Public Health Efforts in Ancient History

- China and Egypt had drinking wells, collected rainwater, and processed sewage
- India had bathrooms, drains, paved streets, and covered sewers
- Minoans and Myceneans built drainage systems, toilets, and water systems
- Hebrews practiced cleanliness, disinfection, sanitation, disposal of sewage and garbage, protection of water and food supplies for disease prevention
Atomic Theory of Disease

- Hippocrates theorized that all things were composed of atoms.
- There were four types of atoms: earth, air, fire, and water.
- The human body was made up of four “humours” (blood, phlegm, yellow bile, and black bile) with different types of atoms.
- He believed disease was a result of an imbalance of these four humours.
Hippocrates (460–377 BC)

- The first epidemiologist
- Observations and records regarding disease distribution, climate, lifestyle, and living conditions
- Distinguished between endemic and epidemic diseases
- Prescribed boiling and straining water before drinking
The Roman Empire
(753 to 509 BC)

• Noted for their underground sewer systems and aqueducts
• Roman baths were emptied and filled at least once per day
• Location of cities was determined according to drainage of dwellings
• There were building regulations, paved streets, and street cleaning
The Middle Ages
(400 BC to AD 1400)

• During the early Middle Ages, Germanic barbarians destroyed everything, including Roman baths
• Church leaders attempted to civilize communities, but believed “sins” caused diseases
• The high Middle Ages saw improvement in government and economics, but there were severe climate changes, droughts, and diseases
Renaissance Period  
(1400–1700)

• Also known as the Late Middle Ages
• Water was to be used for drinking and cooking only; not for hygiene
• Disposal of human waste was a problem
• Typhus and typhoid fever, as well as sexually transmitted diseases, were problems
• Physicians distinguished various characteristics of several diseases
• Primary methods to contain epidemics were isolation and sanitation
The Plague

- Pandemics such as “Black Death” were noted.
- Twenty-three percent of London residents died from the bubonic plague.
- Italy organized health boards to fight the plague by marketing food, monitoring sewage, regulating hospital activities, and overseeing physicians and drug use.
The Americas

• Colonists brought smallpox, measles, typhus, and scarlet fever.
• Smallpox eliminated 50–90% of Indian populations
• Settlements were wiped out from disease.
Age of Enlightenment
(1700–1800)

- Plagues and diseases continued to be problems during revolutions, industrialization, and urban growth.
- Disease and epidemics were thought to be caused by filth and “miasmas.”
- Dr. James Lind discovered that scurvy could be controlled with lime juice.
- Dr. Jenner vaccinated with cowpox against smallpox.
- Dr. Benjamin Waterhouse brought Jenner’s ideas to the United States.
The U.S. Public Health Service

- Shipping and mercantile businessmen were concerned as ships, their crew, and passengers had to be quarantined.
- President John Adams initiated the Marine Hospital Service for seamen who traveled and were unable to seek medical care; supplemented by money from shipmasters.
- The need exceeded the funds and need for hospitals and the U.S. Public Health Service was created.
Industrial Revolution (1800–1880)

- Manufacturing dramatically increased the need for fuels.
- Migration to cities for jobs created slums with crowded conditions.
- Cholera became a major problem from port to port; the first “global disease.”
- Edwin Chadwick wrote *Sanitary Conditions of the Labouring Population*.
- England passed the national Public Health Act of 1848.
- Sanitation efforts and social responsibility were included with isolation and quarantine to control diseases.
Public Health Reports in the U.S.

- Lemuel Shattuck recommended collecting vital statistics in the United States.
- He developed *The Report of the Sanitary Commission of Massachusetts* with details on public health needs.
- Congress established the National Board of Health in 1879 that awarded grants to help states.
- The board was transferred to the Marine Hospital Service, but grants were discontinued.
The Age of Bacteriology (1864–1910)

• Joseph Lister used antiseptics during the Civil War.
• Louis Pasteur developed pasteurization to kill bacteria in food.
• W. T. Sedgwick identified fecal bacteria in water as the cause of typhoid fever and developed the first sewage treatment techniques.
• Hyatt and Hyatt developed water filtration techniques.
The Age of Bacteriology (1864–1910) (continued)

- Theobald Smith developed vaccines, antitoxins, and diagnostic tests for diseases.
- A hygienic laboratory was established on Staten Island, New York, in 1887.
- Herman Biggs suggested applying bacteriology to detect and control cholera.
- Public health efforts were guided by engineers, chemists, biologists, and physicians.
The Age of Bacteriology (1864–1910) (continued)

- Yellow fever, a virus transmitted by mosquitoes, created more epidemics.
- The U.S. Public Health Service (USPHS) began to gather and publish disease statistics (the first MMWR).
- The bubonic plague was known to be transferred by rodents.
- County health departments emerged.
- The Surgeon General became the head of the USPHS.
The Age of Bacteriology (1864–1910) (continued)

• Adulteration of food and medicines was a concern.
  – Pure Food and Drug Act of 1906 was passed.
• Occupational diseases in miners were a concern.
  – The U.S. Department of Labor and Bureau of Mines was created to prevent black lung disease.
• Public Health officials worked overseas to prevent the spread of malaria by using kerosene and oil in water where mosquitoes would breed.
Health Resources Expansion (1910–1945)

- The Immigration Law required immigrants to be examined by physicians for trachoma, insanity, heart disease, lameness, and scalp diseases.
- The first school of public health was established at Harvard in 1922.
- Dr. Charles Chapin established that some diseases were spread through contact.
- Dr. Rupert Blue of the USPHS authorized investigation of water pollution as a cause of disease.
Health Resources Expansion (1910–1945)

• The military established venereal disease control programs and quarantined infected civilians during World War I.
• There were more casualties from the Spanish flu than WW I.
• Malaria became a problem during the 1920s.
• The source of Rocky Mountain Spotted fever was discovered and a vaccination was developed.
The Great Depression

- President Franklin D. Roosevelt determined the health needs of the people could not be met without government intervention.
- Funding was provided for constructing water and sewage systems, hospitals, and for disease control.
- State health departments received funds from the federal government.
- Public health officials began to make house calls.
- The National Institutes of Health were created to study the cause, prevention, and cure of diseases.
The Age of Social Engineering (1945–1975)

- In 1946, the Communicable Disease Center (CDC) was organized in Atlanta, Georgia (now known as the Centers for Disease Control and Prevention).
- The World Health Organization was developed in 1947 to monitor infectious diseases worldwide.
- The Korean War created CDC’s Epidemic Intelligence Service.
- Medical discoveries drastically reduced childhood diseases.
The Age of Social Engineering (1945–1975)

- In 1954, Dr. Jonas Salk developed a polio vaccine.
- Smallpox and influenza vaccines were developed and distributed.
- Medicaid and Medicare programs were established under President Lyndon Johnson.
- Laws created the EPA and Superfund Act, as well as the Clean Air Act, Clean Water Act, Solid Waste Disposal Act, and others.
The Age of Social Engineering (1945–1975)

• The first national health survey (NHANES) was conducted.
• Public health officials identified Legionnaire’s disease.
• The retrovirus HIV and AIDS were first mentioned.
Health Promotion
(1974 to present)

• A *New Perspective on the Health of Canadians* was published in 1974 calling for individuals to be more responsible for their health.

• The U.S. produced *The Healthy People Report* in 1979.

• In 1980, *Objectives for the Nation* were published to direct governmental agencies to improve preventative health measures.
Healthy Peoples Initiative

- *Healthy People 2000* established 22 priority areas with objectives to be achieved in 10 years.
- Public health leaders acknowledged that social, political, and economic factors influenced individual health.
- *Healthy People 2010* was developed with efforts from governmental and other agencies with 10 priorities and 30 objectives.
Healthy People Objectives 2010 Relative to Environmental Health

- Outdoor Air Quality
- Water Quality
- Toxics and Waste
- Healthy Homes and Healthy Communities
- Global Environmental Health
- Food Safety
- Oral Health
- Physical Activity and Fitness
- Tobacco Use
Environmental Health Concerns

- Scientific knowledge and acceptance that disease control is a public health responsibility.
- Average age of U.S. citizens increased by 30 years with environmental health efforts.
- Risks, impact, source, etiology, exposure, and possible controls are considered.
- Acceptable risk and risk management are primary strategies.