

Filth in America: The History of Public Health

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*What Is Public Health?
(and what is it not?)*

Public health is the science and the art of preventing disease, prolonging life, and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organization of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every individual in the community a standard of living adequate for the maintenance of health.

-C.E.A. Winslow, 1920

Pre-History

Pre- agricultural humans lived in groups primarily as hunter-gatherers

Thinking about what would become public health is really about keeping that group healthy- often referred to as the "Survive the Tribe" concept

Focused around basic needs-based in biology

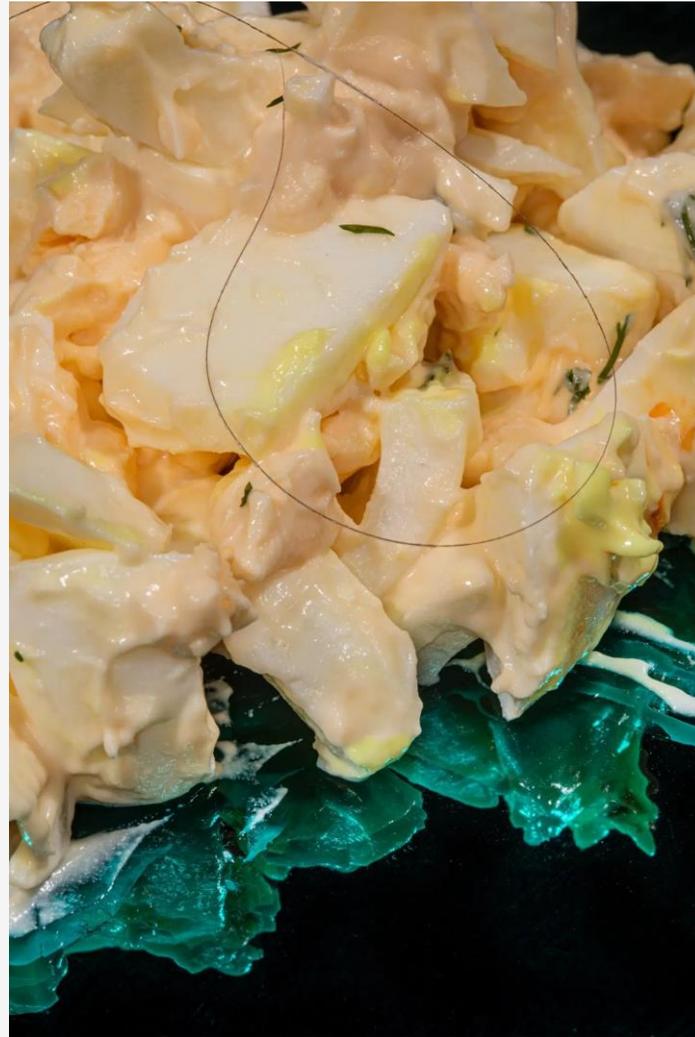


Based in biology

With the agricultural revolution, how it is that people met those basic needs changes, but it is still basically our natural human functions

These include one that is very powerful and important for our thinking about Public health-

Disgust



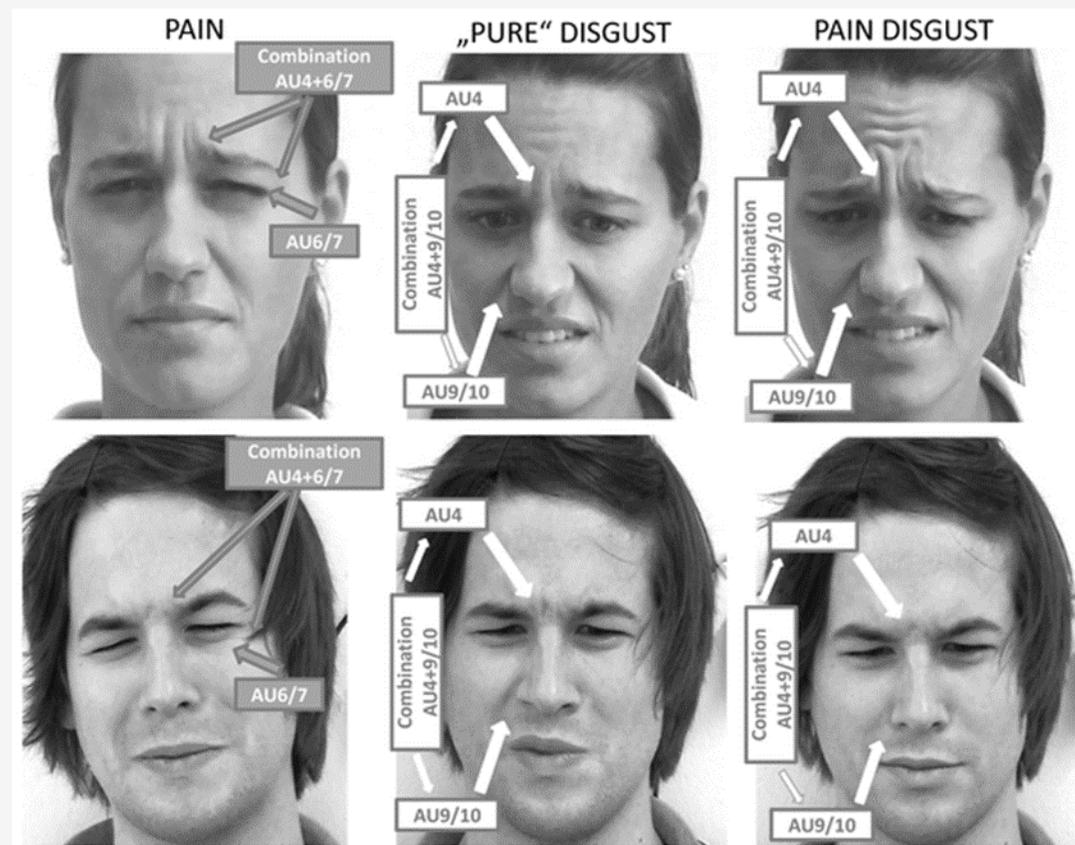
Disgust as a defense from Disease

Disgust is a specific emotion and reaction that likely developed as a health protection-

those that are disgusted by something are less likely to interact with it and therefore less likely to get communicable diseases from it

Very visceral response!!

-“Disgust Face”



Societal Public Health

Many Early Societies develop public health codes:

Tribal Rules

Hieroglyphs

Chinese Empire

Bible (Leviticus)



Societal Public Health

The evolving definition of public health activity is forged by hazards requiring collective action. Throughout history, attention has been directed to controlling transmissible diseases, improving the environment, and providing safe drinking water.

- Toilets drained by covered sewers have been found in excavations of civilizations dating to 4000 years ago in the Indus Valley.
- In 2000 BCE cities, including Troy, had highly developed water supply systems.
- At the time of Joshua when Israelites settled in the Holy Land, there were rules governing the water supply that dictated that there could not be a cemetery, animal slaughterhouse, tannery, or furnace within 50 cubits (approximately 25 meters) of a village water supply.
- In the Western Hemisphere, impressive ruins of sewers and baths document the achievements of the Incas in public health engineering.

Ancient Greece

Concepts of Health:

Personal hygiene & Physical fitness

- Olympics

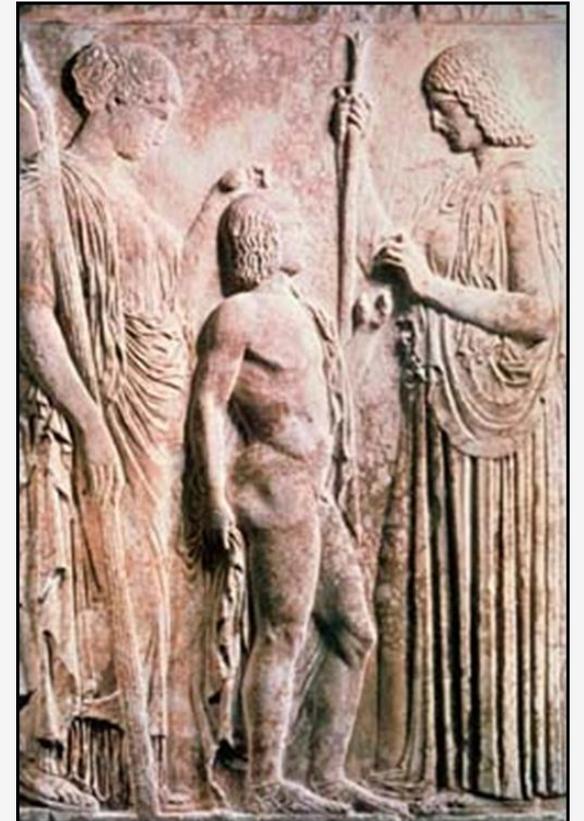
Naturalistic-Disease caused by imbalance between man and his environment

Based on Direct observations

Connected to Medicine

Planned, Deliberate action, not just biological responses

Governmental



Hippocrates

Father of Western medicine and describes causal relationships:

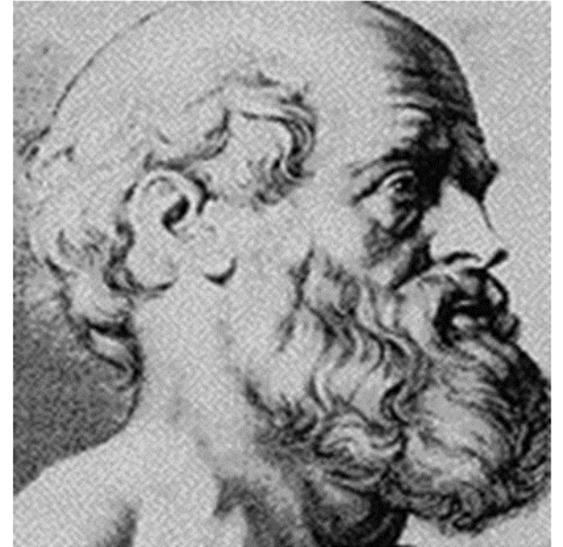
- Opportunities for intervention

Coined the term **epidemic**

- *Epis* ("on" or "akin to")
- *Demos* ("people")

Writes ***Airs, Waters and Places***,

- First Public Health Manual summarizing factors important to disease, including climate, soil, water, mode of life, and nutrition.
- provided guidance to the location of Greek colonies as they expanded eastward to Italy and Sicily.
- Houses were to be located on elevated and sunny areas, avoiding marshes and swamps with their vector-borne illnesses.



Romans- the great engineers

Adopted Greek health values-also made the connection between swamps and disease (specifically, malaria), and determined salubrity was an important component of the selection of places for habitation

Great engineers

- Sewage systems
- Aqueducts

Administration

- Public baths
- Water supply
- Markets



The Middle Ages

Shift away from Greek and Roman values

- Physical body less important than spiritual self- the Church as healthcare
- Decline of hygiene and sanitation

Epidemics of infectious diseases spurred collective activities by communities to promote the public's health, presaging the later formation of boards of health and public health departments

Beginnings of PH tools

- Quarantine of ships
- Isolation of diseased individuals

Medieval cities were run by councils who were charged with routine community administration as well as the supervision of disease prevention, sanitation, and protection of community health. Measures were instituted to control the transmission of infections, including food inspections, regulation of waste disposal isolation, disinfection, as well as isolation and quarantine

The collective actions to protect public health that were implemented in the Middle Ages exhibit patterns that are very much in existence in our current public health programs: a population-based focus for interventions, involvement of government, prominence of environmental interventions, and potential for infringement of individual rights to protect the public.

Late Middle Ages to the Renaissance

After centuries of decreasing scale and scope, Europe starts to reverse that trend:

- Nations
- Wars
- Trade
- Church
- Knowledge/Exploration



Changes in the Church

Restrictions on the practice of medicine by the clergy

- Focus should be on saving of souls not saving of lives
 - Physicians are again non-clergy practitioners
- Knowledge must be shared outside of the monasteries for this to happen
- Health and caring for the poor stay with the church
 - Almshouses
 - Beer?



Changes in Secular Society

Europe becomes larger scale

- Beginning of nations- one warlord subjugates others- centrally rules larger areas
- Rise of cities- population and administration
- *This rise brings more trash, more waste, more animals, more density = More disease*
- *This also requires more connection to a large area (travel), more food and more water*
 - *Solutions have to be on a larger scale than before*



People start moving around

Wars

- Crusades
- Muslims pushed out of Europe (Spain)
- Hundred Years War

Trade

- Silk Road
- Maritime trade and exploration

Diseases and Knowledge move with them:

- Muslim Medical knowledge and Leprosy come back from the crusades
 - Including Vaccination
- The Black Death comes from the east- wipes out 1/3 to 1/2 of the European Population
- Muslims and Jews are expelled from Spain
 - Migration to other parts of the world
 - Captured Medical knowledge
- Near constant War with large armies- networks needed to support it
- Larger Scale trade
 - Black death and other diseases
 - *Solutions needed are larger scale as well*

Public Health Returns

The Hospitallers, a religious order of knights, developed hospitals in Rhodes, Malta, and London to serve returning pilgrims and crusaders.

Leprosy became a widespread disease in Europe, particularly among the poor, and isolation in leprosaria was common in Europe.

- In France alone, there were 2000 leprosaria in the fourteenth century

Hygiene Practices improve and are restored

Universities are established under Royal (not Church/Papal) charter and medical education similar to the Arabic tradition becomes widespread across Europe with physicians coming from the secular middle class



Public Health Returns

Municipalities had their own administration under the king/lord and developed protected water sites (cisterns, wells, and springs) and public fountains across Europe with municipal regulation and supervision.

Piped community water supplies were developed in Dublin, Basel, and Bruges by the thirteenth century. Between the eleventh and fifteenth centuries, Novgorod in Russia used clay and wooden pipes for water supplies, and municipal bath houses were available.

Constant war displaced populations and disrupted areas, however armies had to develop networks for food, supplies and medical care

The Black Death

In Western Europe, public and religious ceremonies and burials were promoted by religious and civil authorities

Hygienic practices limited the spread of plague in Jewish areas

Seaport cities in the fourteenth century began to apply the biblical injunction to separate lepers by keeping ships coming from places with the plague waiting in remote parts of the harbor, initially for 30 days (*treutina*), then for 40 days (*quarantina*) (Ragusa in 1465, and Venice in 1485), establishing the public health act of quarantine as a government measure, which

- on a pragmatic basis was found to reduce the chance of entry of the plague.

This concept was later expanded to include the creation of a pesthouse or *lazaretto* to hold individuals suspected of harboring infections—ultimately used for a variety of infectious diseases

Towns along major overland trading routes in Russia took measures to restrict movement in homes, streets, and entire towns during epidemics. In sixteenth-century Russia, Novgorod banned public funerals during plague epidemics, and in the seventeenth century, Czar Boris Godunov banned trade, prohibited religious and other ceremonies,

- Despite local efforts to prevent disease by quarantine and isolation of the sick, the disease devastated whole communities, and public health measures are often overwhelmed

After the Plague

Guilds organized to protect economic interests of traders and skilled craftsmen developed mutual benefit funds to provide financial assistance and other benefits for illness, death, widows and orphans, and medical care, as well as burial benefits for members and their families.

Commerce, industry, trade, merchant fleets, and voyages of discovery to seek new markets led to the development of a moneyed middle class and wealthy cities. In this period, mines, foundries, and industrial plants flourished, creating new goods and wealth. Partly as a result of the trade generated and the increased movement of goods and people, vast epidemics of syphilis, typhus, smallpox, measles, and the plague continued to spread across Europe. Malaria was still widespread throughout Europe. Rickets, scarlet fever, and scurvy, particularly among sailors, were rampant.

Pollution and crowding in industrial areas resulted in centuries-long epidemics of environmental disease, particularly among the urban working class.

Disease becomes increasingly associated with *miasmas* or bad air & while medical training includes anatomy and other sciences it is still symptom-focused. Medical and Pharmacies are often standardized. Military medical systems and court medical systems are established, but care for the general public is still very local

By 1601, the British Elizabethan Poor Laws defined the local parish government as being responsible for the health and social well-being of the poor, a system later brought to the New World by British colonists. Municipal control of sanitation was weak. Each citizen was in theory held responsible for cleaning his part of the street, but hygienic standards were low, with animal and human waste freely accumulating. Elsewhere in Europe there are local boards of health established to manage the same, and by 1630 they are being held accountable for the health of the community

The New World

As Europeans travel to the New World they bring with them these same diseases, especially smallpox and measles

- Native populations have not encountered these diseases and are devastated by them

Spread of disease also comes from the New World back to Europe.

- A virulent form of syphilis, allegedly brought back from America by the crews of Columbus, spread rapidly throughout Europe between 1495 and 1503, when it was first described by Girolamo Fracastoro (1478–1553).
- Control measures tried in various cities included examination and registration of prostitutes, closure of communal bath houses, isolation in special hospitals, reporting of disease, and expulsion of sick prostitutes or strangers. The disease gradually decreased in virulence, but it lingers as a diminishing public health problem to the present time.
- Other New World diseases are unknown to Europeans so they are unsure how to prevent or treat them

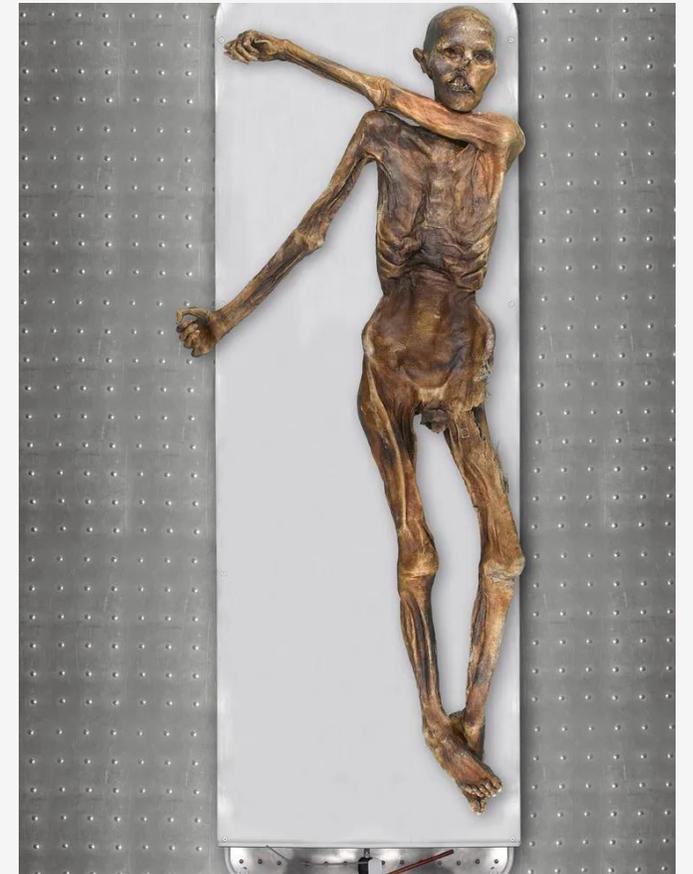
Prior to 1607 most European settlements are outposts rather than cities with limited population, trade and exploitation of resources does occur, but there is not much growth so population density remains low, and as such the sanitation and hygiene problems of European cities do not become as big an issue.

Europeans recognize that the waters and “Aires” in the new world are clean and high-quality, but still retain their beliefs about drinking water and miasmas

History of Ancient Medicine

Pre-History

- Prevention of injury from predators
- Illness/disease caused by supernatural spirits
- Herbs and plants were used as medicine examples:
 - Digitalis from foxglove plants: leaves were chewed to strengthen & slow heart
 - Morphine from opium poppy: relieves severe pain
 - Mushrooms and other fungi
- Administered to self and others based on personal experience



Pre-Historical Surgery?

Trepanning (sometimes *Trephining*) was a basic surgical operation carried out in prehistoric societies across the world

There is evidence discovered of bone tissue surrounding the surgical hole partially grown back, so therefore survival of the procedure did occur at least on occasion

- Concentration of this practice in Peru
- First known trepanning operation was carried out ca. 5000 BC in France
- First known amputation operation carried out in 4900 BC In France



Ancient Egypt

Priests were the doctors – Only the priests could read the medical knowledge from the god Thoth

Temples were places of worship, medical schools, and hospitals

Earliest to keep accurate health records

Pharaohs kept many specialists

Believed the body was a system of channels for air, tears, blood, urine, sperm, and feces.

- If a channel became “clogged”, bloodletting or leeches were used to “open” them.



Imhotep may have been the first physician

Ancient Jewish Practice

Avoided medical practice- little mention in records

- Concentrated on health rules concerning food, cleanliness, and quarantine (book of Leviticus)

Moses: pre-Hippocratic medical practice – banned quackery (God was the only physician)

Enforced Day of Rest

Ancient China

Believed in the need to treat the whole body by curing the spirit and nourishing the body.

Carefully monitored the pulse to determine the condition of the body.

Recorded a pharmacopoeia of medications based mainly on the use of herbs.

Used acupuncture to relieve pain and congestion with moxibustion to treat disease

Began to look for medical causes of disease- disdain for cutting into a body



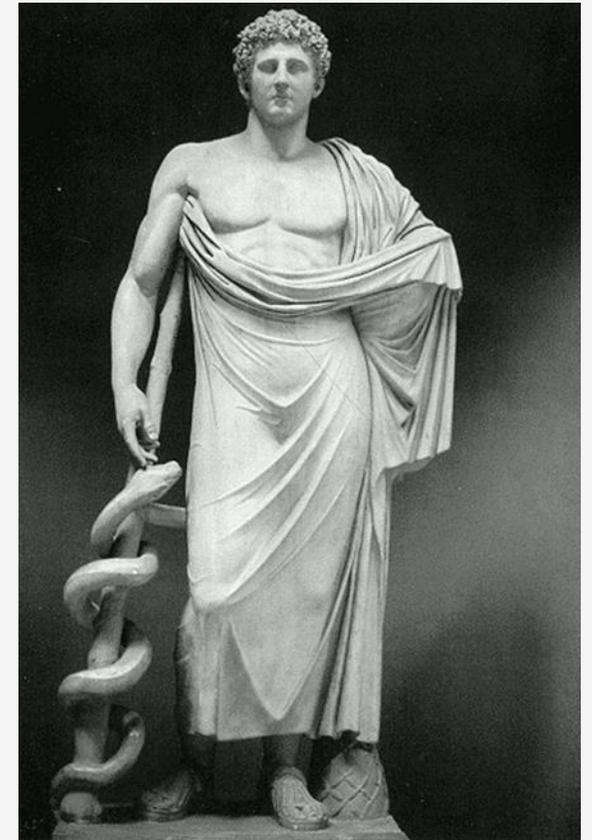
Ancient Greek Medicine

Asclepius, Greco-Roman god of medicine, son of Apollo (god of healing, truth, and prophecy) and the mortal princess Coronis. The Centaur Chiron taught him the art of healing. At length Zeus, afraid that Asclepius might render all men immortal, slew him with a thunderbolt.

Homer, in the *Iliad*, mentions him only as a skillful physician and the father of two Greek doctors at Troy, Machaon and Podalirius; in later times, however, he was honoured as a hero and eventually worshiped as a god.

The cult began in Thessaly but spread to many parts of Greece. Because it was supposed that Asclepius effected cures of the sick in dreams, the practice of sleeping in his temples in Epidaurus in South Greece became common.

In 293 BC his cult spread to Rome, where he was worshiped as Aesculapius



Hippocrates



Hippocrates (c. 460 – 370 BC)
– “Father of Medicine”

Leading physician of his time

- Claimed he was the 18th in descent from Asclepius

Learned from the temple of Asclepius located on the island of Cos, his birthplace

Wrote the “Hippocratus Corpus” In the treatise, *Epidemics* (part of the “Corpus”) the author wrote:

“The physician must...have two special objects in view with regard to disease, namely, to do good or to do no harm.”

He also said, “Life is short, science is long.”

Hippocratic Medicine

Hippocratic school - 4th c. BC - naturalistic approach to health, sickness and healing.

Believed in cause and effect: Disease as part of cosmic order

Body regulated by constitution (humors), which could be understood by experience and reason

Divided human nature into 3 functions – reason, spirit, & appetites – located in brain, heart & liver

- ▶ Classifications were emerging – diseases were grouped according to similar symptoms, e.g. fever
- ▶ Also from place of origin – e.g. head, or chest
- ▶ Preferred dietary regulation
- ▶ Patient's entire lifestyle was under study: Diagnosis = creating profile of patient way of life
- ▶ One text from the "Hippocratic Corpus" suggested the physician investigate...
- "The mode in which the inhabitants live, and what are their pursuits, whether they are fond of drinking and eating to excess, and given to indolence, or are fond of exercise and labor."

Religion, Science, Medicine, Culture all together

Hippocratic/Humeral Medicine

Humors – Blood, mucus, black bile and yellow bile.

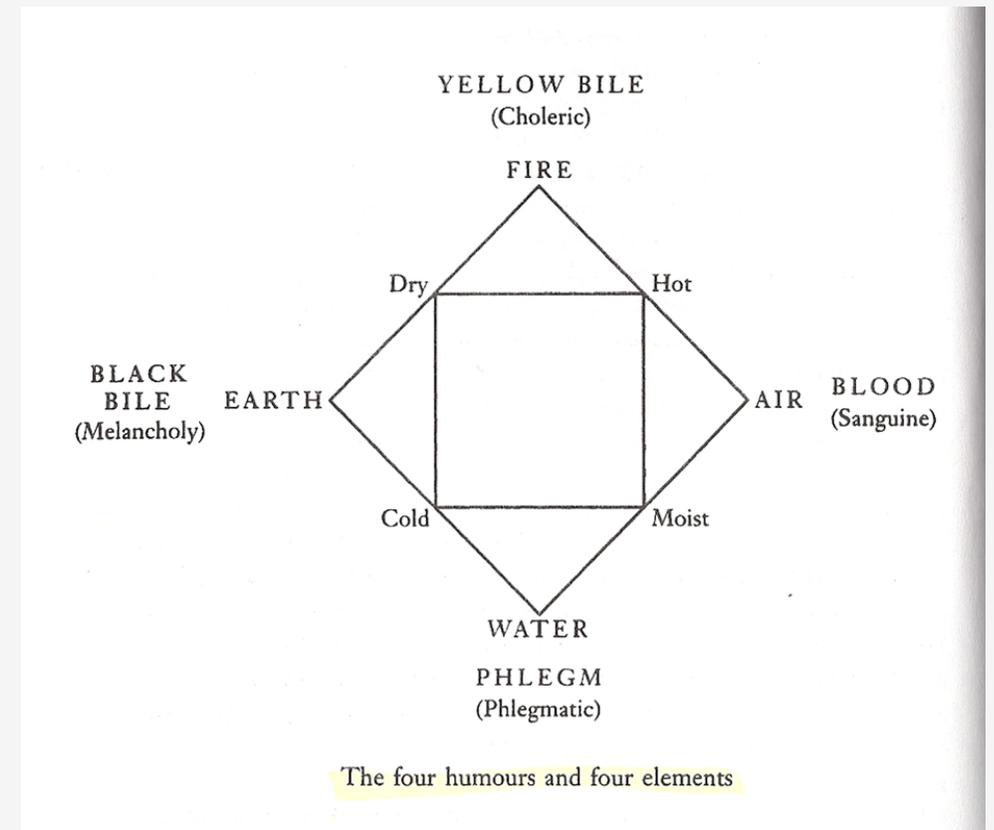
- Sickness = *imbalance*

Health and disease rationally explained by imbalance

- *Interventions restore balance*

Complemented Greek natural philosophy – especially in its rule of 4

- 4 directions
- 4 elements
- 4 primary qualities
- 4 humors



Roman Era

First to organize medical care by providing care for injured soldiers

Room in doctors' house became first hospital

Later hospitals were religious and charitable institutions housed in monasteries and convents.

Division of Labor- Health and Medicine separate



Galen's Medicine

Treated gladiators

Thousands of animal dissections

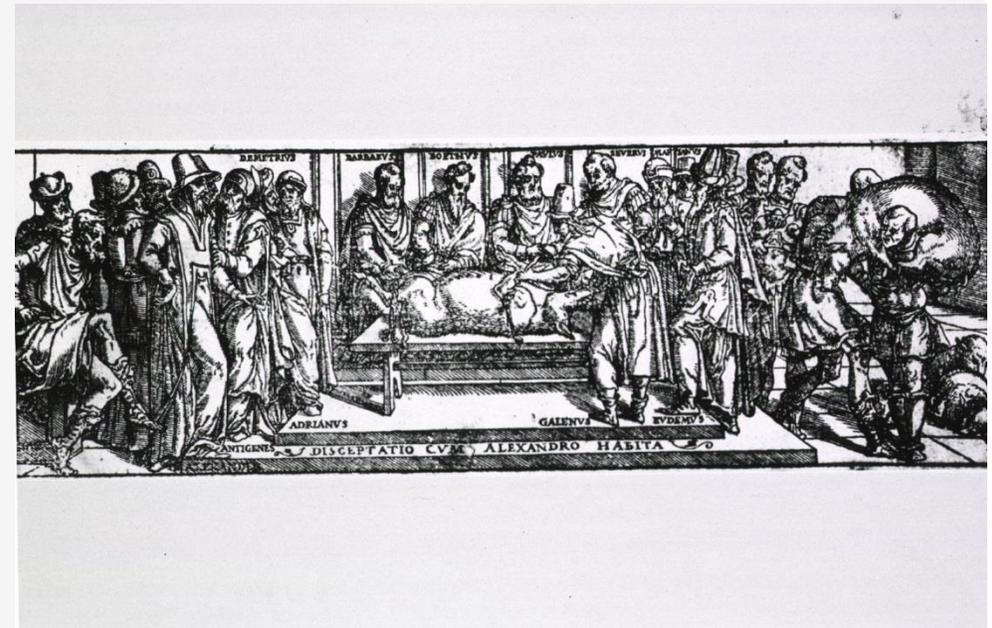
- Determined function of muscles, kidney and bladder

Studied infectious diseases and described symptoms of inflammation

Recommended blood letting for many common ailments

Directed Hippocratic humoral medicine toward theory

- Explains unknown in terms of function
- Open-Minded: Subject Everything to the trial of experience



Galen dissecting pig

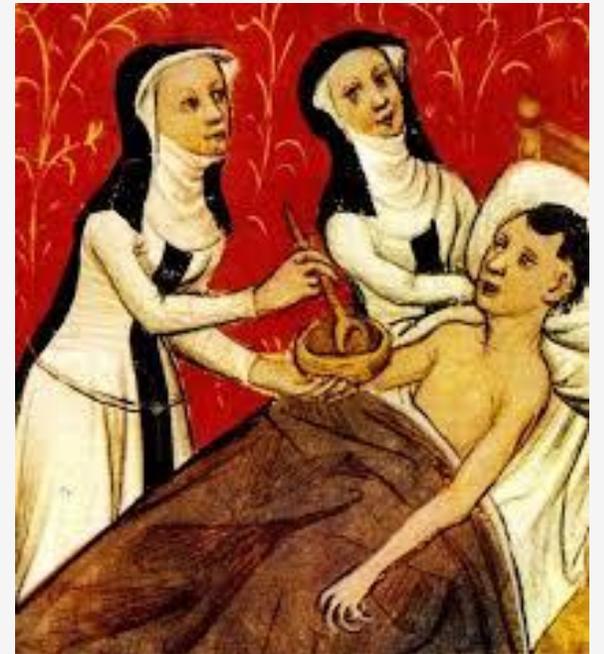
Middle Ages

Hippocratic and Galenic thinking dominate-Medical Knowledge housed in the Church

Monks & priests provided custodial care for sick people. Convents cared for people as well

Christian Imperative to care for people drives medicine rather than scientific inquiry

Magic and non-Christian approaches limited or outlawed "Witchcraft"



Islam and Medicine

Rise of Islam between 7th and 12 c.

Cosmopolitan culture: Friendly to experimental and empirical approach

Produced hundreds of translations of Greek medical texts, and integrated that with other learning from the areas they conquered

Medical training was through reading texts aloud and memorizing with a mentor asking questions about the readings

Valued the experience of physicians as well

"He who studies the works of the Ancients, gains the experience of their labor as if he himself had lived thousands of years spent in investigation." Nevertheless, "all that is written in books is worth less than the experience of a wise doctor."

Synthesized and systematized medical knowledge and created Medical compendium

Created the first pharmacies using plants animals and minerals from conquered areas

-Medicine is not primarily military or religious- its own thing separate from public health as well

Ibn Sina



Ibn Sina

Most famous Muslim physician was a Persian philosopher, Ibn Sina, known as Avicenna in the West

Creates the "The Medical Code" or Canon

Book I: general principles = theory of elements, humors, anatomy, physiology, etc.

Book II: *Materia medica* = physical properties of simple drugs

Book III: Specific diseases classified from head to toe

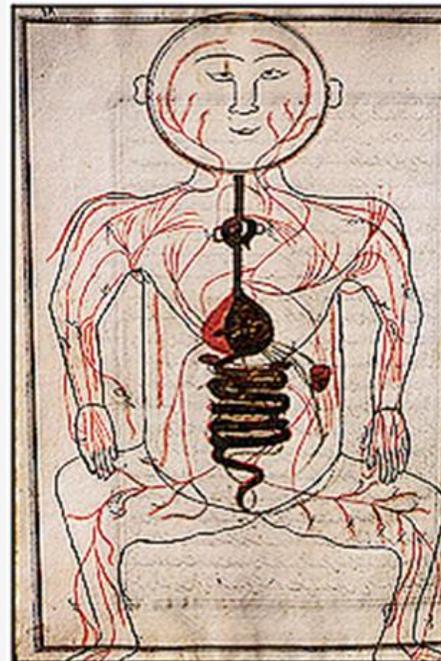
Book IV: Disease affecting whole body

Book V: Description of compound drugs

Other Islamic thinking

Ibn al-Nafis

- Great empiricist
- Composed his *Commentary of Avicenna* at the age of 29
- Text described the pulmonary circulation
- Refuted Galen's idea of "invisible pores"



Ibn Al-Nafis manuscript - Pulmonary Circulation and Digestive System

Islamic Hospitals (12th & 13th Cen)

- Center of Islamic medical practice & education
- Inspired by Christian sick-relief services, but more elaborate
- Found in great cities like Baghdad, Damascus, Cairo
- True function was in bringing ideals of compassion and medicine together