Introduction to the History of Medicine

Fall 2016
September 14 – October 28
# Introduction to the History of Medicine 2016-2017

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**Location:** Becker Medical Library, Center for History Of Medicine and Archives and Rare Books Department
Course Syllabus

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1. Faculty contact information

Course Master: Robert M. Feibel, MD
Email: feibelr@wusm.wustl.edu
Phone: 314-362-2725

2. Course Philosophy/Introduction to the course

This is a survey course on the history of medicine, concentrating on the contributions of some of the major figures in the historical development of medicine. The objectives will be to explain how medical science developed from antiquity to the 20th century. The figures to be discussed are as follows:

Session I - Ancient Medicine: Hippocrates and Galen
Session II - The Beginnings of Modern Medicine: Andreas Vesalius and William Harvey
Session III - Great Developments in Internal Medicine: René Laennec and Ignac Semmelweis
Session IV - The Rise of Pathology: Giovanni Morgagni and Rudolf Virchow
Session V - The Development of Modern Surgery: The Discovery of General Anesthesia and Joseph Lister
Session VI - Medical Science in America: William S. Halsted, Helen Taussig and Alfred Blalock. The origin of the Washington University School of Medicine
3. Course Objectives

By the end of this course students should be able to:

- Identify 15 physicians who, over the course of the past 2500 years, made original and important contributions to the development of modern medical science;
- Describe how each contribution advanced medical diagnosis, treatment and medical theory; and
- Identify a specific figure or topic in the history of medicine which personally interested each student for consideration of additional study.

Each goal is mapped to the WUSM Medical student competency-based learning objectives (indicated in parenthesis). These program level objectives can be found at:

http://bulletinoftheschoolofmedicine.wustl.edu/EducationalPrograms/mdprograms/Pages/Learning%20Objectives.aspx

4. Course Materials

The core reading source is the book, *Doctors: The Biography of Medicine* by Sherwin B. Nuland. This book will be provided to students prior to the first session at the Center for History Of Medicine in the Becker Medical Library (6th floor). Students are expected to read and be able to discuss the core reading which will be two chapters of the text per week. In addition, optional supplementary articles on each subject will be accessible on the online student portal.

5. Policies

a. Grading. (Pass/Fail)

- 80% students' discussion of their assigned chapters in the text
- 10% attendance
- 10% students' summary of the course to be prepared at the conclusion of the course. At the conclusion of the course, students will be required to submit a one- to two-page essay summarizing their impressions and knowledge gained from the course.

b. Attendance Requirements.

Attendance is required. Time: 3:30 - 5:00 pm
6. Professional Expectations

7. Course Updates Based on Student Feedback

8. Concluding notes
Session Overview - Ancient Medicine

Session Date: 9/14/16
Robert M Feibel, MD

Session Requirements:
All students are to read Chapters 1 and 2 before the session.

Learning Resources:
Textbook for course (updated 8/18/16 md)
(Doctors: The Biography of Medicine by Sherwin Nuland, MD)

Session Objectives:
After this session, students will be able to:

- Discuss and understand the origins of Western medical science from the time of the Greeks and Romans until the Renaissance

Information About the Session:
Hippocrates and Galen are pivotal figures in the history of medicine. Their concepts and theories of anatomy and physiology were the controlling authority for physicians for over 1000 years.

Recommended Reading:
Optional (not required) reading for further study
Nutton: Ancient Medicine

Chapter 4 - Hippocrates, the Hippocratic Corpus and the Defining of Medicine
Chapter 6 - Hippocratic Practices
Chapter 15 - The Life and Career of Galen
Chapter 16 - Galenic Medicine

Review Materials:
None available at this time.
Session Overview - The Beginnings of Modern Medicine

Session Date: 9/21/16
Robert M Feibel, MD

Session Requirements:
All students are to read Chapters 3 and 5 before the session.

Learning Resources:
Textbook for course (updated 8/18/16 md)
(Doctors: The Biography of Medicine by Sherwin Nuland, MD)

Session Objectives:
After this session, students will be able to:

- Appreciate the beginning of modern medical science, as physicians began to utilize rigorous observation and logical experimentation

Information About the Session:
We will discuss Andreas Vesalius who paved the way for the development of modern anatomical study and William Harvey who fostered the scientific revolution of experimental physiology.

Recommended Reading:
Optional (not required) reading for further study

2. Vesalius, Saunders, and O'Malley 1950: The Illustrations from the Works of Andreas Vesalius of Brussels

Review Materials:
None available at this time.
Session Overview - Great Developments in Internal Medicine

Session Date: 9/28/16
Robert M Feibel, MD

Session Requirements:
All students are to read Chapters 8 and 9 before the session.

Learning Resources:
Textbook for course (updated 8/18/16 md)
(Doctors: The Biography of Medicine by Sherwin Nuland, MD)

Session Objectives:
After this session, students will be able to:

- Describe two of the most important discoveries of 19th century medicine, the discovery of the stethoscope, and the concept of the cause and prevention of infectious disease

Information About the Session:
Rene Laennec’ invention of the stethoscope and his emphasis on the physical examination of the patient began the idea of modern clinical examination. Ignac Semmelweis was one of the first physicians to understand the cause and prevention of contagious diseases.

Recommended Reading:
Optional (not required) reading for further study

3. Historical Perspective on Hand Hygiene in Health Care http://www.ncbi.nlm.nih.gov/books/NBK144018 (Links to an external site.) (Links to an external site.)
5. Methods to increase handwashing compliance [http://ac.els-cdn.com/S0196655310001823/1-s2.0-S0196655310001823-main.pdf?_tid=34920b50-79f4-11e6-9f14-00000aacb35f&acdnat=1473800224_9fa9a48c5dfb5bf6e3672a199f32d376](http://ac.els-cdn.com/S0196655310001823/1-s2.0-S0196655310001823-main.pdf?_tid=34920b50-79f4-11e6-9f14-00000aacb35f&acdnat=1473800224_9fa9a48c5dfb5bf6e3672a199f32d376) (Links to an external site.)


**Review Materials:**

None available at this time.
Session Overview - The Rise of Pathology

Session Date: 9/29/16
Robert M Feibel, MD

Session Requirements:
All students are to read Chapters 6 and 11 before the session.

Learning Resources:
Textbook for course (updated 8/18/16 md)
(Doctors: The Biography of Medicine by Sherwin Nuland, MD)

Session Objectives:
After this session, students will be able to:

- Appreciate how the field of pathology demonstrated that disease arose from observable malfunctions in specific organs, tissue, and cells

Information About the Session:
Giovanni Morgagni was the first physician to insist that the origin of disease arose from an abnormality in a specific organ that could be identified by autopsy. Rudolf Virchow's major achievement was in demonstrating that the cell is the basic unit of life and disease. These concepts allowed science to identify the tissue alterations from health to disease, establishing what we now call pathophysiology.

Recommended Reading:
3. A survey of the history of pathology: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2895866/ (Links to an external site.)
5. History of grave robbing or body snatching: [https://en.wikipedia.org/wiki/Body_snatching](https://en.wikipedia.org/wiki/Body_snatching) (Links to an external site.)

**Review Materials:**

None available at this time.
Session Overview - The Development of Modern Surgery

Session Date: 10/6/16

Robert M Feibel, MD

Session Requirements:

All students are to read Chapters 10 and 12 before the session.

These are also required readings:

- For general anesthesia:
  - Link to "Insensibility During Surgical Operations Produced by Inhalation (Links to an external site.)" by Dr. Bigelow
  - "Inhalation of Ethereal Vapor for the Prevention of Pain in Surgical Operations" by Dr. Warren
  - "The Discoverer of the Effects of Sulphuric Ether" by Dr. Warren
- For antiseptic surgery:
  - "On the Antiseptic Principle in the Practice of Surgery" by Joseph Lister

Learning Resources:

Textbook for course (updated 8/18/16 md)

(Doctors: The Biography of Medicine by Sherwin Nuland, MD)

Session Objectives:

After this session, students will be able to:

- Review the two greatest discoveries which established the foundations of modern surgery

Information About the Session:

The invention of general anesthesia in the United States in 1846, and Joseph Lister's concepts of antiseptic surgery, were the discoveries which allowed modern surgical technique to develop

Recommended Reading:

Optional (not required) reading for further study

2. Rav, P. Prithvi: Chapter 1 - Historical Aspects of Regional Anesthesia from Textbook of Regional Anesthesia

Review Materials:

None available at this time.
Session Overview - Medical Science in America

Session Date: 10/28/16
Robert M Feibel, MD

Session Requirements:
All students are to read Chapters 13 and 14, and the WUSM History document before the session.

Learning Resources:
- Textbook for course (updated 8/18/16 md)
  (Doctors: The Biography of Medicine by Sherwin Nuland, MD)
- WUSM History - Beginning a Great Work (updated 8/14/16 md)
  (by O'Connor)

Session Objectives:
After this session, students will be able to:

- Understand how academic medical programs and education developed in the United States

Information About the Session:
The work and research of William S. Halsted, Helen Taussig and Alfred Blalock at The Johns Hopkins Hospital established it as the first modern medical school in America. We will end our course by learning the history of the development of the Washington University School of Medicine.

Recommended Reading:
1. “Blue Baby Operation” (exhibit in the Alan Mason Chesney Medical Archives of the Johns Hopkins Medical Institution) http://www.medicalarchives.jhmi.edu/page1.htm (Links to an external site.)
2. “The Four Founding Physicians” http://www.hopkinsmedicine.org/about/history/history5.html (Links to an external site.)
4. History of Osler's text The Principles and Practice of

Other articles in the history of cardiac and thoracic surgery:


12. The important role of Thomas in the “blue baby operation” [http://journals.lww.com/pccmjournal/toc/2003/10000](http://journals.lww.com/pccmjournal/toc/2003/10000) (Links to an external site.) (After accessing the title page of this journal Pediatric Critical Care Medicine 2003;4(4): 451, click where it says abstract and the whole article comes up)

The Entry of Women into Organized American Medicine:

13. Dr. Elizabeth Blackwell, the first woman to receive an MD degree in America: [https://www.nlm.nih.gov/changingthefaceofmedicine/physicians/biography_35.html](https://www.nlm.nih.gov/changingthefaceofmedicine/physicians/biography_35.html) (Links to an external site.)

14. Dr. Mary McLean, one of the first and most important woman physicians in St. Louis: [http://beckerexhibits.wustl.edu/mowihsp/articles/McLean.htm](http://beckerexhibits.wustl.edu/mowihsp/articles/McLean.htm)

15. Timeline of history of women in American medicine: [http://www.lindabrodskymd.com/resources/women_in_medicine.html](http://www.lindabrodskymd.com/resources/women_in_medicine.html) (Links to an external site.)

**Review Materials:**

None available at this time.
Student Comments

- Thanks so much for organizing and teaching this course! I had a great time, and especially love the trips to the Rare Books Archive.

- Thank you for a great first selective session!

- Thank you very much for teaching the History of Medicine class. I really enjoyed getting to discuss the biographies of so many doctors throughout history and it was also interesting to hear about your own experiences in ophthalmology.

- Thank you again for a wonderful and informative class experience. I enjoyed the course greatly, and certainly learned a great deal!

- I just wanted to say that I thoroughly enjoyed your course.

- I thoroughly enjoyed this class and will highly recommend it to the incoming class of next year!

- Thank you for a great selective experience!

- I have attached my essay and wanted to let you know that I really enjoyed being a part of your course this semester!

- It was a wonderful class! Thank you so much for teaching!

- Thank you for leading such a great course!

- I really enjoyed your class and look forward to continue studying the history of medicine in my free time.
History of Medicine Self Reflection

I have always loved history, not only because of the subject's ability to teleport you into a different era and into the lives and interactions of people in previous generations, but also because I think it is incredibly important to understand the past. I think this importance has especially increased as we have become an increasingly interconnected world. This class was the first chance I had to begin understanding the history of the field I chose to pursue for my career.

The chapter on Hippocrates was particularly influential because of its timing. Fresh off forming our own class version of the Hippocratic Oath, it was that much more meaningful to read about the origins of medicine and the person considered to be the field's “father”. Over the course of my first few months studying medicine, the meaning of “first, do no harm” has starting to sink in more and more. A physician I shadowed in primary care told me one of the most difficult, but powerful things you can do as a doctor is to sometimes step back and make the decision to not intervene to fix any abnormal vital sign. I saw both the desire (of patients and doctors) to seek interventions that day, and thought back to the passages of Hippocrates: “Some patients, through conscious that their condition is perilous, recover their health simply through their contentment with the goodness of the physician”. Additionally, it was truly remarkable that even around 500 B.C. we saw the beginnings of an empirical approach to medicine. It must have been a remarkable time to be in Greece.

Then came the Renaissance physicians. Out of the incredible historical figures we studied in this era, I think Vesalius and Harvey particularly stood out to me because of their incredible contributions to human anatomy and the understanding of the human body. I think visiting the Rare Books Archives was a truly wonderful experience, and put in perspective how immense these works were. I was amazed by the amount of anatomy studied, and how they linked their studies to physiology, like Harvey's work on systemic circulation. I was also, like most people, very intrigued by the fact that despite having such deep understanding of anatomy, the treatments for patients was so bizarre (from our perspective at least). Taken in context, however, I couldn't help but wonder if in 400 years, doctors will look back at our generation and wonder the same. I think of our work in genetics, our ability to sequence the entire human genome, yet our inability to use this understanding of the genetics of disease to truly impact medicine on a personal level.
History of Medicine Selective

Learning about the history of medicine has helped me understand the vast field in which we, as medical students, have chosen to immerse ourselves. I think this can be compared to learning embryology as a way to understand anatomy – understanding the different processes that changed and molded over the years to create modern medicine gives you a deeper understanding and appreciation of where we are today, and a window to appreciate the potential magnitude of future medical developments. I think that most strikingly, I have gained an appreciation for how much molecular biology research in the last couple of years has changed how we treat disease, how much we understand about the body, and how we approach patients as doctors. Before this century, innovations in medicine were limited to procedures, and procedures outside of our most vulnerable compartments such as the abdomen and thorax at that. Now, within years of discovering a protein we can start identifying inhibitors, and start treating people with these inhibitors in trials. Considering this, along with the technological innovations that continuously pervade healthcare, medicine is really moving at a rapid pace. I think that our generation of doctors needs to realize that, and really be ready to be life-long learners and approach our field with a large degree of open-mindedness. At the same time, because of all of this innovation we face a unique problem where there exists so much research that it all needs to be shifted through and analyzed in order to be used appropriately. Therefore, for a doctor to best serve his/her patient, he/she needs to be trained in being critical and in applying evidence based-medicine, and use these skills constantly throughout his/her practice.

Another recent shift that I have come to appreciate because of this class has been the United States’ transition to becoming a medical research powerhouse. Before this century, if a doctor was really interested in good medical training, he would have needed to go abroad. However, in the late 1800s/early 1900s, with the founding of John Hopkins Medical School, more attention and care was placed into how physicians were being trained. Medical schools began having more stringent requirements for entry, exceptional physicians were being recruited as teachers, research was incorporated into the curriculum, and money started flooding in from grants and donors instead of the faculty themselves. The Washington University School the Medicine was also starting off at this time, and, by using John Hopkins as a model and incorporating all the aforementioned advancements, was successful in creating a “modern” medical institution. This period, about a century ago, is really when the United States transitioned to being skeptical and slow to accept medical developments to a place where these developments began to occur. So, whereas learning more about the history of medicine has given me a greater appreciation for the training I am receiving, learning that the creation of our medical school occurred within the context of America’s medicine revolution has given me a greater appreciation for the institution within which I am receiving my training.
Conflict and Drama: Reflection on The History of Medicine

One major theme stands out to me above all else in “Introduction to the History of Medicine” and in every chapter of Nuland’s Doctors: The Biography of Medicine. The major theme I am referring to is the unending conflict and political power struggle stretching back even to the days of the Ancient Greek doctors. While it is possible that Nuland overplays this theme of conflict and drama to make his biography interesting and readable, it also seems that the drive to improve and progress naturally creates a battle of ideas in medicine and in the sciences. In order to explain the ways that ideological conflict has shaped medicine, I will first reflect on examples of major conflicts in Nuland’s text and then comment on the role of conflict in medicine: how it helps generate and test new ideas, but can also be bad for the field of medicine in its most divisive and destructive forms.

1) Examples of Conflicts in Nuland’s text

The first ideological conflict that Nuland presents is between the Coan school of medicine and the Cnidian school of medicine in Ancient Greece. The earlier medical school founded at Cnidus valued what can be thought of in modern terms as evidence-based medicine, while the later medical school that Hippocrates founded at Cos valued what can be thought of as holistic medicine. Coan medicine seems to have been far more productive than the earlier Cnidian medicine, partly because of the limitations for performing empirical science in ancient times. Even in modern times there is a strong case for holistic Coan medicine because the patient’s body, a machine produced from billions of years of evolutionary trial and error, is often far more effective at healing itself than a crude medical intervention is. Thus, a doctor who simply observes his or her patient and practices palliation and comfort can sometimes achieve good results due to the patient’s body’s capacity to heal itself. The victory of Coan medicine can be seen in the fact that Hippocrates’ name and oath is celebrated, while the other early Greek medical schools are more obscure.

Moving on from the ancient medicine of 500 BC, the next conflicts revolved around Galen, who lived in the 2nd century AD. By the time Galen entered the medical establishment, there was a “bewildering array of doctrines [including] Dogmatic, Methodist, Empiric, Pneumatic, and Eclectic” (Nuland 36). It is not clear from Nuland how severe and hostile the ideological conflicts were within medicine between these numerous doctrines, but Galen’s logical and empirical thought process seems to have easily dominated medicine and united the field for over a thousand years with anatomical discoveries that are still true to this day. However, Galen’s dogmatic and self-assured rhetoric, which at first united medicine, came at a cost as it prevented progress and sparked the next major battle. This next major conflict came more than a thousand years later when Vesalius adamantly critiqued Galenic dogmas and established modern anatomy in the process. Vesalius is the poster child for conflict and drama leading to the progress of medicine since he had so many enemies who bitterly hated him, but he was also instrumental in advancing medicine. While Vesalius seems to have been a deeply troubled person who had many enemies, abandoned his wife and family, had sadistic tendencies, and was allegedly expelled from a city for dissecting a living person, his influence on medicine is
enormous. The books he published and the anatomical dissections he pioneered were
invaluable to modern medicine.

Moving on from Vesalius, several major conflicts from more modern times were covered in the
course. One of these conflicts revolved around the geographical center of medicine: how
medicine was strongly established in France from 1800 to 1850, but how Germany became the
center of the medical establishment from 1850 to 1900 with the rise of a laboratory science. The
geographic center of the medical establishment seems to have later moved to the United States
in the 1900s with the rise of Johns Hopkins and Massachusetts General Hospital. This
geographic swing is in some ways emblematic of the dramatic conflicts in between physicians
and doctrines of the time, with new pioneers winning out and older schools of thought being
replaced. During the period of German influence and French influence, for example, one major
conflict revolved around antiseptic surgery and antiseptic child delivery. The acrimonious debate
between Semmelweis and his contemporaries over the origin of puerperal fever is a perfect
example of how the recognition that physicians could do harm by spreading germs created
anger and hostility.

Moving from the German and French theater into the American period of influence, another
conflict was over the invention of anesthesia, with several fierce rivals vying for credit. Whether
Horace Wells or William Morton deserves more credit for developing anesthesia is open to
debate. Similarly, there was conflict over how medical colleges in America, and Washington
University School of Medicine in particular, should be established and run. The Flexner report
was incendiary and decisively criticized Washington U and other medical schools of the time.
While this report caused most medical schools in the U.S. close, it also enabled progress in
medicine by restructuring medical education and enforcing stricter admissions procedures to
make sure that doctors were highly educated. Wash U itself is a prime example of progress
from conflict since the school radically rebuilt and restructured itself in just a few years following
the Flexner report, dramatically improving and becoming a world-renowned institution.

2) Was all the conflict useful or productive?

As shown in the case of Wash U rebuilding itself and in the case of Vesalius advancing medical
knowledge, conflict can be a productive force that allows new doctors and new ideas to change
the face of medicine and improve patient care. Each new medical theory has a chance to battle
older theories and hopefully the strongest theory will emerge as the victor and shape the future
of medicine. However, too much conflict can be very harmful to a field. One prime example is
Semmelweis, whose brilliant ideas about antisepsis and puerperal fever may have been
dismissed at the time because of his combative rhetoric toward other doctors of his day. Thus,
had Semmelweis been more diplomatic and avoided conflict, perhaps more lives could have
been saved much more quickly. Conversely, lack of conflict between Wash U and Flexner
exemplifies how avoiding anger and resentment can help conflicts be used productively. Wash
U embraced Flexner’s criticism rather than angrily rebutting the Flexner’s opinions. This
embracing of change was productive and helped Wash U grow. Overall, it seems that conflict is
inevitable, but that responding positively and productively to it enables the field of medicine to
grow and to not be bogged down in petty conflicts.
Impressions and Knowledge Gained

Experiments and Experience
Medical progress reflects societal context

The modern physician can all too easily reflect on the crude ancient teachings of medicine’s
founders – Hippocrates and Galen – with scorn. After all, their scientific theories and
rudimentary cures seem so strange and foreign to today’s practice. Bloodletting is, thankfully,
out of practice, and modern anatomy textbooks have no place for the rete mirabile. However,
Hippocrates, Galen, and every other figurehead in the long history of medicine, existed as
products of their time and place. Within this social context, these physicians were shaped by the
prevailing ideas and attitudes of their peers and those who came before them while proceeding
to advance their field forward in steps. Not all these steps were easy by any means, but their
summation has crafted the path of modern medicine on which we thread today, a path that well
deserves the reflection opportunity offered by this introductory course on the history of
medicine.

While the medicine of Hippocrates and Galen appears very different from the medicine of today
at first glance, some aspects of the profession do not change so easily. For instance, the very
philosophy of medicine held by any individual at any point in history can be defined in relation to
the two major schools present in the time of Hippocrates: the Coan and the Cnidian schools.
Hippocratic physicians, as practitioners of the Coan approach, focused on a holistic view of the
patient and viewed illnesses as events within a broader context, while Cnidians sought specific
etiologies for every disease. Both approaches have much merit, but in an age where knowledge
of individual organ systems was severely limited, the Coan philosophy flourished, leading to
generations of physicians who were sensitive to the symptoms and course of diseases while
forming the foundation of a code of medical ethics that influences physicians to this very day.

As advancements arose in medical science, it became possible for physicians to reintroduce
aspects of the Cnidian philosophy as anatomical and physiological knowledge grew to its full
potential. Many famous physicians proposed novel ideas that broke from past dogma to
introduce a new and more detailed understanding of the human body and its diseases, but
these advancements required the right social environment. Even in the extreme case of
Vesalius, where his innovative anatomy surpassed the stodgy and erroneous Galenic texts that
were prevalent for hundreds of years, progress could only come in the welcoming atmosphere
of the Renaissance. Even then, his writings were still strongly resisted by many, and it took
years for his modern views on anatomy to permeate medical education into general
understanding. Hundreds of years later, Lister encountered similar resistance to his antiseptic
surgical methods. Culturally, surgery was unprepared for the changes he suggested, and it
required the accumulation of a great deal of evidence, much evangelization, and the dawn of a
new cadre of surgeons to realize his antisepsis and ultimately complete the transition to
asepsis. In this way, medical progress has moved, and continues do so, in steps as the world
prepares itself for each new finding.
History of Medicine Impressions and Reflections

The History of Medicine selective has been a phenomenal survey course. I enjoyed hearing about Hippocrates and Galen and their contributions to the philosophy of medicine.

I also appreciated learning about Vesalius and his transformation of the teaching of anatomical dissection, turning it into an active process where the students dissected and observed themselves. It was, furthermore, interesting to learn about Harvey's experiments on cardiac physiology and his discovery, now obvious in hindsight, that blood must circulate throughout the body.

One of the most interesting aspects of the course, for me, however, was learning about the history of our own Washington University School of Medicine. The early days of the university were apparently rough, with faculty who were too preoccupied with their own clinical practices to properly coordinate a curriculum and facilities that one student described as “dirty” and “covered with the grime and soot of years.” These problems were brought to light publicly in one of the most important documents in overhauling the American medical system, the Flexner report. Published in 1910 and written by a layman, not a physician, named Abraham Flexner, the report gave a scathing, and in retrospect comical, assessment of the various health education institutions of the time. After visiting Washington University, he described it as “little better than the worst I had seen elsewhere, but absolutely inadequate in every essential respect.” For other medical schools, these condemnations brought about their closure, and the same could have easily happened at Washington University. Fortunately, Brookings took immediate and extensive measures. In addition to funding the building of new medical school buildings which would be affiliated with the nearby Barnes hospital, he fired senior faculty and recruited some of the finest professors of the era. One of these faculty members, Joseph Erlanger, would go on to win the Nobel prize in medicine for his work on action potentials. These extreme, yet necessary, renovations laid the groundwork for Washington University School of Medicine to become one of the leading medical education centers that it is today.

As an aside, it was both astounding and disheartening to learn about the racial segregation that occurred in the hospital up until 1947. African American children were treated mainly as outpatients, instead of inpatients, and were relegated to separate and likely lesser facilities in the “Butler ward for Negro children.” One glimmer of hope during this dark time was the story of a resident, David Goldring, who had the decency and kindness to bring a premature African American infant to an incubator in the white infant ward when they ran out of space in the Butler ward, despite condemnation by the hospital administrator.
Hand hygiene compliance and its continuing challenges

Early in the 19th century, physicians and their pupils in the maternity ward of the University of Vienna Allgemeine Krankenhaus hospital would deliver newborns right after performing autopsies without washing their hands. As this practice suggests, this was prior to the establishment of germ theory and physicians did not find it meaningful to wash one’s hands after a cadaver dissection. As expected, due to this unhygienic practice, maternity wards that were operated by physicians had a higher death rate due to spread of infection when compared to the wards operated by midwives – simply because midwives were not in the habit of dissection cadavers and then transferring infectious particles to expecting mothers with unwashed hands. Ignac Semmelweis was the first to recognize the cause of maternal death and link the spread of puerperal fever to poor physician hand hygiene. As a counter-measure, he was the first to introduce ‘hand washing’ with chlorinated water after cadaver dissection. Ignac’s intervention, however, did not take with the staff in Vienna and therein started a 200 year-old-problem of hand hygiene compliance. As common sense as Semmelweis’ intervention may seem now, even today, physicians and health-care workers need to be constantly reminded of the importance of hand-hygiene with a compliance rate of under 40%.

Modern efforts of tackling this prevalent problem are focusing on a multimodal approach through the addition of alcohol based hand rubbing as a substitute to hand washing, setting standards for hand hygiene in healthcare institutions, educating health-care workers and providing a ubiquitous supply of disinfecting hand rubs. This has been a more or less successful model as it targets many of the main barriers to compliance by reducing the amount of time needed to disinfect and reducing the knowledge gap of health care workers. Whereas significant progress has been achieved since Semmelweis’ initial findings, hand hygiene still remains a persistent blemish on the effort to control the spread of infectious disease.
History of Medicine Reflection

I remember first being introduced to Google Scholar in high school science class. We were ushered down to the computer lab and directed to webpage. Before we were even allowed, my biology teacher asked us to reflect on the words that can still be found underneath the search bar on the Google Scholar homepage: “Stand on the shoulders of giants”. The weeks I spent in the History of Medicine have been a have been an excellent way to reinforce this lesson that I learned many years ago.

Several themes encountered in these have left a lasting impression on me and have changed the way I view the individuals whose great achievements have shaped medicine as it is today. One thing that really stood out to me was the respect I gained for each of the physicians studied. Many of them sought to introduce new idea into the practice of medicine that were initially discredited and negatively affected their lives and careers. A lot of them found that their ideas were dismissed or discredited even when there was evidence to support them. For example, considering how integral washing hands is to modern infection control, I can't imagine how frustrating it must have been for Semmelweis to try and convince other physicians to wash their hand before delivering babies. Stories like this make me really respect and appreciate the obstacles that these physicians have to face. Another thing that has really changed was the way in which I view some of the erroneous beliefs that have been held by medical practitioners. I feel that the textbook did a good job of presenting us with the historical and societal context under which these physicians were practicing and researching. This was especially prevalent for me when we studied the chapter concerning Virchow and how a prevailing theory during his time was that diseased tissues and healthy tissues have different origins. The context present in the book actually allowed me to follow this train of thought and I actually felt like that would be something I could have believed had I lived in Virchow's time. Finally, I have a sense of awe for how hard some of the physicians worked in their life. What I do now as medical student seems to pale in comparison.

Overall, I believe that this course has left me a greater appreciation of the achievements, trials, and tribulation of our predecessors of medicine. Changes in the field can be slow but also have chance to effect profound improvements in the care we deliver to our patients. I'm left with a sense of gratitude for the physicians who have made their mark on field of medicine.
History of Medicine Essay

The History of Medicine course was a fantastic opportunity to learn about the foundations of modern medical science in a literary and discussion-based context. The course combined my interest in literary analysis and medical history, with an added bonus of learning about the history of printing and book-making, which was in fact an essential aspect of the dissipation and advancement of medical knowledge. I also enjoyed the book used to guide the course content, which I personally found amusing and informational. I feel significantly more informed as a medical student with my foundational knowledge of some of the most important figures in modern medicine, and found myself thinking about Vesalius in anatomy lab and of Harvey during cardiac physiology lectures. As someone who always remembers word definitions better when I understand the etymology, I analogously found relevant medical topics easier to comprehend once I knew how physician-scientists before us came to discover those biological truths. The beginning part of the class, perhaps intentionally, aligned well with our technical coursework, which was helpful and more engaging.

Some of the many renowned figures discussed were Hippocrates, Galen, Vesalius, Harvey, Laennec, Morgagni, and a large collection of individuals involved in promoting the use of ether in general anesthesia. Hippocrates and Galen came from more ancient civilizations with limited scientific knowledge, but offered the foundational credos and ideologies that, for better or for worse, persisted throughout many centuries afterwards. Hippocrates was the first to declare how physicians should conduct themselves and how best to observe, learn from, and treat the ailing human body. Much of Galenism was incrementally debunked, beginning with the era of Vesalius and the proper dissection and analysis of the human body. Beautiful anatomical textbooks and atlases were published, and new discoveries were made that contradicted Galen’s humoral theory. Rather than vital pneuma, which dissipated in the tissues, a constant volume of blood circulated throughout the body, lungs, and heart. Harvey attached no predetermined function or purpose to his findings, choosing a simpler, objective description of his discoveries.

The intense dedication of Laennec to his profession, despite his progressively worsening disease, was inspiring and continues to motivate me to push my own limits and abilities when I feel tired or defeated by schoolwork. Furthermore, he invented the stethoscope, an invention so symbolic and commonly used in the field that it is astounding more people don’t know his name. Morgagni’s De Sedibus is a textbook medical textbook, with its case-based learning philosophy and multiple indexes for easier referencing. It appealed greatly to my preference for well-organized and well-written textbooks, which can be hard to come across even today. It is a bit strange that other gifted minds didn’t have the idea to create a textbook like this sooner in history, but I suppose that’s what the Age of Enlightenment can inspire in a prepared mind, to paraphrase Lister.

The discovery, use, and promotion of ether during surgical procedures was of particular interest and amusement to me because of the time I spent working at MGH doing clinical research. I recalled the talks and lectures I attended in the Ether Dome during my time there. The seats are so small, hard, and uncomfortable that I honestly think they haven’t replaced them since the
1800’s, so maybe I have a decent idea of what it might have felt like on the original Ether Day. It was also interesting to learn more about the many building names, which I now know were almost all individuals involved in Ether Day, either directly or indirectly. Overall, the institution has come a long way since that awful fight for the claim-to-fame of ether, but somehow the narrative still resonates and sounds familiar. I guess some things never change in scientific research.

In the end, I am very glad to have participated in this course, and very lucky to have been able to look at some original texts from the 15th through 19th centuries. I am eager to share what I saw and the resources we are so lucky to have with the rest of my classmates, and encourage them to be inspired by our predecessors’ work as I have been! I look forward to visiting Becker 6 throughout my time at WashU, and feel that my medical education is more rounded out thanks to this course. In the future, I think it would be a great idea to have a part of one of the later sessions devoted to hearing from Dr. Feibel and learning about his career through medicine.
History of Medicine

The study of the History of Medicine was intriguing, not only because it was interesting to trace the progression and advancement of medicine over the past 2,500 years, but also because of the themes that became evident at every stage which are a great learning lesson for the present. Throughout the history of medicine there seems to be a certain degree of inertia, at times preventing or questioning progress. This was clearly seen in the case of Galen, who was so revolutionary and progressive in his advancement of Anatomy and medicine that it discouraged further progress for nearly 1,500 years. Others simply accepted the knowledge that came before them without seeking to build upon it, or put it to the test objectively on their own.

Yet, it can also become easy to look at the past in the frame of present knowledge and hard to judge individuals based upon the time in which they lived. When Renaissance scientists began to disprove many of Galen's notions, the result was an overly critical look at a man who had contributed so much in his time and could not have been expected to be perfect. Had others sought to build upon his work, he could have been viewed as a forefather rather than a barrier, as many began to view him to some extent.

Thus, once that inertia is overcome, and new progress is made, the prevailing wisdom seems to be that those who practiced differently before or could not make as much progress as the contemporaries had achieved were woefully ignorant, setting the stage for a new round of inertia. Even in the case of antiseptics and stethoscopes, advances that are so common and obvious in their appeal today, the developers faced backlash in their time as they threatened to change accepted practices. Contemporaries would have to admit their own prior ignorance in order to accept that there was a better way of doing things. In fact, Nuland made the point that Anesthesia was exceedingly rare to become almost universally accepted overnight, and only because the benefits could be so clearly visualized and quantified. The result is a powerful lesson to try to understand for ourselves why the best practices of our time are best, at least be receptive to changes, and realize that in the future others may realize that we ourselves were woefully ignorant in some regards.
While reading Sherwin B. Nuland’s *Doctors: The Biography of Medicine*, I felt that the words of Professor Karl Thiersch best described the journey most of these physicians had to take in order to reach the fame they have today. What he described is the three stages of discovery: “The first, when the world smiles and shakes its head and says, ‘It’s all nonsense’; the second with a shrug of the shoulders and a look of contempt, ‘It’s the merest humbug’; and finally, ‘Oh, that’s an old story, we knew that long ago.’” With each new discovery, the physician was competing with preexisting ideas that may have prevailed for centuries in some cases. Some of the biggest examples of this struggle is the work of Vesalius and Harvey and how they had to compete with Galen’s work, which was considered the fundamental medical text for 1300 years. Vesalius had trouble proving that some of anatomical structures mentioned in Galen’s work did not exist in the human body, and was so angered by the opposition, he quit his research and became a clinician. However, now his *Di Humani Corporis Fabrica* is considered one of the most influential books on human anatomy. Harvey had similar issues proving that his research proved the true mechanism of circulation of the blood and heart. Furthermore, Semmelweis and Lister both struggled with getting the Germ Theory of disease accepted and the appropriate precautions implemented. This was in part because physicians did not want to take responsibility for all of the deaths they may have caused due to their poor technique, but now aseptic technique is practiced during surgeries, and handwashing is encouraged for not only physicians but for everyone in the community to prevent the spread of communicable diseases.

We can easily learn from the stories in this novel. Even the biggest medical discoveries take years to convince everybody and even longer to get the discoveries implemented in a way that could actually help patients. Right now, the average apparently is around ten years. Although it is easy to quickly share knowledge to a wider range of people today, you also get a larger pool of people to reject your ideas much faster. It takes the determination of a physicians like Lister, who tirelessly fought for his ideas to be implemented, to do the same today as well. We must remember that even the greatest discoveries in the history of medicine met with great opposition. The fear of being opposed should not deter us from taking risks and making discoveries that could potentially help and heal people, as the need to help and heal is one of the few principles of being a physician that has stayed true since the days of Hippocrates.
Intro to the History of Medicine

As a first year medical student, it is easy to become engulfed by vast amount of new information that we are expected to learn and apply without developing perspective on how or why we are learning the information to begin with. Through learning about the history of medicine, I have gained valuable insight into the history of material I am learning in my pre-clinical courses, the development of medical education, and the evolution of the physician’s way of thinking.

After learning about Hippocrates, Galen, and Vesalius it is not surprising that current medical students begin their education by studying anatomy. As the most tangible basic medical science, anatomy provided an accessible source of research for the ancient Greeks to discover new information and generate new questions. What I found most impressive about both Hippocrates and Galen was not the prolificacy of their work, but their long-lasting impact and how they completely changed peoples’ way of thinking before them. While Vesalius did contest Galen’s findings in *De Humani corporis fabrica*, he still applied Galen’s theories to the new observations. Recognizing the names of structures in a book written in the 16th century that were the same in my current anatomy textbook was a profound experience that made me realize the impact that these figures had on anatomy.

Another aspect of the course I found fascinating was the development of medical education. Whether it was incorporating Knidian or Koan philosophies, participating in the body snatching trade, or practicing bloodletting on patients, each era brought its own techniques and traditions to education students on the art and practice of medicine. While even our medical school curriculum is always changing, I thought it was significant to understand the process that led to changes in how students are educated. In particular, I could relate to the Flexner report and how it completely changed American medical education. I appreciated reading Flexner’s specific findings on Washington University, and am proud of how the school of medicine responded to his criticisms by becoming the prestigious institution that endures today.

Perhaps the most significant lesson I will remember from the course involved studying how physicians’ perceptions of the science and art of medicine changed over time. While I respect Galen for his incredible curiosity and overall impact, I found it unbelievable that his erroneous findings were taught and unquestioned for centuries, especially since current medical students are encouraged to not only to question the information they are being taught, but also to discover new information and persist in being lifelong learners.

Ultimately, I thought this course was enjoyable and informative. It provided some much needed perspective on medical school and practicing medicine as a career in general. I am thankful that experienced the course early on so that I can always be mindful of the history of medicine while I progress through my career.
On the Rise and Fall of Galenic Anatomy

To the medical student unfamiliar with the course of medicine throughout history— which can seem insignificant and inconsequential compared to the vast volumes of more relevant knowledge and learning necessary to practice modern medicine— human anatomy, at least on a macroscopic level, appears to be a very well understood field with not much controversy over the grand scheme of things and little room for error. It is hard to imagine a past where the simple identification of basic structures and their functions could be misconstrued. However, for much of the recorded history of medicine, animals served as the basis of understanding human anatomy, in conjunction with a humoral view on pathology. Stemming from misinformation, a pernicious and ineffective form of medicine persisted. Galen of Pergamon is responsible for many of these discoveries and works that misled the course of medicine, and it was not until Andreas Vesalius that the medical community began to realize the flaws in its assumptions. By examining the contributions of Galen and by studying the debunking of such by Vesalius, a greater appreciation for and valuable insight into the study of anatomy can be gained.

Based on current standards, many of the theories proposed and conclusions drawn by Galen are absurd. However, to scrutinize Galen using the lens of modern medicine is to disregard the brilliance of his contributions under the limitations of his time. Under Roman law, autopsy and human dissections were prohibited. As a result, Galen settled with performing vivisections and dissections of animals including pigs, primates, and sheep. In personally conducting countless dissections, Galen systematized the readily observable anatomy noting such differences as the arterial and venous systems. In methodically adjusting his techniques and altering normal anatomy, he was able to demonstrate that the voice was generated in the larynx. Furthermore, he published extensively and effectively disseminated his remarkable findings. Although his findings were undercut by the incongruence of human and animal anatomy and his logical approach were undermined by personal teleology, the discoveries of Galen were impressive for his time, and his methods were highly empirical.

Medical practice and research floundered for more than a millennia following the widespread acceptance of Galenism. Due to various factors ranging from political tumult to economic instability that will not be discussed herein, strict adherence to the Galenic corpus plagued physicians. By whatever stimulating factors and suitable environment that the Renaissance fostered, Andreas Vesalius managed to correct the course of medicine by challenging the long undisputed anatomical conclusions of Galen. By directly performing countless human dissections— which precisely embodied the empirical spirit that Galen championed— Vesalius corrected the errors of Galen and realized that Galen had not dissected humans. In a time when animal and human dissections were performed and lectured upon to a class, unclear anatomy instruction and indirect exposure led to a tortuous cycle of returning to and mindlessly corroborating the findings of Galen. In an extraordinary and unrelenting fashion, Vesalius dethroned the previously unassailable Galen in instances such as demonstrating the lack of the rete mirabile, which is found in sheep, and the three rather than seven part, as in apes, structure of the sternum in humans. Vesalius did not completely and instantaneously overthrow Galenism and did little to address the preeminent theory of vitalism, but he did set a precedence of
challenging Galen and empower others to conduct their own novel research not fearing the consequences.

In both cases, Galen and Vesalius greatly advanced the field of anatomy by direct observation and investigation. These were lost qualities during the dark ages of medicine but present during times of great medical discovery. On another vein, the late twentieth century saw the greatest outflow and advancement of medical research and practice. However, a quick survey of modern medical education reveals that direct laboratory experience in anatomy is limited. Many current medical students will only partially dissect a single cadaver in their entire career yet are slated to lead the most cutting-edge careers. In the vastness of medical knowledge that exists today, it is easy to become absorbed in passive learning and neglect direct exposure. Perhaps this may be a piece of the puzzle in medical education reform that is currently sweeping the nation.
Evaluation Results for: Intro to the History of Medicine

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How would you rate this selective course overall?

Statistics | Value
---|---
Mean | 4.33
Standard Deviation | +/-0.71

Please provide any comments you have about this course:

Comment

The only negative aspects of the course were the fault of my fellow students, unfortunately. Without everyone actually completing the readings, it was difficult to have an extensive and lively discussion, which the class structure greatly depended on.

The course sessions were very organized, and the required reading was a great handbook for the course.

How well were the course learning objectives met?

Statistics | Value
---|---
Mean | 4.33
Standard Deviation | +/-0.50

How effective was the course director in organizing and administering the course?
Would you recommend this course for future students?

Statistics | Value
--- | ---
Mean | 4.78
Standard Deviation | +/-0.44

Please comment on why you would or would not recommend this course.

Comment
The readings for the course were very interesting, and it's neat to contextualize our experience in medical education with the history of the profession.
I would recommend this course because the required work is interesting, and you come out with a completely different perspective on medicine.
The professor was clearly extremely knowledgeable about the history of medicine.

Please share suggestions for improvement of this course:

Comment
I think more incentives to get students to actually read the material will improve the course greatly!