacas or lived in a jungle. The doctors of Ancient Peru also had a considerable knowledge of drugs. Balsam of Peru or copaiba, which is obtained form the balsam tree (myroxylon) is still in use today as is cocaine, the alkaloid derived from the leaves of the coca bush. The medical knowledge of Ancient Peru was unquestionably superior to that of the Aztecs in the realms of surgery. Amputations were performed and artificial limbs made ending in a hollow wooden cylinder to accommodate the stump. The Incas were also active in obstetrics, they removed tumors surgically and carried out trepanations in large numbers in accordance with the most diverse, far-reaching methods, at first with knives made of obsidian and later with copper and bronze instruments. Skulls that have been found clearly show that a considerable percentage of the trepanations healed successfully. The extent to which the Incas carried out a system of public health welfare is really astonishing and seems modern in the best sense of the world. Once a year, a big festival of health took place, in the course of which a thorough cleaning of all houses and dwellings was undertaken. Care for old people, no longer capable of work, was highly developed. Attempts were made to offer them a suitable occupation and the State was responsible for their keep. The State also looked after the lame, crippled and deformed citizens, and they were forbidden to marry. Their extraordinary perspicacity is borne out by the fact that they undertook forceful measures to prevent the misuse of medicines and also knew how to discourage drug addiction. But in spite of all progress in rational healing processes and outstanding hygienic conditions, the doctors of Ancient Peru did not abandon the god and demon worship, the magic diseases and invocation of spirits which were also so much a part of their medical practice. The inhabitants of the Inca kingdom, as their predecessors had done before them, kept alive the belief that the cause of an illness could be found in the sins of the patient.

2. The hygienic conditions in the capital of the Aztec, Tenochtitlan, later to be known as Mexico City, were found to be far superior to those in contemporary towns of the Old World. Steam and sweating baths served for the treatment rheumatism, a great number of medicines were stored ready for use in the pharmacies, the list of drugs used by the

Aztecs was immense, they knew no less than 1,200 medical plants of which several, such as the sarsaparilla root and Chenopodium-wormseed oil, have maintained their medicinal use to his day. The Ancient Aztecs used the powdered leaves of the tobacco plant as a specific against various kinds of disease as well as for enjoyment. There is no collection of medicines in any other ancient civilization which contains quite so many narcotic and intoxicating drugs as that of the Ancient Mexicans. Of these magic drugs, which were used by the ancient inhabitants of the Aztec lands to induce states of trance, three have become most widely known, the peyote cactus, the nanakatk fungus and the seed from a species of bindweed called oluiliuqui. A less dangerous endowment made by the Aztecs to the Old World was the cocoa bean.

3. Aztec doctors used enema syringes made of rubber, and prepared cantharides plasters from the juice of the rubber tree. The specialization of doctors appears to have been as extensive as that of the Ancient Egyptians. There were specialists for eyes, dentists, specialists in phlebotomy, intestinal and bladder complaints, as well as surgeons who treated wounds by sewing them up with human hair, set broken bones, plated fractures and carried out caesarian sections. Dietary prescriptions and physical therapy were widespread and hospitals were available for clinical treatment. The Aztecs had penetrated from the north only about four centuries before the Spanish invasion and barbarians themselves, had taken over the civilization they found there, a civilization which, stretched back in part to the middle of the second millennium BC, and whose origins are to be found among the Olmeks on the coast of the gulf of Mexico. The Aztecs were notorious cannibals who slaughtered tens of thousands of prisoners of war and threw human body parts from the top of their pyramids to the Aztecs and chihuahuas waiting in the city below. Neighboring Mayan and surviving Olmek tribes led Cortes to overthrow the Aztecs, at the first chance, setting dangerous military precedence for the South American conquest by Pizarro.

G. What none of the ancient civilizations had succeeded in doing, neither the Egyptian, the Mesopotamian, the Chinese and Indian nor the pre-Columbian American, was the separation of medicine from god and demon-worship, invocations, sorcery, magic or expiatory sacrifice, the Greeks, a comparatively small nation in the Eastern Mediterranean managed to achieve. This decisive break was made more than two-and-a-half thousand years ago. The new attitude had its roots in the Trojan was which ended in the destruction of Troy, in the year 1184 B.C., made no use at all of magic spells and incantations. Instead, the Homeric doctors were practical men, they were appointed as military surgeons, soldiers and doctors in one. Their chief function was the care of war wounds. During the following centuries, philosophical thought was centered among the Greeks who had settled on the coast of Asia Minor and its off-shore islands. Schools of pupils and disciples grew up round an outstanding philosopher. The founders and leaders of these intellectual communities were generally also doctors. Philosophy and medicine influenced each other more than ever before and resulted in a synthesis which ahs not changed to this day. These men ruled out all though to magic in their search for truth, they sought to establish the fundamental principles of natural science such as space, matter, time motion, life etc. by exploring these subjects with a critical mind. A gigantic revolution in human though divides them from the rest, a thirst for knowledge an innate

struggle for reason, were the peculiarities of this new human mentality. It was in Ancient Greece that the search for knowledge freed itself from magic or priestly ties for the first time. It was here that people first began to reflect on the harmony of the world and the purpose of existence, here that they began to observe nature and themselves, trying to understand man in all his aspects, who, after all, is himself no more than a part of nature.

1. Hippocrates of Cos (c.460-380 B.C.) is considered to be the "Father of Medicine" little is known about him. It is generally accepted that he was roughly a contemporary of Socrates and was a practicing physician. It also seems likely that Hippocrates would have been an Asclepiad. The Asclepiads were members of a guild of physicians which traced its origins to Asclepius, the god of healing. Tradition also tells us that Hippocrates was the most famous physician and teacher of medicine of his time, maybe of all-time. Over 60 medical treatises that have traditionally been attributed to Hippocrates. These treatises are collectively referred to as the Hippocratic Corpus. Most of these treatises, however, were not written by Hippocrates himself. In fact, several of the existent treatises were written well after the life of Hippocrates. The treatises themselves were written over about a two hundred year period and range in date from c.510-c.300 B.C., so clearly one man could not have authored all of them. Although it is likely that Hippocrates did compose some of the treatises, none of the 60 treatises can positively be attributed to Hippocrates although they are similar in looking for natural explanations and treatments of illness and rejecting sorcery and magic. Beyond the actual theories set forth by the Presocratics, however, the early doctors were also influenced by the philosophers' use of rational thought. Greek physicians influenced by the Presocratics began to make careful observations of medical problems and to apply logic to medical treatments. Ultimately, the influence of the Presocratics encouraged early physicians to employ reason in order to progressively develop medical knowledge, rather than resorting to supernatural explanations.

2. The Hippocratic Epidemics consists of seven books which record the observations made by their doctor-authors during the course of their travels as itinerant physicians in northern Greece -- Thessaly, Thrace, and the island of Thasos -- at the end of the fifth and in the first half of the fourth centuries. In addition to the case histories, each book of the Epidemics contains two other types of material: constitutions and generalizations (aphorisms, prognostic indications, lists of things to consider, various notes). The constitutions are summary accounts of the climatic conditions and the illnesses encountered by the doctor in a particular locality over a specific period of time, usually a year. The books of the *Epidemics* form a series that covers the period between 410 and 350 and that they have at least three different authors, and probably more. The earlier books are more rigorously prognostic, with few indications of treatment and a strict concentration on the description of symptoms. In the later books the course of the illness is less often followed in detail and indications of treatment are more frequent. Hippokrates' summary definition of the art of medicine: "the deliverance of the sick from pain and the reduction of diseases' violence, and the knowledge that medical art is unavailing in some cases." Indeed it is often the case that where human skill had been of no avail the patient turns to god.

3. The Iliad is attributed with being the historical foundations for the written philosophy of medicine. The treatise chronicles part of the tenth and final year of the Trojan War. Within the text of this poem, Homer mentions nearly 150 different wounds. Most of these wounds are described with surprising anatomical accuracy. For instance, in the Iliad, Harpalion, a prince allied with the Trojans, is struck from behind by an enemy arrow. Homer explains that this was a fatal wound, for although the arrow entered near the right buttock, it sliced through the body, missed the pelvic and pubic bones, and hit the bladder. Wound after wound is described in a similar fashion in the Iliad. Spears and arrows strike specific internal organs according to their point of entry and trajectory. Homer also seems to have had an appreciation of which kinds of wounds were lethal. In the Iliad, wounds to the arms and legs are painful but not deadly (the story of Achilles' and his famous heel is not mentioned in the poem). On the other hand, all of the 31 different head wounds were lethal. Beyond the description of wounds, to a lesser extent Homer also recorded the care given to an injured warrior. Generally speaking, medical care focused on the comfort of the wounded man and not on treating the wound itself. Among the warriors, however, there were a few who were considered to be specialists in the art of healing through means of herbal remedies and bandaging. One of these doctors was Machaon, the son of the legendary healer Asclepius who later became deified. When Machaon was wounded himself, however, he was treated by being given a cup of hot wine sprinkled with grated goat cheese and barley. From these meager beginnings, Greek medicine rapidly developed over the course of the next several centuries.

4.The oldest schools of philosophy and medicine was situated on the periphery of the Magna Graecia of those days. It was built about 700 B.C. in Cnidus on the far, outjutting point of Cnidian Chersonese on the south-west coast of Asia Minor, north of Rhodes. According to tradition it seems that diagnosis played a leading part. Treatment was concentrated more on the area where the patient’s pain was felt rather than on the whole of his body. During the sixth century B.C. the Greeks founded a medical school at Cos, one of the Dodecanese Islands off the south-west coast of Asia Minor. This school acquired immortal fame because of the idealized image of the doctor who taught there, Hippocrates. Another medical school grew up in Croton on the Gulf of Tarentum. The names of two of the Greek doctors who taught at this school have remained with us, they are Democedes and Alcmaeon. Democedes, who travelled all over the then known Greek world, practised his profession during his travels, from Alcmaeon, who was convinced that without a knowledge of the human body an efficient medical science would be impossible, stems the first Greek textbook on anatomy. Alcmaeon expressed the thoroughly advanced view that illness is brought about as a result of an imbalance between the different components of the human body. According to the teachings of Empedocles, a native of Agrigento on the south coast of Sicily, these body components apparently consisted of the body liquids, blood, mucous, yellow gall and black gall, their places of origin being, it was thought, the heart, the brain, the liver and the spleen. 69-70 Democritus of Abdera was born about 460 B.C. in Thrace. From Democritus stems the theory of atoms, according to which a multitude of tiny, indivisible particles spins about in space and so brings forth matter. Democratus did not confine himself to philosophy, ethics, and poetry, he was also a doctor, as is evidenced by a saying his which is so apt today, “ Men pray to their gods for health, they do not realize that they have control over

it themselves. They jeopardize it by their excesses and so their greed makes them traitors to their health. The great humanity of Democritus' philosophy is confirmed by his conviction that the best kind of happiness was one which derived from a cheerful disposition.

5. When Aristophanes was born, Hippocrates was just ten years old. He was destined to become the idealized image of a doctor of all time, and the sobriquet 'the great' was not added to his name at some later date, Aristotle had already called him this. Galen describes his as the godly. The Middle Ages turned him into the father of Medicine, for what has been discovered today about the medical sciences of the older civilizations was totally unknown at that time. Even though we ourselves no longer believes that medical science began with Hippocrates, we cannot help but commend his outstanding new conception of the truth ethics of medicine which has remained valid to this day. Hippocrates was born about 460 B.C., the son of the doctor Heraclides. His mother, Phainarete, was a descendant of the family of Aesculapius, one of the noble families of Cos, whose ancestral line, which went back to the sixth century BC, was said to descend from the god of healing himself. In ancient times, Hippocrates was already thought the greatest doctor of all times, the father of doctors, in fact the classical originator of medical science. He received his initial training from his father, and counted Herodicos, the Sophist gorgias, and the philosopher Democritus of Abdera, among his later teachers. He was born in a brilliant era. Socrates was pronouncing his philosophy, Thucydides was at work on his histories, Sophocles was thrilling audiences with his trageides, Praxiteles was creating his unique masterpieces of sculpture and Preicles was practicing his brilliant statesmanship.

6. Hippocrates practiced his profession on countless journeys through Hellas and the cures which he achieved soon caused him to become the most famous doctor in his own country, and one who was constantly called in when all other help had failed. He spent some time Chizikos on the Propontis, also in Meliboia and Abdera in Thrace. He visited the island of Thasos and according to tradition, perhaps even travelled to southern Russia, Egypt and Kyrenia. In 429 BC he was in Athens fighting the plague which claimed Pericles among its victims and he spent the last days of a life rich in fulfillment and blessings in Thessalian Larissa, where he died in 377 BC. He was concerned not just to treat a sick organ, but with the whole patient, his attention was always fixedo nthe general condition, the toality of the sick man. The human body is a circle, of which each part may be esteemed as both the beginning and the end, of the knowledge of their parts, their sympathy and communication. By the affection of one part, the whole body may become affected. The writings of Hippocrates and Galen present a genuinely warm humanitarian attitude as the fundamental basis on which his healing activities were built. He maintained that the chief aim of treatment was to draw observation of nature, the constitution and circumstances of life into the field of examination in support of the natural healing processes. Hippocrates greatest contribution was his belief in the ethics governing the practice of medicine, as expressed by the Oath.

7. It is not certain whether Hippocrates himself left any written work to posterity, of the seventy-two books which were written between 480 and 380 B.C. and assembled in

Alexandria under the title, *Corpus Hippocraticus*, during the third century BC. The book *The Sacred Disease* (*De Morbum Sacrum*) confirms most unequivocally the total separation of Hippocratic medicine from any involvement with magic. It begins by saying in a downright authoritative way, I am about to discuss the disease called sacred. It is not, in my opinion, any more divine or more sacred than other diseases, but has a natural cause, and its supposed divine origin is due to men's inexperience, and to their wonder at its peculiar character. The *Corpus Hippocraticus* deals with different branches of medicine. One book entitled *About Air, Water and Places* was on medical climatology. *About the Nature of Man* describes the theory of body liquids in utmost detail. The theory was based on the existence of four cardinal fluids: blood, mucous, yellow gall and black gall. Moreover blood represented the warm-damp principle, mucous the cold-damp, yellow gall the arm-dry and black gall the cold-dry principle. Other fluids were the intestinal juices, lymph and semen.. Illness was the result of a wrong mixture of the liquids of dykrasy; health on the other hand, depended on the correct blending of the liquids, or eukrasy, as a result of which the harmony of an organism was guaranteed. The book *Prognosticon* evidently comes from Hippocrates himself. It demonstrates a very sharp talent for observation and by means of accurately described symptoms, explains the prognoses which played an important role in Hippocratic medicine. A feature common to all books, in spite of some contradictions, is that they are al imbued with the Hippocratic spirit and put professional ethics before all other medical virtues. This attitude is expressed most forcibly in the Law and the Doctor.

8. It was thought that food alone would not achieve health, many other things had to be added, gymnastics, strengthening exercises, baths, massage, the use of light, air and water, breathing exercises, voice exercises and may more things besides. Finally, it was believed that every case demanded its own special diet. High standards of professional ethics can be found in the medical sciences of much older civilizations and much higher levels of treatment by medicines of surgery and hygiene can sometimes be found thousands of years before Hippocrates. It is important to help, or at least not to harm, to undertake nothing useless, but also not to overlook anything. A short time after Hippocrates death, during the fourth century B.C., a doctor became famous who, by his research and knowledge, demonstrates that interest in anatomy was beginning to become more and more active. Diocles was a known in Athens as a second Hippocrates. He was a much-travelled man. He wrote sixteen books, but, though all the titles are known, of the texts only fragments remain. One of them deals with anatomy, medical plants and poisons. What he wrote about a healthy way of life has come down to us intact and deserves full attention even today, two thousand three hundred years later: Rise before sun-up. Wash the face and head. Tooth-care – whereby gums and teeth should be carefully rubbed with peppermint powder. Rub oil into the whole body. Then take a little walk before starting work. At midday visit the gymnasium and perform physical exercise. Then have a bath and massage. Breakfast is understandably plain: bread, a light porridge with vegetables, cucumbers or similar vegetables, depending on the season, everything being prepared simply. Quench the thirst with water before eating. After the meal, drink white wine mixed with water and a little honey. After breakfast, during the midday heat, come sth siesta, in a cool shady spot free from draught, as in all southern countries. Then back to work and later another visit to the gymnasium. In summer, the

main meal takes place during the evening shortly before sunset. It consists of fruit, vegetables, bread and fish or meat. The day ends with a short walk and bed sought early.

CHAPTER 9—HOSPITALIZATION OF MENTALLY ILL NATIONALS RETURNED FROM FOREIGN COUNTRIES

§321. Definitions

For the purposes of this chapter except as the context may otherwise require—
(a) The term "Department" means the Department of Health and Human Services.
(b) The term "Secretary" means the Secretary of Health and Human Services.
(c) The term "State" means a State or Territory of the United States, the Commonwealth of Puerto Rico, or the District of Columbia.
(d) The term "eligible person" means an individual with respect to whom the following certificates are furnished to the Secretary:
(1) A certificate of the Secretary of State that such individual is a national of the United States; and
(2) Either (A) a certificate obtained or transmitted by the Secretary of State that such individual has been legally adjudged insane in a named foreign country, or (B) a certificate of an appropriate authority or person (as determined in accordance with regulations prescribed by the Secretary of Health and Human Services) stating that at the time of such certification such individual was in a named foreign country and was in need of care and treatment in a mental hospital.

(e) The term "residence" means residence as determined under the applicable law or regulations of a State or political subdivision for the purpose of determining the eligibility of an individual for hospitalization in a public mental hospital.

(Pub. L. 86–571, §1, July 5, 1960, 74 Stat. 308; Pub. L. 96–88, title V, §509(b), Oct. 17, 1979, 93 Stat. 695.)

Change of Name. "Department of Health and Human Services" substituted for "Department of Health, Education, and Welfare" in subsec. (a) and "Secretary of Health and Human Services" substituted for "Secretary of Health, Education, and Welfare" in subsecs. (b) and (d)(2), pursuant to section 509(b) of Pub. L. 96–88 which is classified to section 3508(b) of Title 20, Education.

Effective Date. Pub. L. 86–571, §11, July 5, 1960, 74 Stat. 310, provided that: "This Act [enacting this chapter and repealing sections 191a and 196a of this title] shall, except as otherwise specified, take effect on the date of its enactment [July 5, 1960]."

§322. Reception of eligible persons at ports of entry or debarkation

(a) Arrangements for care, treatment, and assistance
Upon request of the Secretary of State, the Secretary of Health and Human Services is authorized (directly or through arrangements under this subsection) to receive any eligible person at any port of entry or debarkation upon arrival from a foreign country and, to the extent he finds it necessary, to temporarily care for and treat at suitable facilities (including a hospital), and otherwise render assistance to, such person pending his transfer or hospitalization pursuant to other sections of this chapter. For the purpose of providing such care and treatment and assistance, the Secretary is authorized to enter into suitable arrangements with appropriate State or other public or nonprofit agencies. Such arrangements shall be made without regard to section 6101 of title 41, and may provide for payment by the Secretary either in advance or by way of reimbursement.
(b) Payment or reimbursement for care, treatment, or assistance
The Secretary may, to the extent deemed appropriate, equitable, and practicable by him, (1) require any person receiving care and treatment or assistance pursuant to subsection (a) to pay, in advance or by way of reimbursement, for the cost thereof or (2) obtain reimbursement for such cost from any State or political subdivision responsible for the cost of his subsequent hospitalization.

(Pub. L. 86–571, §2, July 5, 1960, 74 Stat. 308; Pub. L. 96–88, title V, §509(b), Oct. 17, 1979, 93 Stat. 695.)

Codification. In subsec. (a), "section 6101 of title 41" substituted for "section 3709 of the Revised Statutes, as amended (41 U.S.C. 5)" on authority of Pub. L. 111–350, §6(c), Jan. 4, 2011, 124 Stat. 3854, which Act enacted Title 41, Public Contracts.

Change of Name. "Secretary of Health and Human Services" substituted in text for "Secretary of Health, Education, and Welfare" pursuant to section 509(b) of Pub. L. 96–88 which is classified to section 3508(b) of Title 20, Education.

§323. Transfer and release to State of residence or legal domicile, or to relative

If, at the time of arrival in the United States, the residence or the legal domicile of an eligible person appearing to be in need of care and treatment in a mental hospital is known to be in a State, or whenever thereafter such a person's residence or legal domicile in a State is ascertained, the Secretary shall, if the person is then under his care (whether directly or pursuant to a contract or other arrangement under section 322 or 324 of this title), endeavor to arrange with the proper authorities of such State, or of a political subdivision thereof, for the assumption of responsibility for the care and treatment of such person by such authorities and shall, upon the making of such arrangement in writing, transfer and release such person to such authorities. In the event the State of the residence or legal domicile of an eligible person cannot be ascertained, or the Secretary is unable to arrange with the proper authorities of such State, or of a political subdivision thereof, for the assumption of responsibility for his care and treatment, the Secretary may, if he determines that the best interests of such person will be served thereby, transfer and release the eligible person to a relative who agrees in writing to assume responsibility for such person after having been fully informed as to his condition.

(Pub. L. 86–571, §3, July 5, 1960, 74 Stat. 308.)

§324. Care and treatment of eligible persons until transfer and release

(a) Place of hospitalization
Until the transfer and release of an eligible person pursuant to section 323 of this title, the Secretary is authorized to provide care and treatment for such person at any Federal hospital within or (pursuant to agreement) outside of the Department, or (under contract or other arrangements made without regard to section 6101 of title 41) at any other public or private hospital in any State and, for such purposes, to transfer such person to any such hospital from a place of temporary care provided pursuant to section 322 of this title. In determining the place of such hospitalization, the Secretary shall give due weight to the best interests of the patient.
(b) Ineligible persons
The authority of the Secretary to provide hospitalization for any person under this section shall not apply to any person for whose medical care and treatment any agency of the United States is responsible.

(Pub. L. 86–571, §4, July 5, 1960, 74 Stat. 309; Pub. L. 98–621, §10(r), Nov. 8, 1984, 98 Stat. 3381.)

Codification In subsec. (a), "section 6101 of title 41" substituted for "section 3709 of the Revised Statutes, as amended" on authority of Pub. L. 111–350, §6(c), Jan. 4, 2011, 124 Stat. 3854, which Act enacted Title 41, Public Contracts. Amendments. 1984—Subsec. (a). Pub. L. 98–621 substituted "any" for "Saint Elizabeth Hospital, at any other" after "for such person" in first sentence. Effective Date of 1984 Amendment. Amendment by Pub. L. 98–621 effective Oct. 1, 1987, see section 12(b) of Pub. L. 98–621 set out as an Effective Date note under section 225 of this title.

§325. Examination of persons admitted

(a) Time and frequency of examination; discharge
Any person admitted to any hospital pursuant to section 322 or section 324 of this title shall, as soon as practicable, but in no event more than five days after the day of such admission, be examined by qualified members of the medical staff of the hospital and, unless found to be in need of hospitalization by reason of mental illness, shall be discharged. Any person found upon such examination to be in need of such hospitalization shall thereafter, as frequently as practicable but not less often than every six months, be reexamined and shall, whenever it is determined that the conditions justifying such hospitalization no longer obtain, be discharged or, if found to be in the best interests of the patient, be conditionally released.
(b) Notice to legal guardian, etc.
Whenever any person is admitted to a hospital pursuant to this chapter, his legal guardian, spouse, or next of kin shall, if known, be immediately notified.

(Pub. L. 86–571, §5, July 5, 1960, 74 Stat. 309.)

§326. Release of patient

(a) Request; determination of right to retain; retention after request
If a person who is a patient hospitalized under section 322 or 324 of this title, or his legal guardian, spouse, or adult next of kin, requests the release of such patient, the right of the Secretary, or the head of the hospital, to detain him for care and treatment shall be determined in accordance with such laws governing the detention, for care and treatment, of persons alleged to be mentally ill as may be in force and applicable generally in the State in which such hospital is located, but in no event shall the patient be detained more than forty-eight hours (excluding any period of time falling on a Sunday or legal holiday) after the receipt of such request unless within such time (1) judicial proceedings for such hospitalization are commenced or (2) a judicial extension of such time is obtained, for a period of not more than five days, for the commencement of such proceedings.
(b) Transfer to another hospital
The Secretary is authorized at any time, when he deems it to be in the interest of the person or of the institution affected, to transfer any person hospitalized under section 324 of this title from one hospital to another, and to that end any judicial commitment of any person so hospitalized may be to the Secretary.

(Pub. L. 86–571, §6, July 5, 1960, 74 Stat. 309.)

§327. Notification to committing court of discharge or conditional release

In the case of any person hospitalized under section 324 of this title who has been judicially committed to the Secretary's custody, the Secretary shall, upon the discharge or conditional release of such person, or upon such person's transfer and release under section 323 of this title, notify the committing court of such discharge or conditional release or such transfer and release.

(Pub. L. 86–571, §7, July 5, 1960, 74 Stat. 310.)

§328. Payment for care and treatment

(a) Persons liable; scope of liability; compromise or waiver; investigations; judicial proceedings. Any person hospitalized under section 324 of this title or his estate, shall be liable to pay or contribute toward the payment of the costs or charges for his care and treatment to the same extent as such person would, if resident in the District of Columbia, be liable to pay, under the laws of the District of Columbia, for his care and maintenance in a hospital for the mentally ill in that jurisdiction. The Secretary may, in his discretion, where in his judgment substantial justice will be best served thereby or the probable recovery will not warrant the expense of collection, compromise or waive the whole or any portion of any claim under this section. In carrying out this section, the Secretary may make or cause to be made such investigations as may be necessary to determine the ability of any person hospitalized under section 324 of this title to pay or contribute toward the cost of his hospitalization. All collections or reimbursement on account of the costs and charges for the care of the eligible person shall be deposited in the Treasury as miscellaneous receipts. Any judicial proceedings to recover such costs or charges shall be brought in the name of the United States in any court of competent jurisdiction.

(b) "Costs or charges" defined. As used in this section, the term "costs or charges" means, in the case of hospitalization at a hospital under the jurisdiction of the Department of Health and Human Services, a per diem rate prescribed by the Secretary on a basis comparable to that charged for any other paying patients and, in the case of persons hospitalized elsewhere, the contract rate or a per diem rate fixed by the Secretary on the basis of the contract rate.

(Pub. L. 86–571, §8, July 5, 1960, 74 Stat. 310; Pub. L. 96–88, title V, §509(b), Oct. 17, 1979, 93 Stat. 695.)

Change of Name. "Department of Health and Human Services" substituted in text for "Department of Health, Education, and Welfare" pursuant to section 509(b) of Pub. L. 96–88 which is classified to section 3508(b) of Title 20, Education.

§329. Availability of appropriations for transportation

Appropriations for carrying out this chapter shall also be available for the transportation of any eligible person and necessary attendants to or from a hospital (including any hospital of a State or political subdivision to which an eligible person is released under section 323 of this title), to the place where a relative to whom any person is released under section 323 of this title resides, or to a person's home upon his discharge from hospitalization under this chapter.

(Pub. L. 86–571, §9, July 5, 1960, 74 Stat. 310.)

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