History of Medicine

Opening Questions:

- What do we do when we're sick? (Where do we turn for help?)
- What is medicine?
- How is it perceived in our culture?
- What people do we associate with medicine?
- What institutions do we associate with medicine?
- What images do we associate with medicine?
More Specific Questions:

• What expectations do we have of doctors? (What are they supposed to do?)
• . . . of hospitals?
• How does our society perceive, and deal with, death?
• What type of people are expected to die?
• What are “natural” causes of death?
• Where are people expected to die?
• What actions or activities surround a “natural” death?
• (Consider: It wasn’t always this way.)

“I’m feeling better”

• It’s especially hard not to be a “Whig” in regard to medicine.
• Bear in mind:
  • Every generation since the medieval period has seen itself as “more advanced” than that which went before.
  • Sometimes, when measured by fairly objective standards such as “mortality” the assumption of medical advances has been dead wrong.
• Some bad examples of “cutting edge” medicine:
  • Drinking mercury to cure syphilis.
  • Also for venereal disease: “Hot Sulphur” compresses, or cauterization of affected members.
  • Prescribing opium for headaches or menstrual cramps.
  • Lobotomies.
  • Hysterectomies.
  • Smoking as a treatment for pneumonia (It “dries out” the lungs.)
• In addition, many very good ideas in medicine have been abandoned at times because they were not sufficiently “scientific,” or they countered more “advanced” medical theories.
The Case of “Childbed Fever”

- **Puerperal Fever** -- in the eighteenth and nineteenth centuries one of the most common reasons for mothers dying in childbirth.
- Infection rate could be as high as 40% of all mothers, according to some hospital records.
- Mortality rate could be as high as 90%, or as low as 10-20%
- Symptoms:
  - Fiery inflammation of the pelvic and abdominal areas, 1-2 days after birth.
  - Extremely rapid pulse and high temperature.
  - Death following delirium/coma, within 10 days of the birth.
  - Autopsies revealed the affected areas to have become putrid and rotting while the patient was still alive.
  - Pus could be found throughout the affected organs, especially on the uterus and ovaries, but in some cases around the heart and lungs also.

Professional Opinions:

- Diagnoses of possible causes:
  - Fluids or “humors” that the body should have expelled were retained.
  - Tight clothing such as corsets and stays?
  - Emotional conditions, especially stress or fear?
  - Cold vapors causing the closing of pores and retention of fluids?
  - “Miasmas” -- disease carrying vapors?
  - Misdirection of milk -- rather than going to mammary glands it emptied into the abdomen and thorax?
- Complicating factors:
  - Some doctors had many repeating cases, others in the same region had few or none.
  - The disease would afflict hospitals in epidemic waves lasting years, with occurrences much higher in winter. (At its worst, a woman was six times more likely to die in a hospital than at home.)
  - From the beginning of the practice of doctors delivering babies it was suspected by some that the doctor might be partly to blame:
    - Doctors who suspected this practiced a “superstitious habit” and applied the methods of purification associated with the plague: burning their clothing, heating their instruments in the fire, and extensive bathing.
    - Those who practiced this were convinced that it made a difference. Oliver Wendell Holmes believed he had statistical “proof,” and went so far as to accuse those who didn’t follow this practice of “crime.”
  - Other doctors objected (especially to Holmes):
    - There were no methods or habits which doctors had which could be consistently associated with the disease.
    - Counter-examples abounded: both of doctors who did not practice purification who had the disease suddenly subsided in their practice, and of doctors who did everything (washing, burning, and all) to have their next patient die of the disease.
- Patients’ opinions: some doctors and hospitals were to be avoided. Midwives were (often) safer.
The "General Hospital" of Vienna was in the midst of a wave of Puerperal Fever (this wave began in 1844).

"Division 1," a ward presided over by medical professors and students had the greatest mortality rate: 600-800 deaths per 3,000-3,500.

"Division 2," run by midwives, had a far lower mortality rate: 60-80 deaths per 3,000-3,500.

Every death was followed by a meticulous autopsy. The very doctors who had cared for the patient sought tirelessly for the causes of death.

Nothing changed.

Ventilation was improved in Division 1 to move out the "bad air" or miasma.

Nothing changed.

Concerned that the constant presence of priests administering Last Rites was causing healthy patients to be seized with fear and "retain fluids" the priests were asked to enter by back doors and "sneak in."

Nothing changed.

The head of obstetrics, Johann Klein, had resigned himself to the tragedy until it should pass.

His young assistant, Ignac Semmelweis, had not. He worked frantically in both the ward and the morgue to find better answers.

Vienna: Allgemeine Krankenhaus c. 1847

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- Every death was followed by a meticulous autopsy. The very doctors who had cared for the patient sought tirelessly for the causes of death.
- Every move of doctors and midwives was monitored closely. Many doctors began imitating the midwives to the closest detail.
- Nothing changed.

What Semmelweis Knew:

1. The specifics of the difference in mortality rate between divisions 1 & 2.
2. There was no epidemic of childbed fever outside the walls of the hospital (it was not a general epidemic).
3. Unlike many epidemics, neither the incidence, nor the mortality of childbed fever at the Krankenhaus was related to the weather.
4. Greater degrees of trauma during delivery appeared to increase the likelihood that a mother would develop the sickness.
5. Closing down the ward ended the deaths, but there were simply too many cases to leave it closed.
6. Frequently the baby would die with symptoms very similar to the mother, but in different locations in the body.
7. He concluded that this was not an ordinary epidemic, and that, since it was isolated to a specific location it could be identified more precisely as to cause (the same way a disease which afflicts only one part of the body can be traced more easily)
A Last Lesson from a Friend

- While Semmelweis was puzzling out this problem, Jakob Kolletschka, a close friend who was also a medical professor at the hospital died.
- The cause of death was a blood infection which he developed after being stabbed by a student's scalpel in the autopsy room.
- Semmelweis performed the autopsy himself, and found exactly the same type of coagulated pus in Kolletschka's chest cavity, stemming from his wound, that was present in the bodies of women who had died from childbed fever.
- Semmelweis immediately theorized that the women had a blood infection that had entered through the reproductive organs.
- Counterc to his usual meticulous style, his methods were haphazard, and his experiments inconclusive, even by his own standards.
- Instead of carefully working with his supporters Semmelweis was in the habit of flying into rages at the hint of criticism.
- It was clear then, and it is clear now, that Semmelweis had gone clinically insane.
- Believing they were following a madman, his support dwindled.
- Semmelweis moved to his native Hungary, and continued his campaign, but with less than widespread approval.
- 1867 - two weeks after being committed to a lunatic asylum in Vienna, Semmelweis was beaten to death as employees tried to restrain him.

A Tragic Turn:

- Semmelweis had widespread support at the hospital, but there was also some skepticism.
- Experimentation was needed.
- Semmelweis began experiments with rabbits and cadaver tissue.
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- 1867 - two weeks after being committed to a lunatic asylum in Vienna, Semmelweis was beaten to death as employees tried to restrain him.
- He was suffering, by then, from another medical mystery:
- (presenile) Alzheimer's.
- Not until Pasteur and Lister had established bacterial causes for disease would a "thorough hand washing" be standard procedure.
Some Key Players in Greek Medicine:

• Hippocrates (c. 460-377 B.C.E.), and the Hippocratic Corpus:
  - Comes down to us as a collection of texts on medical practice from the time.
  - Hippocrates was the primary figure in a “school”
  - The writings are those of the physicians in the “school.”
  - There’s a lot in the corpus, but one key idea is the concept of “balance” as a key to health.
• Aristotle:
  - Wove the concept of elements together with another theory, that of bodily fluids or “humors” for explaining the human constitution.
  - Advanced the “man as microcosm” idea (of Plato and others.)
  - Health is a matter of proper humoral balance.
  - (Remember, he was a philosopher, not a physician.)
• Galen (c. 130-200 C.E.):
  - Greek physician and anatomist.
  - Advanced Aristotle’s empirical study of animals and humans.
  - Made humoral theory, as per Aristotle, a model for practical medicine.
• Aristotle and Galen come down through time as the “big names” in the field.

The Two Routes of Greek Science:

Greek Natural Philosophy

“Popularization and Preservation”
(David C. Lindberg)

Transmission and Development via Byzantium and Islam

Western Eastern
Popularlization

- In Roman society, Greek thought was adopted without any particular development.
- So that it could be easily read by Roman intellectuals whose primary interests lay elsewhere, Greek thought was summarized and arranged in a more digestible form.
- Those interested in going deeper could go to the Greek themselves.
- Others could read Greek thought in conveniently translated collections.
- However, this meant that little, and very selective, Greek thought was preserved in the Latin language.

Preservation

- At least part of the interest in making abbreviated collections of Greek thought in Latin was to preserve the most important ideas of Greek natural philosophy.
- This required a process of selection which was based upon what the editor/translator thought was important.
- With the political and economic demise of Rome, and especially with the crisis brought to most of the old Roman Empire by “Barbarian Invasions” the question of preservation became critical.
Monastic Selection:

- In the West, the only remaining institutions of learning capable of the task of preservation were the Christian monasteries.
- However many resources were stretched to the limit in monastic communities:
  - Parchment and Vellum
  - Qualified Scribes
  - The means to travel in seriously hard times.
- In order to preserve the “most important” ideas, Christian scholars in the West very carefully selected and summarized what had already been selected and summarized in Roman culture.

Cultural Triage

- Christian spiritual works, covering the highest subjects according to monastic transmitters, took priority.
- Other works were selected according to their utility and/or necessity:
  - Medical works and books of prescriptions were among the most important.
  - Works on history and law were also prized.
  - At this time other selections varied widely, according to the varying priorities of the scribes involved.
- The net result: little Greek thought filtered down through the West, and that which did came in a highly abbreviated and summarized form.
- Knowledge was often preserved only in little encyclopedias or “bouquets,” (florilegia) containing gatherings of short descriptions, prescriptions, and quotations of earlier works.
The Eastern Route:

• **In Byzantium**
  - The political and economic fall of Rome was not complete, only a time of transition.
  - The Greek language was not lost as it was in the West.
  - Serious effort was made to preserve the learning of past generations, but there was little added to it (except in spiritual and distinctly practical matters)
  - The result was a high degree of preservation but no real development.

• **In Islam**
  - When Byzantine lands were conquered Islamic scholars took possession of the natural philosophical texts they encountered.
  - They translated the "important" ones into Arabic, and developed the sciences which they found most useful, particularly mathematics, medicine, and astronomy.
  - (Again, cultural triage was at work. "Utility" ruled.)

The “Renaissance” of the 12th Century:

• **In the eleventh century, after the last invasions by displaced Magyars and “Vikings,” etc. Western Europe began to stabilize.**

• **More centralized government, along with the rise of secure trade routes and establishment of cities, provided a backdrop for a renewed interest in learning: this was when the first universities came on the scene.**

• **Increased travel from trade, not to mention the Crusades, resulted in a greater cultural exchange between Islam and the West (as well as Byzantium).**

• **Via Islamic scholars, significant works on mathematics, medicine, and Aristotle’s cosmos were recovered (along with the commentaries of Muslim writers.)**
**Stages of Transmission in the West:**

- **Popularization:** Those elements are translated into Latin which are most useful at a popular level.

  - **Popular Latin Collections:** Medical experts, such as Galen and Soranus, still use Greek.

- **Preservation or “Cultural Triage”:** with the Barbarian invasions and the fall of Rome, many books were destroyed.

  - **Monastic Texts “Florilegia”:** The most important ideas, as determined by Christian monastics were gathered in collections.

  - Medically, this meant primarily drug recipes and prescriptions.

**The Medieval Period:**

- Monastics in the West, such as Hildegard of Bingen, developed medical theory based on their own assumptions and observations, lacking the proper “authoritative texts.”

- The ancient texts were preserved in the East, by Eastern Christians and Moslems, who retained the ability to read and speak Greek.

- Beginning in the eleventh and twelfth centuries the Greek texts began to be recovered. The assumption was that now that the originals were being recovered better medicine was on the way.

- A minority thinker from Alexandria, Soranus, was recovered by a monastic named Constantine the African, and his work contributed to the medical curriculum at the newly founded medical university at Salerno.

- Aristotle and Galen were also recovered, along with Arabic commentaries. These had a widespread influence on all aspects of education at the universities, as we have seen in the writings of Aquinas.
The Renaissance Triumph of Aristotelian Medicine

- Aristotle and Galen were recovered in stages: the first was in the medieval period, the second was with the widespread recovery of Greek texts (and the Greek language) in the Renaissance.
- What these texts offered was a sophisticated and coherent theory of the body and health. It was the only truly comprehensive and coherent theory available.
- Though some Galenic ideas would be challenged in the Scientific Revolution, as with all scientific theories, there was no reason to challenge the Aristotelian/Galenic system except where it was clearly inadequate.

Medicine in the Medieval World

- Beyond their place in the Aristotelian System, living things were not given the attention of a specialized field.
- The one notable exception was medicine, for rather predictable reasons.
- Galen’s practical adaptation of Aristotle’s theories about life and humors dominated the Medieval and Renaissance eras.
- From the 12th century there was a medical university at Salerno, in Italy, training “professional” physicians primarily in the recovered Galenic texts.
- There was some hands-on experience with dissection (usually of animals) which consisted of a lecturer reading from Galen while a surgeon wielded his knife.
- The university-trained professional was not necessarily trusted, and not inherently accepted (success rate mattered.)
- Few could afford a true professional anyway.
**Other Options for Health**

- Folk medicine. (Local traditions, etc. Midwifery was almost exclusively folk medicine.)
- The more advanced, usually Aristotelian, herbalism of the local clergy and monasteries.
- The traveling surgeon.

**The Surgeon -- Skill in the Hands**

- Prior to the 19th century the surgeon was regarded as a technician, not a true physician. (Skilled with the hands, not the head.)
- Nevertheless, Surgery had a real place as a healing art. Small matters could be treated with great success, while there was no other option for medical problems arising on the battlefield.
- Although surgery was taught at medical universities, most surgeons received their training from the battlefield, and the trade was organized as a guild, with masters taking-on apprentices.
- For small problems, as well as those which were regarded as very serious, the surgeon was in high demand.
- The surgeon usually traveled from town to town, setting up a booth or tent at fairs. (Travel insured his own safety as well as a broader customer base.)
- Minor surgeries were usually successful, major (intrusive) were usually fatal.
- The surgeon was often also a barber. (Barber services were usually successful.)
- Bloodletting was among the most common services offered by a surgeon. (Hence the barber pole symbol.)
Herbal Medicine

• Medieval Europe had a highly developed tradition of herbal cures and preventatives.
• Monasteries and the local clergy incorporated what was known of Greek medicine with local traditions.
• Galenic concepts of balance dominated, but were augmented through experience.
• The concept of “emblematics” was also prevalent throughout late medieval herbals:
• God had placed “signatures” in the very forms of the plants themselves which indicated (by shape, smell, physical properties, etc.) what they were good for.

Andreas Vesalius

• (1514-1564)
• University of Padua anatomist.
• Performed his own dissections.
• “Simple Observation” led to the disproving of many errors in the classical anatomical texts of Galen. (Over 200)
• “autopsia” -- seeing for oneself.
• Vesalius did not “overthrow Galen” -- he amended him greatly.
• According to Vesalius himself, his reliance upon Galen was necessary for the corrections he made.
Paracelsus (1493-1541)

- (Given name, Theophrastus Philippus Aureolus Bombastus von Hohenheim)
- Traveled extensively and taught that there must be alternatives to the academic medicine of the universities.
- Proposed that the key to getting medicine right required the observation of nature.
- Argued that disease resulted from bodily organs not filtering-out poisons properly (as opposed to the Galenic sense of imbalance.)
- Advocated chemical treatments (particularly metals) based on alchemy and folk medicine. (*Like cures like* -- a poison is cured by a similar poison.)
- Included a heavy emphasis on “emblems”
- Some amount of success, in spite of a large number of cures involving mercury, lead, arsenic etc.

Final Thoughts on Porter:

- What are some of the significant developments leading toward modern:
  - Surgery?
  - Hospitals?
  - Nursing?
- While the modern “scientific method” was essentially fully-formed by the end of the seventeenth century, modern “scientific medicine” gained ground only gradually, and particularly in the 19th & 20th centuries.
- In all areas covered by Porter (doctors; anatomy; hospitals; etc.) there were:
  - Serious concerns over legitimacy.
  - Ethical concerns in light of the “human cost.”
  - A demand for *effectiveness* rather than mere scientific validity.
  - The problem of (often very legitimate) alternatives.
- Medicine deals with something very near and dear to most people:
  - Their lives.
  - Thus what matters most in medicine from the patient/consumer’s angle has always been success. (Does it help?)
  - This has been a serious obstacle to what we might call a “purely scientific” approach to medicine -- the experimental method, after all, is a form of “trial and error.”
  - It is an important obstacle to leave in place -- It has been removed at great moral cost, whether in the Third Reich, the Soviet Union, the experiments of Dr. Shiro Ishii, or Communist China.