An Introduction to the History of Medicine and Dentistry in the United States

Course Faculty

Essentials of the Profession
January 2025
Harvard Medical School

As you enter the medical profession, you might take certain things for granted. Physicians and dentists in the twenty-first century are members of prestigious professions, with respected institutions (e.g., clinics, hospitals, and schools) and a monopoly on the practice of medicine and dentistry. Their practices are grounded in sophisticated sciences. Clinicians deploy powerful therapeutics that can have a decisive impact on many diseases. Health care is a major sector of the American economy, with substantial investments from governments, insurers, and pharmaceutical and medical device companies.

This status is a recent development. It is important to understand the history of how this prestige was obtained: this history has left medicine with a legacy of racism and discrimination. Two aspects of this history are especially relevant.

First, none of status, wealth, and power of health care professionals and institutions existed when HMS was established in 1782 or when HSDM opened in 1867. For most of the 19th century, the professions in America were weak, disorganized, and unregulated. Understanding the contingencies of how and why medicine and dentistry developed in the United States provides valuable perspective on the practice of medicine and dentistry today.[1] Several questions need to be understood. What is a profession, and why does that matter? What role do doctors play in the broader medical marketplace? How has the balance between outpatient and hospital medicine shifted, and where should medical and dental education take place today? Why are the medical and dental professions less diverse than society at large? Is there a right to health care—and how have answers to this changed over time?

Second, health care, like all other institutions in the United States, bears the scars of racism that has existed ever since the establishment of the colonies that became the United States.[2] Doctors contributed to the creation of a racialized body of scientific knowledge.[3] They participated in the systems of chattel slavery, from the ships that carried enslaved people to the Americas to the plantation where enslaved people labored. They exploited a wide range of marginalized populations—African Americans, Irish immigrants, urban poor, institutionalized people, and many others—in teaching and research. They established exclusionary policies that limited the diversity of the medical profession. They continue to research and teach systems of race-based medical practice. While specific episodes of medical racism have received substantial attention (e.g., J. Marion Sims, the USPHS syphilis study at Tuskegee), the

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[1] On the utility of history in medical education, see David S. Jones, Jeremy A. Greene, Jacalyn Duffin, and John Harley Warner, "Making the Case for History in Medical Education," *Journal of the History of Medicine and the Allied Sciences* 70 (2015): 623-52.

[2] Evelynn Hammonds and Susan M. Reverby, "Toward a Historically Informed Analysis of Racial Health Disparities since 1619," *American Journal of Public Health* 109 (October 2019): 1348-1349; W. Michael Byrd and Linda A. Clayton. "Race, Medicine, and Health Care in the United States: A Historical Survey," *Journal of the National Medical Association* 93 supplement (March 2001): 11S-43S.

[3] Christopher D.E. Willoughby, *Masters of Health: Racial Science and Slavery in U.S. Medical Schools* (Chapel Hill: University of North Carolina Press, 2022).

problems remain pervasive.[4] There are many reasons why Black and Brown people have come to distrust our health care system. It is essential that all health care professionals understand the role that our professions have played in creating health inequities and in allowing them to persist. Only by doing so can we begin to contribute to meaningful solutions.

This essay provides a brief introduction to the history of health care in the United States to suggest initial answers to the questions listed above. It cannot offer full coverage of every relevant topic. It focuses on the development of medicine and dentistry (the fields in which you will all work), and not on other therapeutic systems (e.g., TCM, Ayurveda, homeopathy, indigenous therapeutic systems, etc.). It focuses on physicians and dentists, and not on other caregivers in these fields (e.g., nurses, midwives, physical therapists, dental technicians, pharmacists, etc.). It focuses on developments in Boston, but includes some important stories from other parts of the United States. Some topics (e.g., human-subjects research) are covered in more detail in later readings.

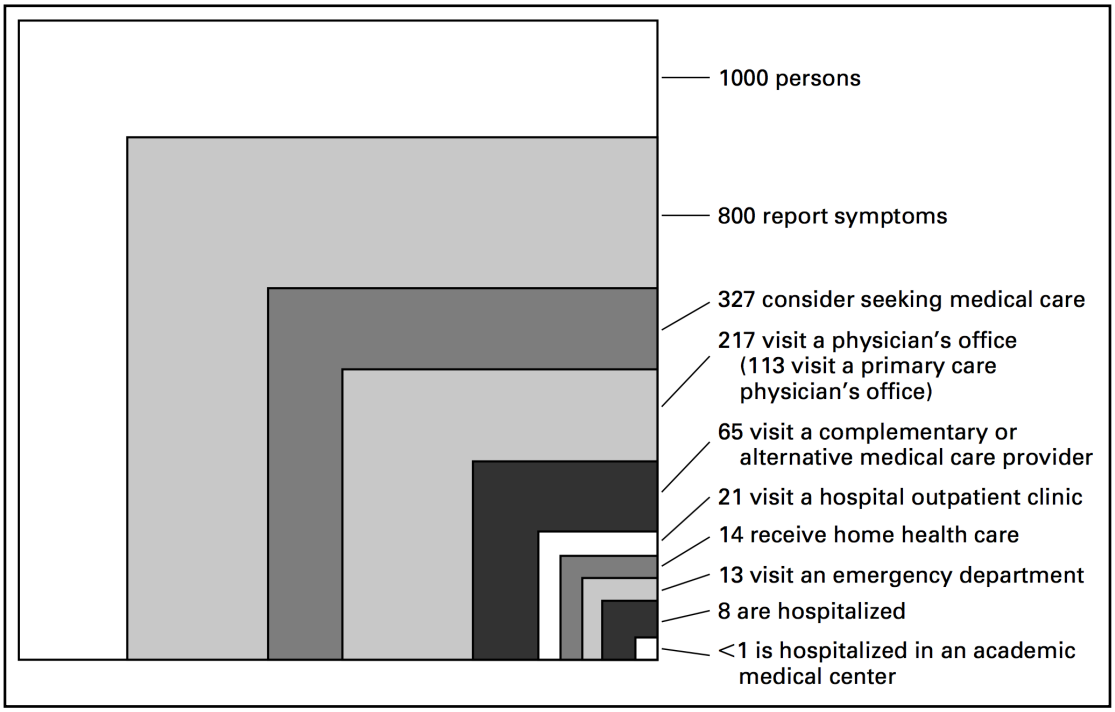
Therapeutic Systems, the Medical Profession, and the Medical Marketplace

Human societies have always had healers: people given responsibility for caring for the illnesses and injuries.[5] The healers were part of a broader ***therapeutic system***, the complex set of processes by which a society accounts for and responds to disease. Therapeutic systems have always been extraordinarily diverse, with different kinds of healers, beliefs, and practices co-existing at any given time or place. A citizen of classical Athens could have gone to herbalists, bone setters, midwives, surgeons, physicians (who might be empiricists or rationalists), or priests. Similar heterogeneity prevailed in the Arab world from the 800s to the 1300s, even as elite scholars took the lead in advancing medicine during this time. In such settings, the various practitioners would have had different training, different beliefs about disease, and different therapeutic practices, as well as different clienteles, status, and power. Historians have labelled this complex therapeutic environment the ***medical marketplace***.

[4] Simar Singh Bajaj and Fatima Cody Stanford, "Beyond Tuskegee—Vaccine Distrust and Everyday Racism," *New England Journal of Medicine* (20 January 2021), DOI: 10.1056/NEJMpv2035827.

[5] Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity* (New York: Harper Collins, 1997). Note that Porter's text likewise has a rich "further reading" section for those interested in still additional sources.

A diverse medical marketplace still exists and patients still exhibit complex ***health-seeking behavior*** within it. Most illness episodes (75%) in the U.S. are self-managed by individuals, with treatment decisions informed by their own experiences and by advice from friends and family, using over-the-counter remedies or other readily available interventions.[6] For people who seek expert care, Boston offers internists, surgeons, psychiatrists, midwives, and nurse practitioners, as well as



massage therapists, diet counselors, Christian Scientists, Pentecostal healers, astrologers, chiropractors, homeopaths, hypnotists, psychotherapists, herbalists, energy healers, and many others. In one prominent study, 34% of patients in a national survey had sought care from an unconventional healer in the past year; out of pocket spending on alternative medicine was comparable to that spent on conventional (i.e., allopathic, western) medicine.[7] While physicians often believe themselves to be at the center of their patients' health care activity, this is often not the case.

Many societies have tried to impose order on the medical marketplace and regulate both the types of practitioners who can practice and what they can do. When ***universities*** emerged in medieval Europe, they offered medical teaching (which would have included natural philosophy, anatomy, botany, and therapeutics) but no clinical

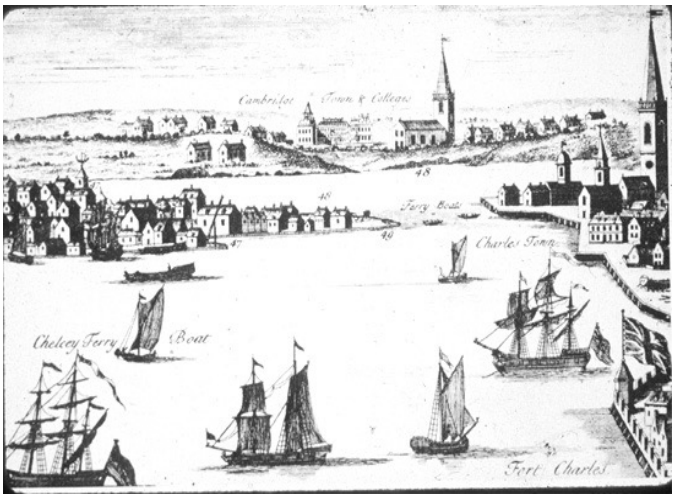
[6] Larry A. Green, George E. Fryer, Jr., Barbara P. Yawn, David Lanier, Susan Dovey, "The Ecology of Medical Care Revisited," *NEJM* 344 (2001): 2021-2025.
[7] David M. Eisenberg, Ronald C. Kessler, Cindy Foster, Frances E. Norlock, David Calkins, et al., "Unconventional Medicine in the United States: Prevalence, Costs, and Patterns of Use," *NEJM* 328 (1993): 246-252.

training. Many of the most respected physicians were self-taught or had served an ***apprenticeship*** without formal education. This complexity made regulation difficult. England began to define and defend monopolistic privileges in the sixteenth century. Members of the Royal College of Physicians, established in 1518, had a monopoly on diagnosis and prescription. Members of the Royal College of Barber-Surgeons, established in 1540, had a monopoly on blood-letting and other minor surgical procedures. Members of the Royal College of Apothecaries, established in 1617, had a monopoly on filling prescriptions. But this was largely hypothetical: there was very little enforcement even in London, and none outside of London.

These efforts demonstrate the origins of the concept of a ***profession***.[8] A profession (traditionally law, clergy, and medicine) was a group of practitioners given a legal ***monopoly*** by the government for a particular area of practice. The profession was also given the right and responsibility to ***self-regulate***, to train future members (e.g., through medical schools), and to determine who was or was not a member of the profession. These rights and monopolies were justified by the consensus that members of the profession had mastered an elite body of knowledge and that the services that they could provide as a result were a public good.

Medicine in Colonial America

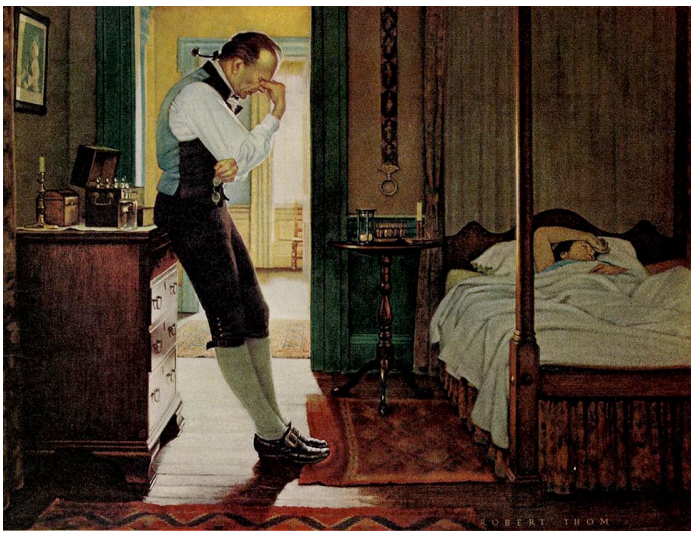
When the British established Massachusetts and their other colonies in North America, they did so on land taken from Indigenous Americans and quickly came to depend on the labor of enslaved Africans. Medical theory played an important role in this process. Colonists knew that epidemics had struck some Indigenous populations and believed that this justified their mission: they were, as John Winthrop argued, settling vacated lands.[9] Doctors concluded that European bodies were ill-suited for labor in tropical climates; this claim was used, in part, to rationalize the enslavement of African people. Slave traders hired physicians to "care" for the people they enslaved and shipped to the Americas.[10] Physicians also worked for the owners of plantations.



[8] Paul Starr, *The Social Transformation of American Medicine: The Rise of a Sovereign Profession and the Making of a Vast Industry* (New York: Basic Books, 1982), Introduction.
[9] David S. Jones, *Rationalizing Epidemics: Meanings and Uses of American Indian Mortality* (Cambridge: Harvard University Press, 2004).
[10] Carolyn Roberts, *To Heal and to Harm: An Origin Story of Predatory Medicine in the Western World* (Cambridge: Harvard University Press, forthcoming).

As the British established their colonies, they brought the English medical system (or lack thereof) with them. They also encountered, appropriated, and suppressed diverse Indigenous and African therapeutic systems.[11] The British settlements in North America were small. Boston, in 1700, was the largest settlement in the colonies, with just 7000 people. Most people lived in small farming villages. The medical marketplace that emerged in these villages looked more like that of rural England than that of metropolitan London. There were no hospitals or medical schools before 1760. Aspiring doctors who wanted a formal education traveled to Europe, especially to medical schools in Edinburgh, London, or Paris.

While some colonies did enact ***medical licensing laws***, these were rarely enforced.[12] The unregulated marketplace enabled a wide range of providers: anyone could declare him or herself to be a physician or healer of any sort. At the time of the American Revolution there were 3500 to 4000 "doctors" in the British colonies (for a population of 2,500,000, or 1:625). Of these, only 400 had had any formal education, and likely only 200 had received an MD degree from a medical school in England or elsewhere in Europe.[13] Apprenticeship was a key form of training, entailing a one- to five-year contract, in which the apprentice would pay the doctor and work as a servant (e.g., clean the house, clean the stables, etc.) in exchange for access to books, observation of patient visits, and possibly some direct instruction. Yet in 1700, only 20% of physicians had gone through an apprenticeship; by 1800, the figure was still only 37%.[14] Meanwhile, villages, plantations, and trading posts hosted a wide range of other providers. Enslaved Africans, for instance, often sustained their own therapeutic theories and practices, adapting those to the local plants available in the Americas.[15] Even when physicians were present, they often played a small role in the



[11] Pablo Gomez, *The Experiential Caribbean: Creating Knowledge and Healing in the Early Modern Atlantic* (Chapel Hill: University of North Carolina Press, 2017).
[12] Starr, *Social* Transformation, pp. 44-47; see also William G. Rothstein, *American Physicians in the Nineteenth Century: From Sects to Science* (Baltimore: Johns Hopkins University Press, 1972).
[13] Starr, *Social Transformation of American Medicine* (n. 5), p. 40; see also Richard H. Shryock, Medicine and Society in America, 1660-1860 (New York: New York University Press, 1960).
[14] Eric H. Christenson, "Medicine in New England," in Judith Walzer Leavitt and Ronald L. Numbers, eds., *Sickness & Health in America*, 3rd ed. (Madison: University of Wisconsin Press, 1997), pp. 47-71; see also John C. Burnham, *Health Care in America: A History* (Baltimore: Johns Hopkins University Press, 2015.
[15] Gomez, *Experiential Caribbean*.

therapeutic marketplace. Midwives (mostly women), herbalists, and other "traditional" healers provided the majority of treatment and caregiving.[16]

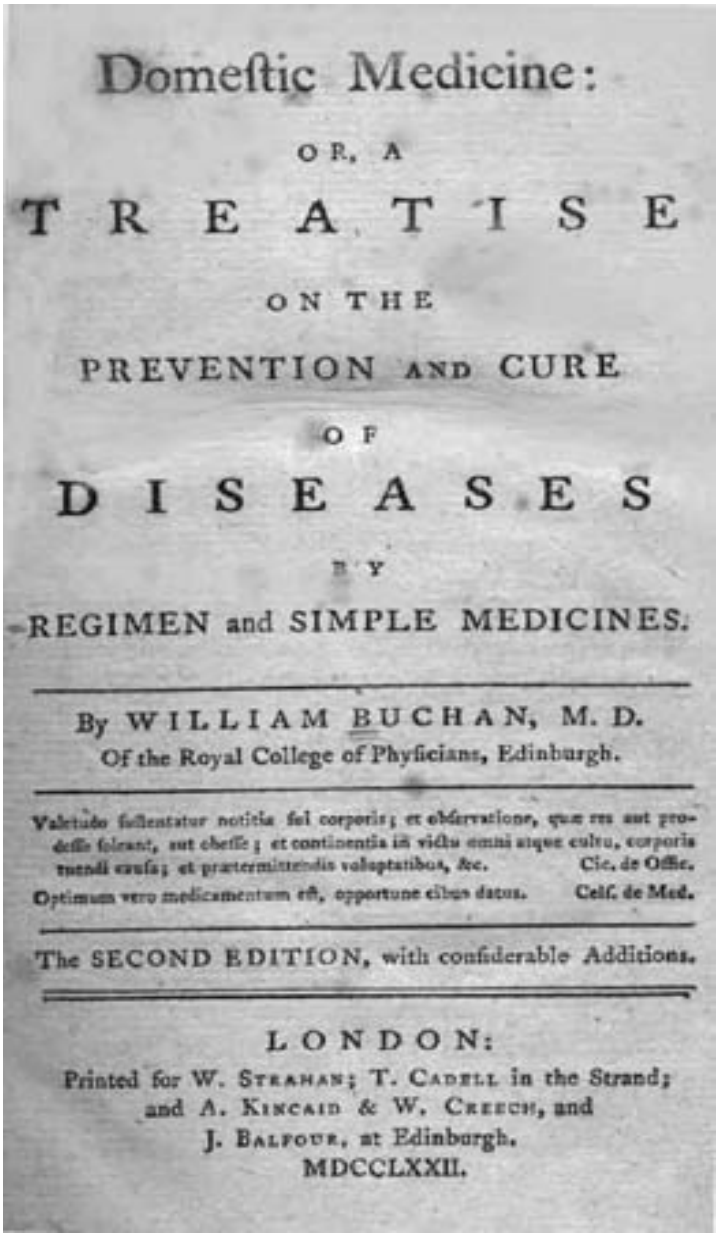
There was no standardization of theory or practice among any of these healers. Different physicians adhered to different physiological theories, and their knowledge and remedies did not differ dramatically from that of self-trained practitioners. Physicians had no privileged knowledge, no special remedies that only they could prescribe, and—most importantly—no credible claims of superior efficacy. Some followed theories of classical Greek humoral medicine and worked to maintain a balance of the body's humors. Others saw the body as a furnace, which became sick when its flows or fumes obstructed; therapeutics sought to restore flow. Regardless of theory, most remedies other than bloodletting (which was employed by many types of healers) were plant-based, mixed into teas, ointments, syrups, or compresses, and used to induce dramatic symptoms, especially emetics (vomiting), cathartics (diarrhea), and diaphoretics (sweating). Mineral and animal remedies were also common. Many remedies had magical or religious components.

Did any of these treatments work? From the perspective of modern medical science, most pre-modern remedies did not work, in that they did not have a significant impact on the underlying pathophysiology of disease (more on this in our session on Efficacy). But from the perspective of the time, many of them could work: in a world in which diseases were symptoms (patients might be diagnosed with fever, flux, ague, etc.), remedies that allowed doctors to control or purposely induce symptoms (e.g., vomiting, diarrhea, sweating) could be de facto effective.[17] This, combined with the influence of caregiving relationships, ***therapeutic rituals***, and the tendency for most diseases to resolve on their own, produced a therapeutic system that was often considered effective.[18]

[16] Laurel Ulrich, *A Midwife's Tale: The Life of Martha Ballard, Based on Her Diary, 1785-1812* (New York: Vintage Books, 1990).
[17] Charles E. Rosenberg, "The Therapeutic Revolution: Medicine, Meaning, and Social Change in Nineteenth-Century America," in Morris J. Vogel and Charles E. Rosenberg, eds., *The Therapeutic Revolution: Essays in the Social History of American Medicine* (Philadelphia: University of Pennsylvania Press, 1979), pp. 3-25.
[18] Ted J. Kaptchuk, "Placebo Studies and Ritual Therapy: A Comparative Analysis of Navajo, Acupuncture, and Biomedical Healing," *Philosophical Transactions of the Royal Society B* 366 (2011): 1849-1858.

Much of the medical knowledge that existed circulated widely and was available to anyone who was literate. Interested people could buy a medical text, written for a general reader, and quickly learn anything that educated doctors might know. One text, William Buchan's Domestic Medicine (first published in 1769), was for decades one of the best-selling books in England and the British colonies, second only to the Bible. ***Self-treatment*** was common and valorized as part of the ideal of American self-sufficiency.

This therapeutic system persisted well into the nineteenth century. Doctors sometimes earned respect, whether through a European education, or as news of successful treatments spread in their local communities. Just as often they were treated with suspicion, even ridicule, as quacks who had a high opinion of themselves but no actual skill. In many communities it was women, whether midwives, nurses, or others, who performed the bulk of the caregiving labor and won the trust and gratitude of the people.



Domeſtic Medicine:

OR, A

TREATISE

ON THE

PREVENTION AND CURE

OF

DISEASES

BY

REGIMEN and SIMPLE MEDICINES.

By WILLIAM BUCHAN, M. D.
Of the Royal College of Phyſicians, Edinburgh.

Valetudo ſuſtentatur notitia ſui corporis; et obſervatione, quæ res aut prodeſſe ſolerent, aut obeſſe; et continentia in victu omni atque cultu, corporis tuendi cauſa; et prætermittendis voluptatibus, &c. Cic. de Offic.

Optimum vero medicamentum eſt, opportune cibus datus. Celſ. de Med.

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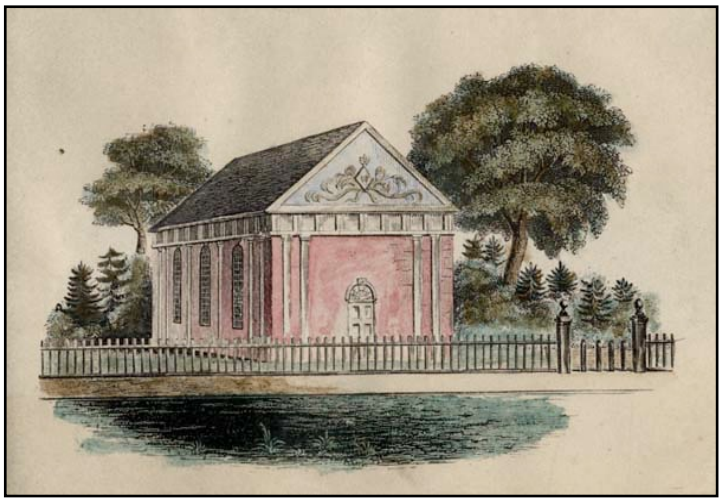
MDCCLXXII.

The Origins and Decline of the Medical Profession in the United States

Elite physicians, which generally meant rich, white, men who had received medical training in Europe, became concerned about this state of affairs in the mid-18th century. They called for the establishment of ***medical schools*** and founded them in Philadelphia (1765) and New York (1767). In 1782 three men established what would become Harvard Medical School: John Warren, a surgeon who had served under General Washington during the Revolution; Benjamin Waterhouse, a physician who had completed an apprenticeship in Rhode Island and then studied medicine in Edinburgh and Leiden before settling in Boston; and Aaron Dexter, the chemistry professor at Harvard College. HMS, like Harvard College at the time, was only open to white, male students. While students of color were not explicitly barred, none would graduate from HMS before the Civil War (more on this later).[19] Anyone else had to pursue informal training—or simply assert their expertise. The "fee for a Degree in Medicine" from Harvard in 1801 was thirty dollars.[20] None of these schools had laboratories or access to hospitals. Faculty simply provided short lecture series on anatomy, physiology, botany, and materia medica. The schools conferred degrees after completion of the lectures, sometimes with an oral exam.



Warren and Dexter worried that they could not teach students without easier access to patients. When HMS was founded, its medical lectures took place at Harvard College in Cambridge (occupying what is now Holden Chapel). However, most physicians and patients worked and lived in Boston. In 1810 Dexter and Warren petitioned the President of Harvard to relocate the medical lectures to

[19] Nora N. Nercessian, *Against All Odds – The Legacy of Students of African Descent At Harvard Medical School Before Affirmative Action 1850-1968* (Puritan Press, 2004).
[20] Thomas Francis Harrington, *The Harvard Medical School: A History, Narrative and Documentary* , Vol. I (New York: Lewis Publishing Company, 1905), p. 289.

Boston.[21] They also hoped that the students would have access to the residents of the Boston Almshouse, which provided shelter (and some care) for people who were otherwise destitute.[22]

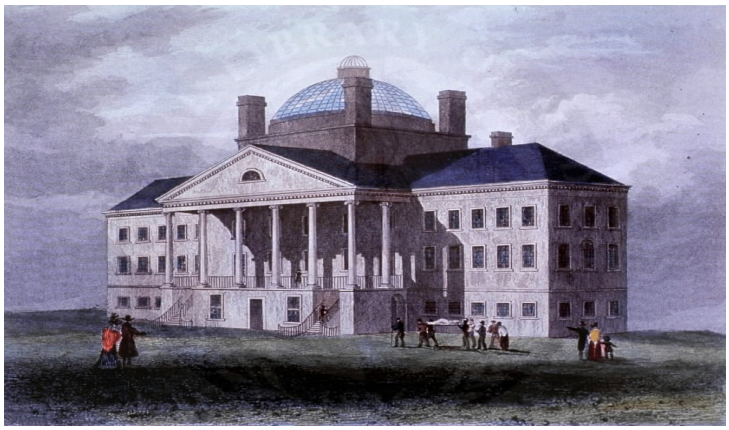
Leading physicians also developed ***professional societies***. Boston physicians, led by Warren, established the Massachusetts Medical Society in 1781 in hopes "that a just discrimination should be made between such as are duly educated, and properly qualified for the duties of their profession, and those who may ignorantly and wickedly administer medicine."[23] Chartered by the Commonwealth of Massachusetts, the MMS had the authority to certify candidates for the practice of medicine and surgery. However, such certification was largely honorific: despite efforts by elite (white) physicians to establish an exclusive profession, anyone could practice medicine without MMS's certification. Moreover, conflicts arose almost immediately: HMS and MMS argued about whether a degree from HMS automatically entitled the graduate to certification by MMS.

Physicians also worked to establish ***hospitals***. The Spanish and French empires had established hospitals quickly in their colonies. The Spanish founded hospitals in Hispaniola in 1502, Mexico City in 1521, and Puerto Rico in 1524; there were 128 hospitals in New Spain by 1600 (including hospitals established specifically for the Indigenous Mexican population). The French established their first hospital in Quebec in 1639 (in part to care for the Huron and other First Nation populations). The British, in contrast, did not establish hospitals for over a century (though they did establish military hospitals, as well as pesthouses for quarantine). Medical care took place at

[21] John Warren and Aaron Dexter, "To the President and Fellows of Harvard University," 20 February 1810, John Warren Papers, Massachusetts Historical Society. See also Thomas Edward Moore, "The Early Years of the Harvard Medical School, Its Founding and Curriculum," *Bulletin of the History of Medicine* 27 (1953): 530-561.

[22] In response to questions from students about Harriet Washington's *Medical Apartheid*, we looked but found no evidence that the relocation of HMS was motivated by a desire to access Black bodies for clinical training, experiments, or dissection. Boston at the time did have a small African American population (both enslaved and free); we found no sources or histories that document their health care experiences in this period. Enslaved people sometimes sought treatment from healers within their communities, and sometimes were forced to submit to medical care imposed by the plantation owner or physicians the owner employed.

[23] Rothstein, *American Physicians in the Nineteenth Century* (n. 6), 65; Walter R. Burrage, *A History of the Massachusetts Medical Society* (Norwood: Plimpton Press, 1923).



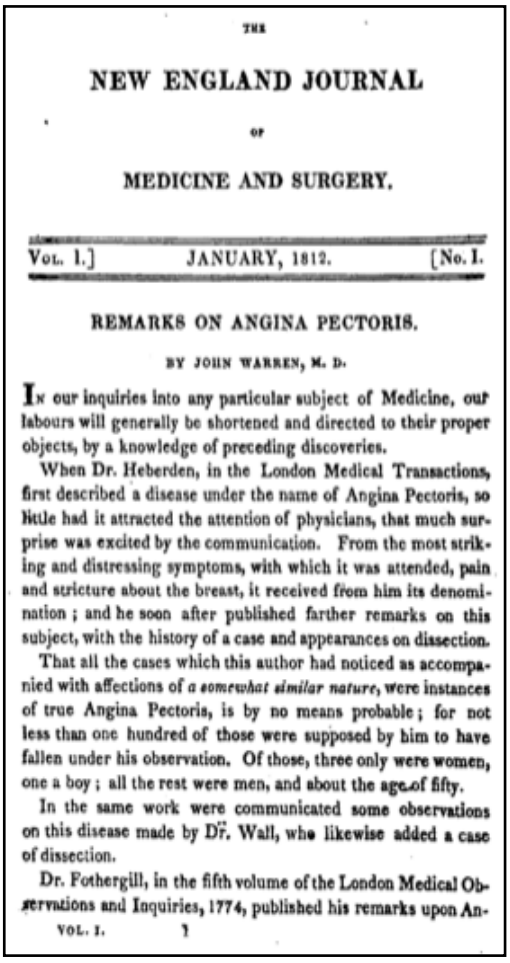
home, for the most part, with practitioners making house calls. Some villages had an almshouse, where people without family or other supports could get care, but these were not therapeutic institutions (some almshouses did later develop into hospitals, most famously New York's Bellevue Hospital). The first British public hospital, Pennsylvania Hospital, only opened in 1752, nearly 150 years after the British established their first colonies. The second hospital, New York Hospital, opened in 1791. Massachusetts General Hospital, chartered in 1811, admitted its first patients in 1821.

These hospitals, like the medical schools, shared few features with their modern counterparts. Admissions were controlled not by physicians but by the trustees who funded the hospitals. Patients resided in open wards, with dozens of patients arranged around a large room. There were no nurses. Instead, patients and their families were expected to provide food and nursing care.[24] The wards were chaotic places, with drunkenness, gambling, and prostitution. Conditions, especially with respect to food and hygiene, were so poor that patients often acquired scurvy or other diseases while in the hospital. Any medical care that a hospital could provide could be provided more safely at home by anyone who had the means to arrange visits by a physician. Hospitals were a last resort for anyone who had no family to provide care, medical or otherwise. Physicians worked at the hospitals, often without pay, to gain experience and to demonstrate their civic virtue.

[24] Charles E. Rosenberg, *The Care of Strangers: The Rise of America's Hospital System* (New York: Basic Books, 1987), chapter 1.

Hospitals were also ambivalent about their role in medical education. When MGH opened in 1821, it greatly limited contact between students and patients: "pupils are not to remain at the Hospital longer than is absolutely necessary for the visits. They are not to converse with the patients or nurses … It must be obvious that the greatest inconveniences must arise, if [physical] examinations were commonly made by the pupils."[25]

In addition to medical schools, professional societies, and hospitals, physicians established ***medical journals***.[26] The first journals appeared in New York, Philadelphia, and Baltimore. Boston physicians established the *New England Journal of Medicine and Surgery and the Collateral Branches of Science* in 1812. Many other journals soon followed. These journals published articles by prominent physicians on their clinical experiences, reprinted news and research from European journals (the original "translational medicine"), and reported on news, oddities, or other developments of interest to physicians. Medical journals were also key sites where physicians asserted theories of racial difference and, often, race hierarchy (i.e., white supremacy). They routinely published articles that would be considered racist and reprehensible today; critique of the pervasive racism was rare.[27]



THE

NEW ENGLAND JOURNAL

OF

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VOL. I.] JANUARY, 1812. [No. I.

REMARKS ON ANGINA PECTORIS.

BY JOHN WARREN, M. D.

IN our inquiries into any particular subject of Medicine, our labours will generally be shortened and directed to their proper objects, by a knowledge of preceding discoveries.

When Dr. Heberden, in the London Medical Transactions, first described a disease under the name of Angina Pectoris, so little had it attracted the attention of physicians, that much surprise was excited by the communication. From the most striking and distressing symptoms, with which it was attended, pain and stricture about the breast, it received from him its denomination; and he soon after published farther remarks on this subject, with the history of a case and appearances on dissection.

That all the cases which this author had noticed as accompanied with affections of *a somewhat similar nature*, were instances of true Angina Pectoris, is by no means probable; for not less than one hundred of those were supposed by him to have fallen under his observation. Of those, three only were women, one a boy; all the rest were men, and about the age of fifty.

In the same work were communicated some observations on this disease made by Dr. Wall, who likewise added a case of dissection.

Dr. Fothergill, in the fifth volume of the London Medical Observations and Inquiries, 1774, published his remarks upon An-

VOL. I. 1

There was no process of peer review. Physicians had to judge for themselves the credibility of a journal, its editors, and its authors. Credibility varied considerably and most journals quickly foundered. Of the 509 medical journals founded in the United States between 1797 and 1882, three-quarters had failed. One 1879 review deemed many to be "absolutely worthless" and others "undeniably worse than worthless — they are dangerous and disgusting parasites upon the body medical."[28]

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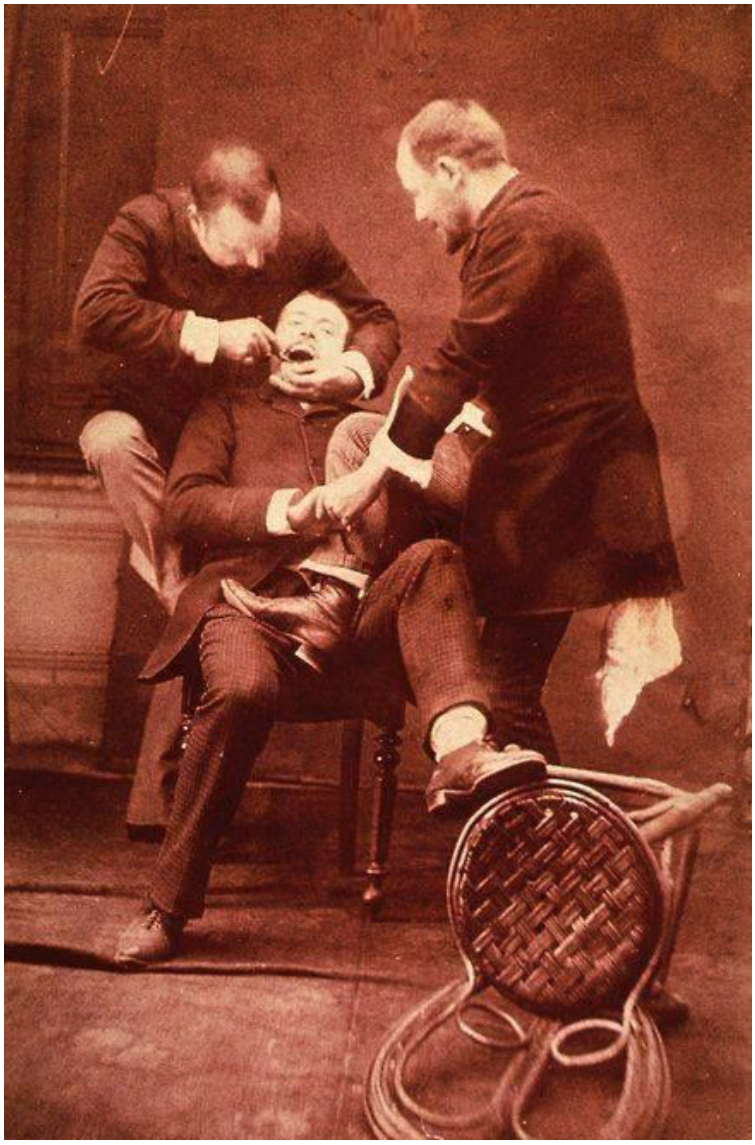
[25] James Jackson and John C. Warren, notice from 1824, in Harrington, *The Harvard Medical School,* Vol. II (n. 10), pp. 582-583.

[26] Scott H. Podolsky, Jeremy A. Greene, and David S. Jones, "The Evolving Roles of the Medical Journal," *NEJM* 366 (2012): 1457-61.

[27] David S. Jones, Scott H. Podolsky, Meghan Bannon Kerr, and Evelynn Hammonds, "Slavery and the *Journal*—Reckoning with History and Complicity," *NEJM* 389 (7 December 2023); Jones, Moustafa Abdalla, and Joseph Gone, "Indigenous Americans—The *Journal*'s Historical 'Indian Problem,'" *NEJM* 390 (4 January 2024); and the other articles in the *NEJM* series "Recognizing Historical Injustices in Medicine and the *Journal*."

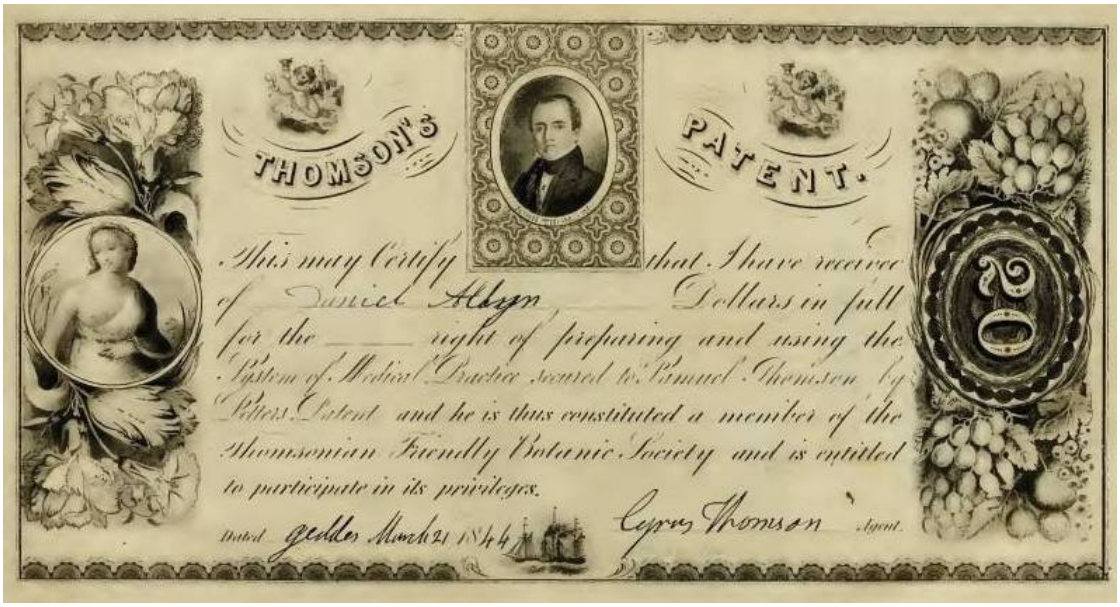
[28] "Anent Medical Journals," *Chicago Medical Journal and Examiner* 38 (1879): 202-5.

Dentists remained outside of these developments. Dentistry had traditionally been considered a trade, learned through apprenticeship. There were no dental schools in the early Republic. In the early nineteenth century, however, dentists, like physicians, worked to professionalize their occupation. The first dental school in the United States opened in 1840 in Baltimore; others soon followed.[29] None of these early dental schools was affiliated with a university. Concerned that this partitioned dentistry from other domains of education and medicine, Harvard University established Harvard Dental School in 1867. The first dean, Nathan Cooley Keep, was a physician.[30]



While so-called "regular" or "orthodox" providers struggled to maintain professional respect and prestige, ***alternative practices*** of medicine thrived in a medical marketplace that was characterized, especially during the Jacksonian era, by a suspicion of elites.[31] Homeopathy, developed in Germany by Samuel Hahnemann in 1796, came to the US through one of his disciples, in 1825. In 1822 Samuel Thomson began to market his self-developed system of botanical healing, the *New Guide to Health*, which became wildly popular. Thomsonian and Homeopathic medical schools (including

[29] Thomas M. Schulein, "A Chronology of Dental Education in the United States," *Journal of the History of Dentistry* 52 (2004): 97-108.
[30] Elizabeth Gitelman and Meadow Merrill, *Lasting Impressions: Harvard School of Dental Medicine, the First 150 Years* (Hollis, NH: Puritan Press, 2017).
[31] Norman Gevitz, ed., *Other Healers: Unorthodox Medicine in America* (Baltimore: Johns Hopkins University Press, 1988); James Whorton, *Nature Cures: The History of Alternative Medicine in America* (New York: Oxford University Press, 2002).



what is now Boston University School of Medicine) were founded, though the "do-it-yourself" aspects of many of these systems provided much of their appeal to many Americans. Countless other systems thrived, including African healing systems on the plantations and Indigenous American systems on the western and southern frontiers. Mary Baker Eddy famously got fed up with all of this and established Christian Science in Boston in 1866. She dismissed medicine altogether and encouraged her followers to seek healing through prayer. Oliver Wendell Holmes, professor of anatomy and later dean of Harvard Medical School (and responsible, as described below, for admitting and then expelling the school's first Black students), railed against these other systems in his 1842 address, "Homeopathy and Its Kindred Delusions."[32] However, he was also one of the most outspoken critics of formal medical practice. He often encouraged his colleagues to trust in the ***healing power of nature***.

The orthodox medical profession in the United States reached its nadir in the mid-nineteenth century. A survey in Tennessee in 1851, to which 201 "doctors" responded, revealed that 35 had obtained an MD, 42 had attended some lectures, 27 were botanics, and 97 were self-taught.[33] As one anonymous editorialist wrote in 1869, "It is very well understood among college boys that after a man has failed in scholarship, failed in writing, failed in speaking, failed in every purpose for which he entered college; after he has dropped down from class to class; after he has been kicked out of college, there is one unfailing city of refuge—the profession of medicine."[34]

The medical profession found itself in a difficult position. It had no expert knowledge that distinguished physicians from other healers in the medical

[32] Holmes's attitudes on race will be discussed below.
[33] Cited in Ronald L. Numbers, "The Fall and Rise of the American Medical Profession," in Judith Walzer Leavittt and Ronald L. Numbers, eds., *Sickness and Health in America*, 2nd ed. (Madison: University of Wisconsin Press), p.187.
[34] Quoted in Numbers, "The Fall and Rise of the American Medical Profession," p. 186.

marketplace. While some physicians were respected, many were not. Many medical schools were worthless, while "elite" schools struggled to assert any kind of standards in a competitive marketplace. Hospitals were considered dangerous places, to be avoided at any cost. Many physicians were skeptical of the value of medical interventions. Dentists were often judged simply by how quickly they could pull a tooth. Governments had little interest in formal regulation of medical practice. No one could define the essential components of a professional education. No one could show that a medical education produced practitioners who were more effective than homeopaths or botanics. By 1850, only two states in the country had any regulations at all on medical practice.[35]

Rehabilitation

As had happened in the eighteenth century, there were elite physicians who wanted to revitalize the profession to restore respect and prestige. Reforms took place gradually in many different domains.

In an act of self-conscious professionalization, the ***American Medical Association*** was founded 1847, with the goal of improving medical education and of defining the orthodox (and, from the AMA's point of view, reputable) medical profession. As AMA president Nathaniel Chapman declared in 1848, "The profession to which we belong, once venerated on account of its antiquity—its varied and profound science—its elegant literature—its polite accomplishments—its virtues—has become corrupt and degenerate, to the forfeiture of its social position."[36] The AMA initially did little more than formalize a Code of Ethics, and even that was quite modest. The American Dental Association was founded in 1859. The AMA excluded both women and Black physicians for decades.

In the domain of therapeutics, however, change was in the air, most famously with surgery. Into the mid-nineteenth century, surgery was a brutal affair. Surgeons operated on awake patients in unsanitary conditions (often on a kitchen table) with instruments that might not have

[35] Numbers, "The Fall and Rise of the American Medical Profession," 187.
[36] Morris Fishbein, ed., *A History of the American Medical Association, 1847-1947* (Philadelphia: W.B. Saunders Company, 1947), p. 41.

been cleaned since the last operation. Half of patients died during the procedures. Patients only consented to surgery *in extremis*, as a last resort, something that contributed to the high mortality rate. Some surgeons, most famously J. Marion Sims, used enslaved women (and later poor Irish immigrants in New York City) to develop new surgical procedures.[37] Surgeon Crawford Long used enslaved boys for some of his early experiments with ether anesthesia.[38]

Dentists helped lead the way out of this morass by introducing some surgeons to anesthetics. The first successful public demonstration of anesthesia, with dentist William Morton providing the ether, took place at MGH in October 1846.[39] Surgical anesthesia was the first medical innovation developed in the United States that spread to Europe. It became a key component and blessing of Civil War medicine, when approximately 60,000 amputations took place, with approximately 80% using ether or chloroform.

Anesthesia, however, did not transform surgery overnight.[40] Surgery only became safe decades later. With the development of germ theory in the 1870s and 1880s, surgeons learned the importance of infection control, antisepsis, and eventually modern aseptic techniques. By the 1890s, surgeons increasingly operated in dedicated spaces (surgical theaters, in hospitals), with sterilized equipment, anesthesia, and precise surgical technique.[41] This allowed rapid innovation and the successful demonstration of appendectomies, cholecystectomies, and many modern surgical

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[37] Deirdre Cooper Owens, *Medical Bondage: Race, Gender, and the Origins of American Gynecology* (Athens: University of Georgia Press, 2017).
[38] K.J. Roddy, V. Starnes, S.P. Desai, "Sites Related to Crawford Williamson Long in Georgia," *Anesthesiology* 125 (2016): 850-860. He used enslaved boys for 2 of his first 5 cases in 1842; he did not publish until years later.
[39] Henry Jacob Bigelow, "Insensibility During Surgical Operations Produced by Inhalation," *Boston Medical and Surgical Journal* 35 (1846): 309-17; Richard Wolfe, *Tarnished Idol: William Thomas Green Morton and the Introduction of Surgical Anesthesia: A Chronicle of the Ether Controversy* (San Anselmo, CA: Norman Publishing, 2001). While details remain unclear, Morton may have heard of Long's 1842 operations with ether.
[40] Martin S. Pernick, *A Calculus of Suffering: Pain, Professionalism, and Anesthesia in Nineteenth-Century America* (New York: Columbia University Press, 1985); Stephanie J. Snow, "Surgery and Anaesthesia: Revolutions in Practice," in *The Palgrave Handbook of the History of Surgery*, edited by Thomas Schlich, 195-214 (London: Palgrave MacMillan, 2018).
[41] Thomas Schlich, "Negotiating Technologies in Surgery: The Controversy about Surgical Gloves in the 1890s," *Bulletin of the History of Medicine* 87 (2013): 170-197; Schlich, "Asepsis and Bacteriology: A Realignment of Surgery and Laboratory Science," *Medical History* 56 (2012): 308-343.

procedures. Surgery was one of the first areas of medicine to become prestigious—and profitable.

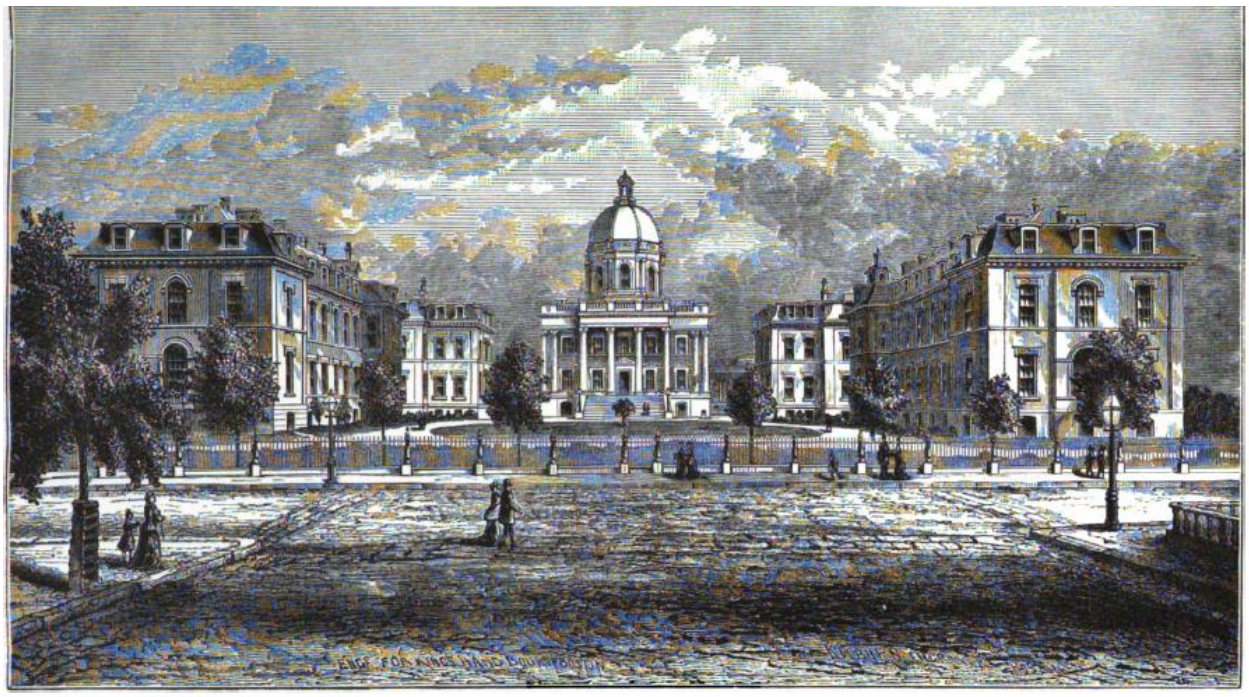
Some of this surgical experimentation exploited Black, poor, or other marginalized populations. However, the center of innovation in surgery in the 1880s and 1890s was Germany. Aspiring American surgeons traveled there to learn the new techniques. The leading center for surgical innovation in the United States at this time was the Mayo Clinic, established in rural Minnesota.[42] When the Peter Bent Brigham Hospital opened in 1913, it quickly established itself as a site for surgical research. While a comprehensive analysis has not been performed, many of the patients subjected to experimental surgery there (and at MGH) seem to have been employed, white men (and smaller numbers of women). Surgery had become prestigious enough that it did not need to rely on vulnerable populations. It is unclear if the poor of Boston (or any place else) could have accessed reputable surgical care.

The rise of surgery had a coattail effect on hospitals: patients began to go to hospitals to have surgery done safely. Hospitals were also transformed by urbanization and changes in family structure: as more people began to live away from extended families, they could no longer rely on families to provide medical care at home. This created a market for hospitals, which began to compete for paying patients. They did so by hiring nurses and by providing private or semi-private rooms, with heat, running water, clean linens, and food. In 1873 there were 178 hospitals in the United States; by 1909, there were 4,359, with physicians (as opposed to lay trustees) in control of most.[43]

The expansion of the hospital system between 1850 and 1900 also reflected the deep ***racial and ethnic divisions*** in American society. In 1851 a trustee at MGH complained that the hospital had too many Irish (and Catholic) patients: "They cannot appreciate & do not really want, some of those conveniences which would be deemed essential by most of our native citizens."[44] He recommended that MGH erect a

[42] W. Bruce Fye, *Caring for the Heart: Mayo Clinic and the Rise of Specialization* (Baltimore: Johns Hopkins University Press, 2015). The Mayo brothers' unprecedented case series were presumably composed almost entirely of white patients.
[43] Rosenberg, *Care of Strangers* (n. 12), p. 5.
[44] Rosenberg, *Care of Strangers* (n. 12), p. 42.

separate building to care for them. In 1863 the Archdiocese of Boston opened Carney Hospital, and in 1864 the city established Boston City Hospital, both to care for Irish immigrants. Beth Israel Hospital opened in Boston in 1916 for Jewish patients. New York had a similarly segregated system, with distinct hospitals for Protestants (New York Hospital, 1791; St. Luke's Hospital, 1850; Presbyterian Hospital, 1869), Catholics (St. Vincent's Hospital, 1849; St. Francis Hospital, 1865), Jewish people (Jews' Hospital, 1852, which would become Mount Sinai Hospital), and women (Woman's Hospital, 1857), as well as hospitals for ophthalmology, orthopedics, ENT, and psychiatry. It is unclear what access, if any, Black patients would have had to these



THE BOSTON CITY HOSPITAL.

hospitals. Specific hospitals for Black patients opened in the 19th century and lasted well into the 20th century. These institutions, however, struggled to obtain adequate resources to care for their patients. In the 1920s Black physicians launched an organized campaign to upgrade the quality of Black hospitals, a self-help movement that reflected the stark segregation of American society.[45]

Medicine also cast its lot with ***laboratory science***, increasingly seeing the experimental life sciences as the route to medical truth and prestige. Most of these innovations came out of France and Germany, especially with the emergence of biochemistry, histology, pathology, and physiology in the mid-19th century. The rapid development of germ theory and bacteriology in the 1870s and 1880s, as exemplified

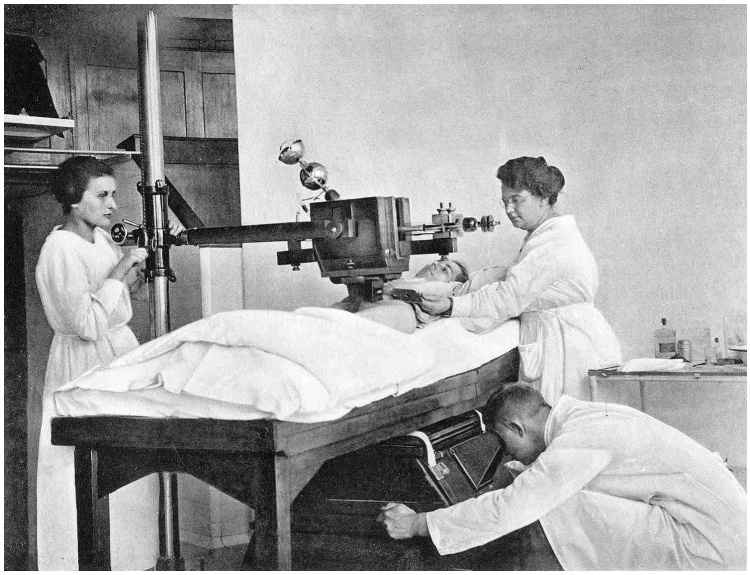
[45] Vanessa Northington Gamble, *A Place for Ourselves: The Black Hospital Movement, 1920-1945* (New York: Oxford University Press, 1995).

by Louis Pasteur (e.g., rabies vaccination) and Robert Koch (e.g., the etiology of tuberculosis) demonstrated the value of this approach. Germ theory offered physicians unprecedented diagnostic capability. Physicians sought to trace symptoms to their underlying causes and provide more convincing explanations than did other, alternative medical theories. These new biomedical sciences became a source of considerable prestige, allowing medicine to denigrate and suppress competing health systems ranging from chiropractic (developed in 1895) to Native American healing.

The therapeutic payoff of this new science, however, only materialized slowly. Germ theory did produce a few early breakthroughs, including antitoxin for diphtheria (which won Emil von Behring the first Nobel Prize for Physiology or Medicine in 1901) and tetanus, and then serotherapy for pneumonia.[46] Both the pharmaceutical industry and academic research centers (e.g., the Rockefeller Institute, HMS) invested heavily in laboratory science, eventually producing such treatments as insulin for diabetes (discovered at the University of Toronto, but developed further at Boston's Joslin Clinic), liver extract (discovered at HMS, and later found to be vitamin B12) for pernicious anemia, and sulfa drugs (discovered in Germany in the mid-1930s). The most dramatic therapeutic product of this new medical science, powerful and safe antibiotics, only became widely available in the 1940s—60 years after Pasteur's and Koch's discoveries.[47] Amid these new scientific therapeutics, medical treatment often remained much as it had been for decades: rest, diet, supportive care, and the use of a wide range of pharmaceutical remedies, few with credible evidence of their efficacy.

The turn to science also brought a turn to ***technology***. The late nineteenth century was a time of rapid innovation, with electric lights, telephones, and

[46] Evelynn Maxine Hammonds, *Childhood's Deadly Scourge: The Campaign to Control Diphtheria in NewYork City, 1880-1930* (Baltimore: Johns Hopkins University Press, 1999); Scott H. Podolsky, *Pneumonia before Antibiotics: Therapeutic Evolution and Evaluation in Twentieth Century America* (Baltimore: Johns Hopkins University Press, 2006); Bert Hansen, *Picturing Medical Progress: A History of Mass Media Images and Popular Attitudes in America* (New Brunswick: Rutgers University Press, 2009).
[47] Robert Bud, *Penicillin*: *Triumph and Tragedy* (New York: Oxford University Press, 2007).



phonographs. Medicine followed suit. X-rays, discovered in 1895, provided an easily appreciated demonstration of the power of new medical technology (though they were not used routinely in hospitals until the 1920s).[48] Many other new technologies helped to transform medical diagnostics, including chemical and bacteriological laboratories, clinical thermometers, sphygmomanometers, scopes of many kinds, electrocardiograms, and many others.[49] Specialists—ophthalmologists, laryngologists, pediatricians, neurologists, psychiatrists, radiologists, etc.—began to differentiate themselves from generalists.

These linked developments had a major impact on ***medical education***. Charles Eliot, who became president of Harvard in 1869, had been horrified by the state of the medical profession in Massachusetts, and of Harvard Medical School in particular: "an American physician or surgeon may be, and often is, a coarse and uncultivated person, devoid of intellectual interests outside of his calling, and quite unable to either speak or write his mother tongue with accuracy."[50] He tried to tighten standards and asked the faculty to impose written exams, remarking that "the ignorance and general incompetency of the average graduate of American Medical Schools, at the time when he receives the degree which turns him loose upon the community, is something horrible to contemplate."[51] In turn, confident that laboratory science held the key to the future of medicine, elite medical schools re-crafted themselves on the German model that included a longer, more organized curriculum, rigorous training in laboratory science, and clinical experience. Harvard Medical School, at the vanguard

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[48] Joel D. Howell, *Technology in the Hospital: Transforming Patient Care in the Early Twentieth Century* (Baltimore: Johns Hopkins University Press, 1995).

[49] Stanley Joel Reiser, *Medicine and the Reign of Technology* (New York: Cambridge University Press, 1978); Hughes Evans, "Losing Touch: The Controversy over the Introduction of Blood Pressure Instruments into Medicine," *Technology and Culture* 34 (October 1993): 784-807.

[50] See the online exhibit, "Broad Foundation," Center for the History of Medicine, Countway Medical Library, at https://collections.countway.harvard.edu/onview/exhibits/show/broad-foundation/-turned-over-like-a-flapjack-

[51] Kenneth M. Ludmerer, *Learning to Heal: The Development of American Medical Education* (New York: Basic Books, 1985), pp. 47-53.

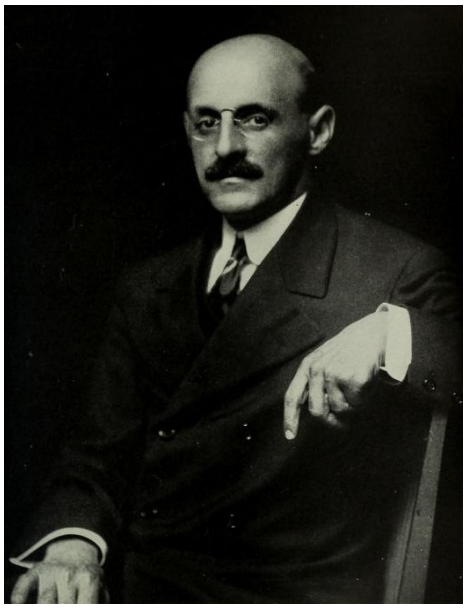
of educational reform, implemented a three-year curriculum in the 1870s. Johns Hopkins University School of Medicine, founded in 1893, set what would become the gold standard: it required a bachelor's degree for admission, and its four-year curriculum included two years of pre-clinical coursework and two years of intensive inpatient clinical training. As demonstrated by Hopkins, ***hospitals had become medicalized*** (e.g., the site of technologically intensive medical care) and ***the medical profession had become hospitalized*** (e.g., all physicians did their core training in hospitals). In 1850, no one would have bothered to go to such a medical school. By 1900, many were convinced that such rigorous training was the key to the future of medicine.

Even as Hopkins set the standard for what elite medical education might look like, the profession faced the same problem that had plagued medical education throughout the nineteenth century: the inability to enforce high standards on all medical schools and the proliferation of for-profit "diploma mills" that churned out graduates with minimal training.[52] This changed between 1900 and 1920. In 1904 the American Medical Association established a Council on Medical Education and hired

[52] David Alan Johnson, "John Buchanan's Philadelphia Diploma Mill and the Rise of State Medical Boards," *Bulletin of the History of Medicine* 89 (2015): 25-58.

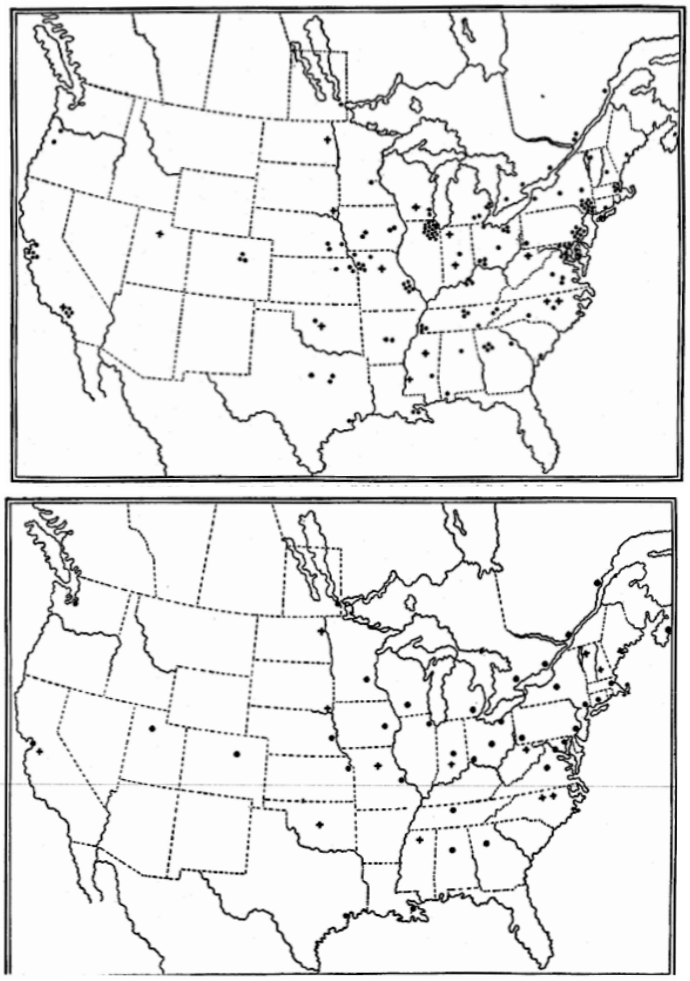
THE PHILADELPHIA HYSICIAN-FACTORY.

an education consultant, Abraham Flexner (whose brother had taught at Hopkins). With funding from the Carnegie Foundation, he visited all 155 medical schools in the United States and issued the (in)famous Flexner Report in 1910.[53] He found that most medical schools were stand-alone institutions, not affiliated with a university. They had no laboratories. The cadavers were not preserved, resulting in terrible conditions in the anatomy labs. He was especially critical of the medical schools that offered medical training to either women or students of color; these often lacked the resources available to other schools. As will be discussed below, this aspect of his critique reflected racist assumptions that were widespread among elite white physicians at this time. Flexner also believed that the United States produced too many doctors (the ratio of doctor to population was 1:2000 in Germany but 1:600 in the United States). Flexner recommended that most of these schools close (from 155 to 31), and that the surviving schools adopt the Hopkins model, with, among other things, the hospital at the center of medical education.



[53] Abraham Flexner, *Medical Education in the United States and Canada* (New York: Carnegie Foundation for the Advancement of Teaching, 1910).

Flexner and the AMA had no power to do this directly. However, the Carnegie Foundation and Rockefeller Foundation offered funding to schools (including HMS) that adopted the reforms. Moreover, the reforms in medical science and medical education, and a broad cultural enthusiasm for how science and technology (from telephones to sanitary reforms) had transformed society, gradually caught the attention of state legislatures. They became convinced that scientific (i.e., allopathic) medicine was different from homeopathy and all the others, and that it deserved special status. States restored medical licensing laws and, importantly, began to enforce them: physicians needed an MD from an accredited school to get a license to practice. Hopkins's four-year curriculum became the national model by 1920.



The development of laboratory science and the emerging respect for medical professionals also transformed public health. States began establishing public health departments in the nineteenth century, with Massachusetts, for instance, founding its Board of Health in 1869.[54] The departments, generally led by physicians, implemented programs to improve sanitation and public hygiene. Harvard and MIT discussed a joint public health program in 1870, but the effort failed. Instead, they continued to offer courses in sanitary engineering and public health without formal degree programs. In 1913 HMS and MIT came together to establish a School for Health Officers. This morphed into the Harvard School of Public Health in 1922.[55]

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[54] Barbara Gutmann Rosenkrantz, *Public Health and the State: Changing Views in Massachusetts, 1842-1936* (Cambridge: Harvard University Press, 1972).

[55] Jean Alonzo Curran, *Founders of the Harvard School of Public Health, with Biographical Notes, 1909-1946* (New York: Josiah Macy Foundation, 1970); Allan M. Brandt and Martha Gardner, "Antagonism and Accommodation: Interpreting the Relationship Between Public Health and Medicine in the United States during the 20th Century," *American Journal of Public Health* 90 (2000): 707-715.

Science, Genetics, and Eugenics

The advent of recognizably modern scientific thought in medicine did have some grim consequences. The most dramatic example is provided by the history of ***eugenics***. The sciences of genetics and statistics, like bacteriology, developed rapidly in the 1880s and 1890s. By the early 1900s proponents of eugenics believed that they knew enough about human heredity to improve the quality of the human race through the guidance or control of human reproduction.[56] As Francis Galton wrote in 1883, "If a twentieth part of the cost and pains were spent in measures for the improvement of the human race that is spent on the improvement of the breed of horses and cattle, what a galaxy of genius we might create." Eugenics took root in the United States in part in response to the influx of large numbers of immigrants: the "native-born" population, largely of British and western European descent, feared that they would be overrun by refugees from southern and eastern Europe. The eugenic movement took two forms. Positive eugenics encouraged the "right" sort of people to reproduce (e.g., with prizes at state agricultural fairs that rewarded the best babies, the fittest—and usually whitest—families, etc.). But advocates believed that this would be inadequate. Negative eugenics sought to prevent the "wrong" sort of people from reproducing through compulsory sterilization. These policies targeted people with undesirable traits that were believed to be hereditary, especially feeblemindedness and criminality.

Initial ambivalence about such regressive policies gave way to increasing enthusiasm by the 1920s, especially after the 1927 Supreme Court decision in Buck v. Bell upheld a Virginia law that had authorized compulsory sterilization of people with intellectual disabilities.[57] California led the way and performed over 20,000 sterilizations in the 1920s and 1930s. Its state law was used as a model by the National Socialists when they rose to power in Germany in 1933. Beginning with programs to sterilize people believed to be suffering from hereditary diseases, the Nazi regime proceeded to programs of mass murder of psychiatric patients, Jewish people, Roma, and Black Germans. Enthusiasm for eugenics remained widespread among intellectuals and physicians in the United States into the 1930s, with many universities (including Harvard) and medical schools (but not HMS) including eugenics in their curriculum. Some acknowledged that Nazi programs went too far but maintained their faith that the basic logic of eugenics was sound. This faith was sorely tested: by the end of the Holocaust, the German regime had murdered nearly 6,000,000 Jewish people as well as roughly 500,000 others.

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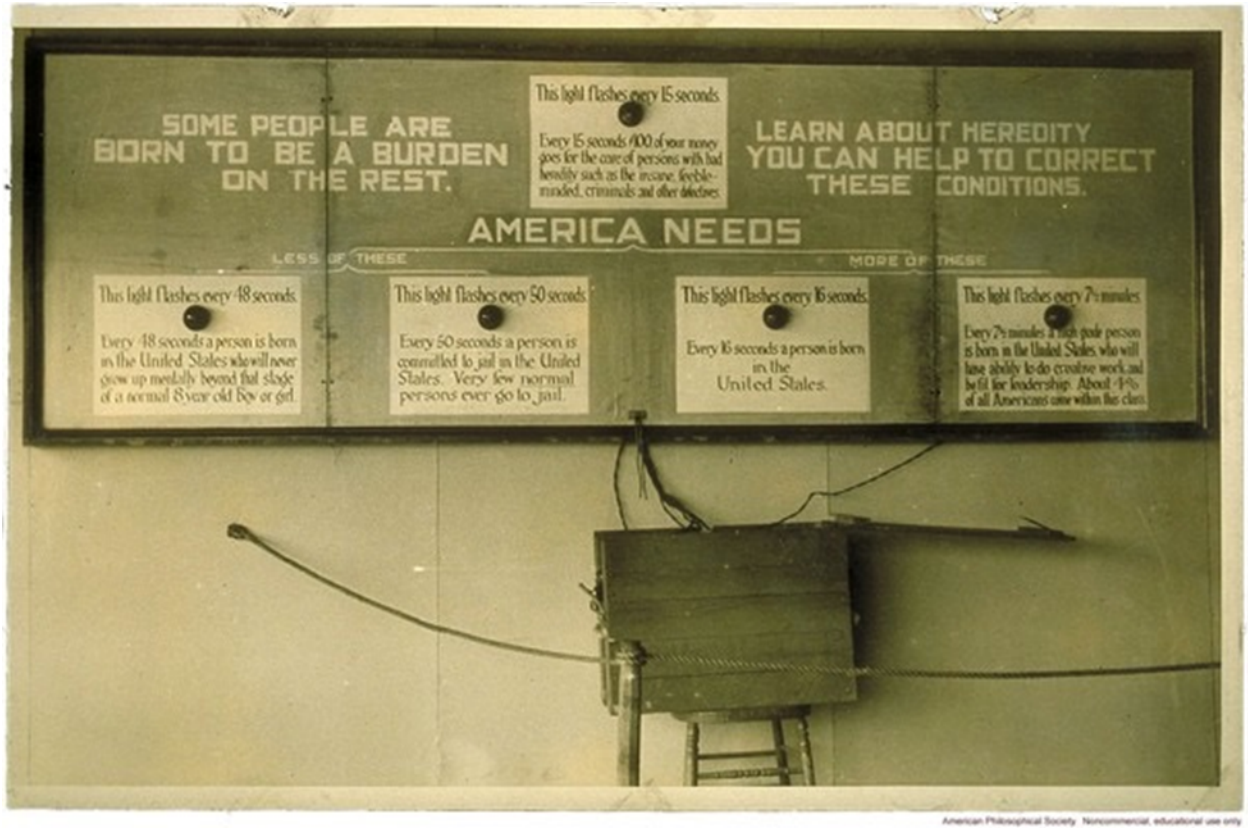
[56] Daniel J. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (New York: Alfred A. Knopf, 1985).

[57] Paul A. Lombardo, *Three Generations, No Imbeciles: Eugenics, the Supreme Court, and Buck v. Bell* (Baltimore: Johns Hopkins University Press, 2008); Lombardo, "'Ridding the Race of His Defective Blood' — Eugenics in the Journal, 1906–1948," *NEJM* 390 (7 March 2024): 869-873; Joelle M. Abi-Rached and Allan M. Brandt, "Nazism and the Journal," *NEJM* 390 (4 April 2024): 1157-1161.



The public (at least the white, protestant establishment) and state and federal governments had had great faith in eugenicists and their science. The faith was grounded not in the actual accomplishment of genetics at the time, but in the ***promissory claims*** that geneticists made, in the growing cultural respect given to sciences and the scientific management of society during the Progressive Era, and in the ways in which scientific theories resonated with widely held cultural attitudes: eugenics fit the needs and interests of the establishment.

However, discontent with eugenics began to emerge in the 1930s, even before the horrors of Nazism were recognized. Many Americans became skeptical of eugenic science (e.g., human genetics proved to be more complicated than early geneticists had thought; many traits once thought to be hereditary proved not to be). They also became concerned about how eugenics had been deployed. There was growing recognition that sterilization was being used indiscriminately to punish undesirables, in the absence of careful study of whether specific crimes actually involved hereditary factors. There was particular concern that eugenic policies had been implemented in arbitrary ways that reflected class and race prejudice.

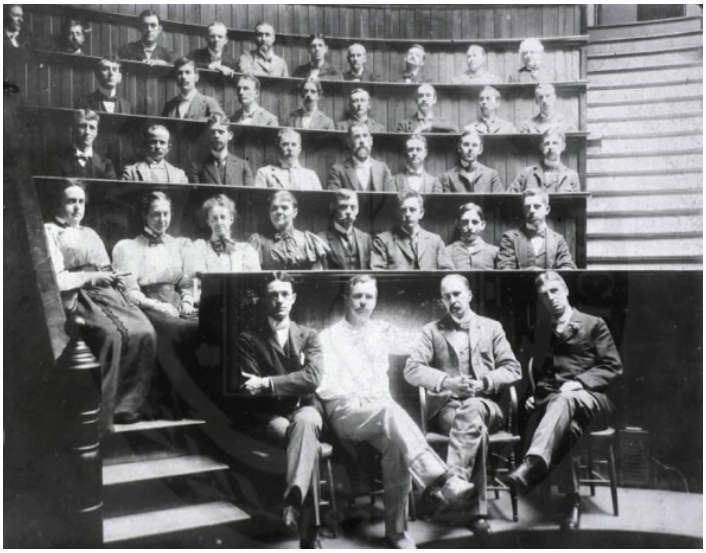
Despite widespread disillusionment with eugenics by the 1940s, compulsory sterilization persisted in some places in the United States (e.g., California and many southern states) into the 1980s. Black, Hispanic, and Indigenous women bore the

brunt of sterilization efforts[58]. This is not a relic of history. In September 2020 a whistleblower who worked at an ICE detention center reported that forced sterilizations had been inflicted on immigrant women.[59] The history of the eugenics movement offers a cautionary tale about ambitious scientists with unwarranted faith in their work who over-promise something that an eager public wants to hear. While the eugenics movement was an extreme case, this basic dynamic persists today in many areas of science and technology.

Medicine, Difference, and Discrimination

While the Flexner Report is often praised as the pivotal moment in the history of medical education, it had serious costs. It reflected the sexist and racist biases that were prevalent at the time. The struggles of women and African Americans to gain access to Harvard Medical School demonstrate these biases well.[60]

Women first requested admission to HMS in 1847. The President and Fellows of Harvard College considered the issue twice that year but did not "deem it advisable" to change the male-only policy. In 1848 the Boston Female Medical College opened. When the HMS faculty voted to admit a woman in 1850, HMS students protested her admission; the faculty rescinded their offer. Women repeatedly tried to gain admission in the 1860s but were blocked by the faculty. In 1878 Marian Hovey offered HMS $10,000 if it would admit women. The faculty voted to change the policy only if a proper sum (e.g., $200,000) were raised. By the 1880s, when it looked like that sum might be raised, most of the faculty vowed to resign if women were admitted; the Overseers voted to refuse the gift. In 1893 Hopkins opened as a co-ed institution—the result of a gift that was similarly contingent on Hopkins admitting women. In 1902 Radcliffe began to offer



[58] Jane Lawrence, "The Indian Health Service and the Sterilization of Native American Women," *American Indian Quarterly* 24 (2000): 400-419; Myla Vicenti Carpio, "The Lost Generation: American Indian Women and Sterilization Abuse," *Social Justice* 31 (2004): 40–53; Renee Tajima-Peña, *No Más Bebés* [film], PBS / Independent Lens, 2015, available at http://www.nomasbebesmovie.com/

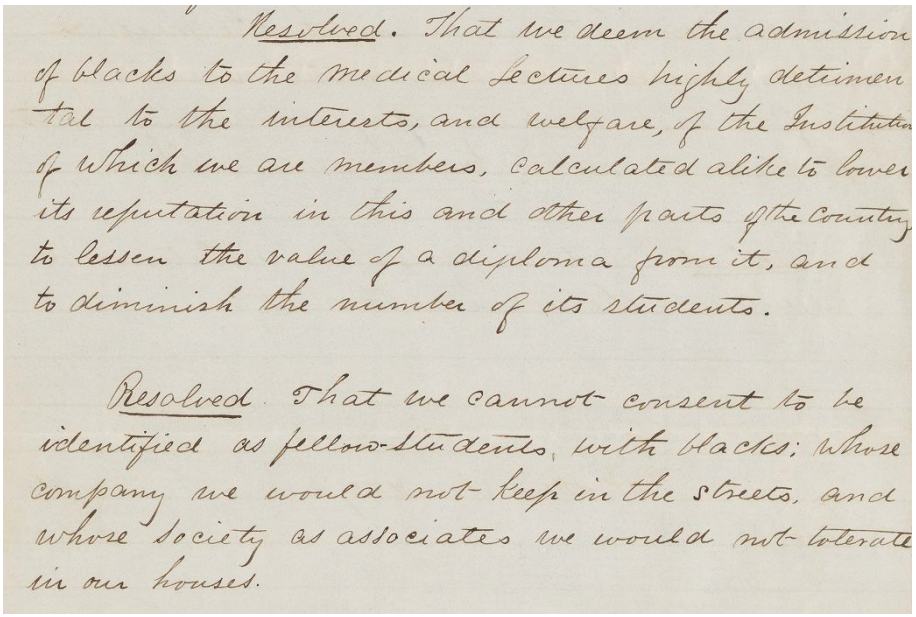
[59] Tina Vásquez, "Senate investigation of medical abuse at Georgia ICE facility confirms women's stories," *Prism*, 8 December 2022. Available at https://prismreports.org/2022/12/08/senate-investigation-georgia-ice-facility/.

[60] These sections rely heavily on Nora N. Nercessian, *Worthy of the Honor: A Brief History of Women at Harvard Medical School* (President and Fellows of Harvard College, 1995); idem, *Against all Odds: The Legacy of Students of African Descent at Harvard Medical School before Affirmative Action* (Hollis, NH: Puritan Press, 2004)

undergraduate degrees, but HMS again refused to admit women. When enrollment at HMS dropped during World War I, the university created an opportunity for women to receive separate medical training at Harvard. Male HMS students protested: "whenever a woman proved herself capable of intellectual achievement, the area in question ceased to constitute an honor to the men who had previously prized it." The university abandoned the plan. In 1919 Alice Hamilton joined the faculty; she was not allowed into the faculty club, she was not allowed to march at commencement, and she was not given the usual faculty tickets to Harvard football games.

Such policies reflected prevailing scientific ideas. In E.H. Clarke's notorious 1873 *Sex in Education*, he warned about the dangers of educating women: if women, especially adolescents, devoted too much energy to education, then their brains would develop at the expense of their reproductive organs, leaving them infertile, possibly even dead.[61] Angry women physicians and advocates pushed back and published a furious rebuttal.[62] The policies also reflected broader social biases. Women only gained the right to vote in the United States with the 19th amendment in 1920.

A similar story played out with African American students. In 1850, the same year that HMS attempted to admit a woman, the school admitted three African American students. This related, in part, to a plan to resettle formerly enslaved people in Liberia (i.e., HMS was proposing to train African American doctors who would work in Liberia, not in Boston). Dean Holmes initially supported this effort. Some white students, however, protested vigorously and petitioned Holmes, arguing "That we deem the admission of blacks to the medical lectures highly detrimental to the interests, and welfare, of the Institution of which we are members, calculated alike to lower its reputation in this and other parts of the country, to lessen the value of a diploma from it, and to diminish the number of its students. That we cannot consent to be identified as fellow students with blacks; whose company we would not keep in the streets, and whose society as associates we


Resolved. That we deem the admission of blacks to the medical lectures highly detrimental to the interests, and welfare, of the Institution of which we are members, calculated alike to lower its reputation in this and other parts of the country to lessen the value of a diploma from it, and to diminish the number of its students.

Resolved That we cannot consent to be identified as fellow-students with blacks; whose company we would not keep in the streets, and whose society as associates we would not tolerate in our houses.

[61] Edward H. Clarke, *Sex in Education: A Fair Chance for Girls* (Boston: J.R. Osgood & Co,, 1873).
[62] Julia Ward Howe, ed., *Sex and Education. A Reply to Dr. E.H. Clarke's 'Sex in Education'* (Boston: Roberts Brothers, 1874).

would not tolerate in our houses." Even though other students defended the Black students, Holmes capitulated, concluding that the "experiment" had demonstrated "that the intermixing of the white and black races in their lecture rooms is distasteful to a large portion of the class and injurious to the interests of the school."[63] The faculty supported Holmes's reversal and voted to expel the three students at the end of the semester.[64]

Harvard's exclusionary policies were reversed more quickly for African American men than with women (white or Black). HMS and Harvard Dental School both began admitting small numbers of African American men after the Civil War. Robert Tanner Freeman, admitted to HSDM in 1868, became the first African American graduate of an American dental school. The decision to admit him was explicitly framed in terms of justice.[65]

Discrimination against women and minorities in medicine persisted into the twentieth century. When Flexner published his influential assessment of medical education, he did not hide his disdain (or his offensive language) about the prospects and goals for African American doctors: "The practice of the negro doctor will be limited to his own race, which in its turn will be cared for better by good negro physicians than by poor white ones … Not only does the negro himself suffer from hookworm and tuberculosis; he communicates them to his white neighbors … Self-protection not less than humanity offers weighty counsel in this matter; self-interest seconds philanthropy. The negro must be educated not only for his sake, but for ours."[66] Flexner recommended that five of the seven African American schools close. Other factors—from the hostility of the AMA and state medical boards, to limited options for pre-medical training for Black students—accomplished this goal.[67]

Post-Flexnerian reforms had dire consequences. Weakened by inadequate financial resources, many of the schools that trained women and African Americans closed. By limiting medical education to a smaller number of elite schools, the reforms essentially limited the profession to rich, white men. Race, religion, gender, and class bias remained endemic in medical school admissions in the first two-thirds of the

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[63] Philip Cash, "Pride, Prejudice, and Politics," in Werner Sollers, Caldwell Titcomb, and Thomas A. Underwood, eds., *Blacks at Harvard: A Documentary History of African-American Experience at Harvard and Radcliffe* (New York: New York University Press, 1993), p. 29.

[64] Nercessian, *Against all Odds*, p. 21. The faculty decided to "deem it inexpedient, after the present course, to admit colored students to attendance on the medical lectures." See also Scott H. Podolsky, "Oliver Wendell Holmes, Racism, and Remembrance," *Bulletin of the History of Medicine* 96 (Winter 2022): 484-515.

[65] Leroy M.S. Miner, "The Dental School," in Samuel Eliot Morison, ed. *The Development of Harvard University since the Inauguration of President Eliot, 1869-1929* (Cambridge: Harvard University Press, 1930), p. 595. Historian Clifton Orrin Dummett would later remark of HSDM and its stance on admitting and training black students: "This school deserves the credit for setting the precedent in liberalism, justice, and the true scientific spirit." In Dummett, *The Growth and Development of the Negro in Dentistry in the United States* (Chicago: The Stanek Press, on behalf of the National Dental Association, 1952), p. 7.

[66] Flexner, *Medical Education in the United States and Canada* (n. 53), p. 180.

[67] Lynn E. Miller and Richard M. Weiss, "Revisiting Black Medical School Extinctions in the Flexner Era," *Journal of the History of Medicine and Allied Sciences* 67 (2011): 217-243.

twentieth century. Most medical schools had strict quotas for Catholic, Jewish, or other marginalized applicants.

HMS was particularly slow to change. In 1942 World War II reopened the question of admitting women. With so many men mobilized into the war effort, HMS struggled to maintain its enrollment at a time when physicians were sorely needed.[68] A senior physician at MGH encouraged the dean of HMS to reconsider the long-standing policy: "It would be wise to admit women to the Harvard Medical School in this emergency … If this proves to be a long war we will have increasing need for such graduates." HMS appointed a committee to consider the issue in January 1943. An assistant professor of gynecology was opposed: "While I am willing to agree that there are some very able women in medicine, the pro-feminists are apt to overlook the fundamental biological law that the primary function of woman is to bear and raise children, and the first social duty of woman is to develop and perpetuate the home." After "scenes of disorder and confusion" at an April 1943 meeting, the HMS faculty voted to admit women. In June, however, the President and Fellows of the College overruled the faculty. As applications continued to fall, the faculty voted again in May 1944 to admit women. This time the President and Fellows approved the change. White women entered HMS in September 1945. HMS graduated its first African American woman—surgeon Mildred Jefferson—in 1951.[69]

Only in the 1960s did medical schools in the United States make a serious effort to admit a diverse student population. In 1968, after the assassination of Martin Luther King, a group of HMS faculty demanded reforms at HMS. That year there were only five African American students at HMS, across all four classes. Leon Eisenberg, a psychiatrist and professor of social medicine, offered a stark diagnosis: "We have failed

[68] For this paragraph, see Joint Committee on the Status of Women, "The Matriculation of Women at Harvard Medical School: A History of Conflict and Debate," at https://jcsw.hms.harvard.edu/matriculation-women-harvard-medical-school

[69] "Mildred Jefferson," Schlesinger Library, Harvard Radcliffe Institute, at https://www.radcliffe.harvard.edu/schlesinger-library/collections/mildred-jefferson.

to understand the urgency and the complexity of the task of recruiting black students; the inequality of demanding 'equal' qualifications and 'equal' tuition in an unequal society; and the joint responsibility of American medical schools for a situation in which Howard and Meharry have produced 150 black graduates and the other some 90 schools a total of only 50 more each year. All of us have tolerated, if we have not created, a social structure whose outcome has been racist, whether it was consciously intended or not. To the victim, it mattered little whether the outcome was intended."[70] The faculty proposed the creation of a scholarship fund to support "Negro Medical Students" each year at HMS; they took up a collection among the faculty to raise funds for this program. The committee sought broader reforms as well: a study of how to improve the quality and availability of medical care for the black community; better employment opportunities for the black community at HMS; funding for research in social and community medicine; and broader engagement with the Boston community. The "Disadvantaged Students Program" began recruiting applicants that summer. Sixteen of these students entered HMS in 1969.[71] The fact of admission, however, did not solve all problems. The HMS students had to live in a city that would soon be torn by race riots triggered by school desegregation and forced busing.

The emergence of affirmative action in medical school admissions helped some disadvantaged groups, but not all. Medical schools had long discriminated against applicants with physical disabilities, in part driven by the idea that medical schools should expect that each student could perform all possible medical tasks. This would enable all graduates (according to a 1950 report from the American Surgical Association) to "enter without handicap any one of the fields of medical practice and research." However, an initially obscure provision of the 1973 Rehabilitation Act specified that "no otherwise qualified handicapped individual … shall, solely by reason of his handicap, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving Federal financial assistance." When an applicant to a nursing school was rejected because of a hearing impairment, she sued under the Rehab Act. The AAMC rushed to defend its ideal of the "undifferentiated physician" and the ability of health professional schools to bar applicants with physical disabilities. It crafted a set of technical standards (e.g., students had to be able to perform physical exams, CPR, phlebotomy, etc.) and submitted an amicus brief to the US Supreme Court. In its 1979 decision in *Southeastern Community College v. Davis*, the Court determined that applicants to medical or nursing schools had to meet all program requirements "in spite of their handicap." This endorsed the use of technical standards. Even though the 1990

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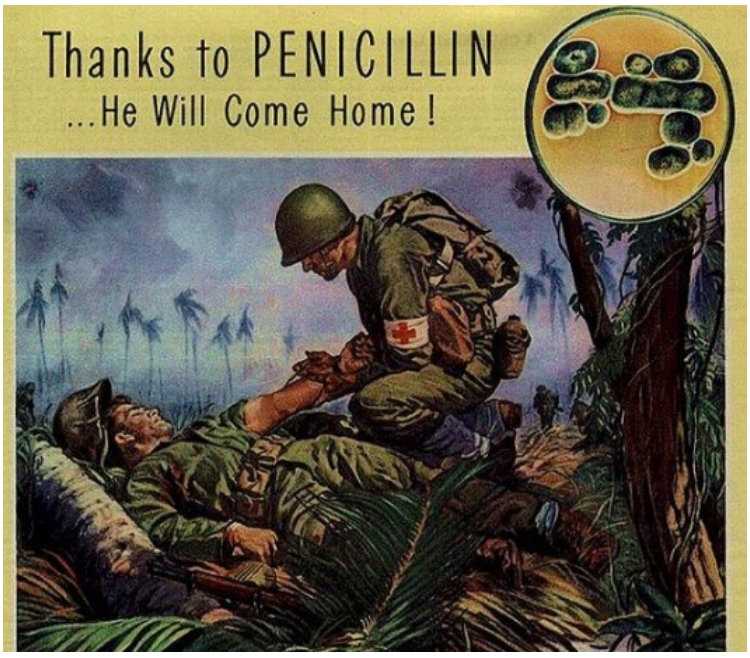
[70] Leon Eisenberg (Chairman, Commission on Relations with the Black Community) to Robert H. Ebert, 4/1/69, as introduction to "Preliminary Report of the Commission on Relations with the Black Community," submitted to the Faculty of Medicine, April 11, 1969, Box 2, file folder 2, Leon Eisenberg Papers, H MS c196, Francis A. Countway Library of Medicine.

[71] "50 Years of Diversity and Inclusion at HMS and HSDM," available at https://hms.harvard.edu/news-events/celebrating-50-years-diversity-inclusion/50-years-history

Americans with Disabilities Act further strengthened protections for people with disabilities in the United States, the exception granted to health professional schools has endured. While some schools have admitted applicants who use wheelchairs, or provided accommodations needed by other students to succeed, this is largely at their discretion. [72] HMS, for instance, maintains a stringent set of technical standards.

Medicine and Dentistry in the Twentieth Century

Stepping back again in our history, by the 1920s the medical profession had reached a state where it actually functioned as a profession. Physicians were increasingly respected in American society (for an important example, see Sinclair Lewis's *Arrowsmith*, for which he was awarded the Pulitzer Prize).[73] By the 1930s, doctors were second only to Supreme Court justices in terms of prestige and respect. They had a state-sanctioned monopoly on medical practice. They controlled membership in the profession through admission to a reduced number of well-regarded medical schools. In Boston this produced a medical profession that was overwhelmingly white and male caring for the largely white patients who could afford their services. The Great Migration, beginning after during World War I and continuing through the Great Depression, brought six million African Americans from the rural south to northern cities. This migration slowly changed the complexion of Boston and its hospitals. Boston City Hospital, for instance, which had been built to care for Irish immigrants, became the primary source of medical care for the city's growing Black community. In Baltimore, which had long had a Black majority population, Johns Hopkins Hospital had long offered care for Black patients, though on segregated wards. The local community had long been suspicious that the physicians exploited them for teaching and research.

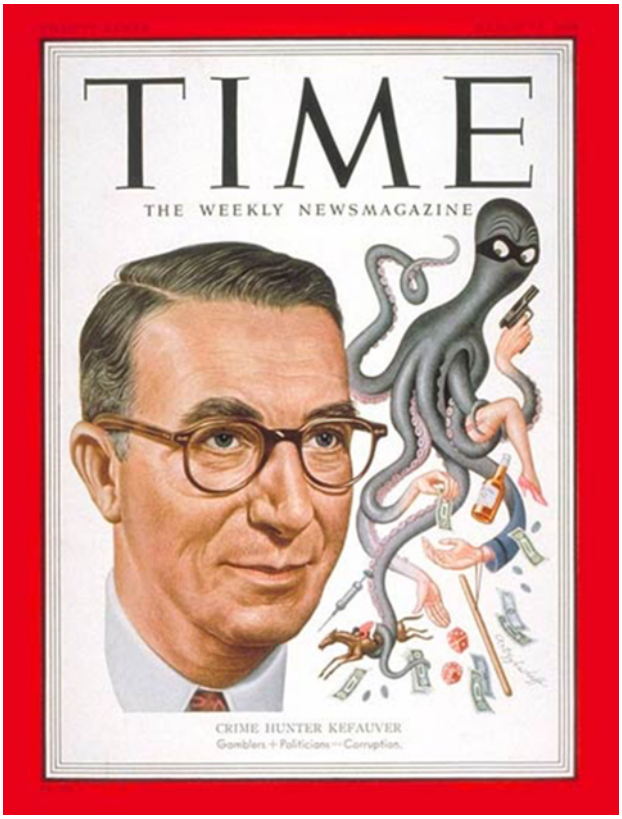


World War II introduced a period of rapid innovation in medical science and technology. Federal investment in medical research produced many innovations, most famously penicillin and DDT. Inspired by the success of these

[72] Emily Gordon, "Wheels of Injustice: How Medical Schools Retained the Power to Disciminate against Applicants in Wheelchairs in the Era of Disability Rights," *Journal of the History of Medicine and Allied Sciences* 77 (2022): 453-474.
[73] Sinclair Lewis, *Arrowsmith* [1925) (New York: Signet Classics, Penguin Books, 1980).

programs, Congress committed unprecedented resources to medical research after the war, establishing the ***National Institutes of Health*** in 1948. Funding increased from $8,000,000 in 1947 to more than $1,000,000,000 in 1966.[74] Clinical research became central to the work of academic medical centers. At the Peter Bent Brigham, for instance, the famous Metabolic Ward set the standard for clinical research.[75] At some hospitals, poor and minority patients bore the brunt of this research. The case of Henrietta Lacks, for instance, demonstrates how physicians exploited patients for research without informing them about the research or seeking their consent.

The therapeutic payoff came quickly. Many major classes of new pharmaceuticals appeared, including antibiotics, antihypertensives, steroids, antipsychotics, anxiolytics, chemotherapy, and many others. Pharmaceutical marketing and profits increased dramatically in the 1950s, and this growth was largely unregulated. The ***Food and Drug Administration***, created in 1906, initially had the power only to ensure the accuracy of drug labels; in 1938 it was given the right to evaluate the safety of new drugs. The rapid proliferation of new drugs in the 1950s created a crisis. Some seemed truly life-changing, but others seemed worthless, promoted on the basis of "testimonials" and not on the basis of rigorously conducted controlled studies.[76] Investigations revealed cozy relations between academics, industry, and regulators, and the extent to which physicians themselves were "educated" by industry through drug detailing and advertisements.[77] The rising cost of drugs triggered the first significant Congressional hearings on the pharmaceutical industry, led by Senator Estes Kefauver and beginning in 1959. A bill to strengthen FDA power had nearly been killed by industry lobbying in 1962 when the thalidomide scandal broke. The outcry facilitated the passage of the Kefauver-Harris amendments later that year. These mandated that new drugs be proved efficacious through "well-controlled



[74] Victoria Harden, Office of History of the National Institutes of Health, "A Short History of the National Institutes of Health," available at https://history.nih.gov/exhibits/history/docs/page_06.html
[75] Renée Fox, *Experiment Perilous: Physicians and Patients Facing the Unknown* (Glencoe, Ill: Free Press, 1959).
[76] Scott H. Podolsky, *The Antibiotic Era: Reform, Resistance, and the Pursuit of a Rational Therapeutics* (Baltimore: Johns Hopkins University Press, 2015).
[77] Jeremy A. Greene and Scott H. Podolsky, "Keeping Modern in Medicine: Pharmaceutical Promotion and Physician Education in Post-War America," *Bulletin of the History of Medicine* 83 (2009): 331-77.

investigations by qualified investigators" (i.e., randomized control trials) prior to approval, and established the phase I/II/III/IV system of drug review.[78]

Surgery, in parallel, achieved unprecedented success and prominence. The first successful human kidney transplant was performed at the Peter Bent Brigham Hospital in 1954, and was joined by advances in cardiac surgery, particularly open-heart surgery (reliably demonstrated in 1955 in Minnesota) and cardiac transplantation (1967).[79] Therapeutic success on many fronts, from vaccines to surgery, was the last piece of the puzzle needed by the medical profession. Elite knowledge had fostered rapid therapeutic development. The profession, based in prestigious schools and respected hospitals, was protected by a robust licensing system: states licensed physicians, defining a minimal level of competence, and professional society boards accredited specialists, defining a higher level of competence. In many respects the profession reached its high-water mark of respect and sovereignty in the early 1960s.[80]

The success, however, was incomplete in many important respects. First, medicine continued to receive important critiques, whether about research ethics, paternalism, reliance on dehumanizing technologies, or over-stated claims of its impact on morbidity and mortality.[81]

Second, the health care system in the United States remained segregated. In 1946, Congress passed the Hill-Burton Act, which provided unprecedented federal funding for hospital construction. New hospitals appeared throughout the country, improving access to medical care. However, in a concession to southern Congressmen,

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[78] Jeremy A. Greene and Scott H. Podolsky, "Reform, Regulation, and Pharmaceuticals: The Kefauver-Harris Amendments at 50," *NEJM* 367 (2012): 1481-3; Laura E. Bothwell, Jeremy A. Greene, Scott H. Podolsky, and David S. Jones, "Assessing the Gold Standard—Lessons from the History of RCTs," *NEJM* 374 (2016): 2175-2181

[79] Nicholas L. Tilney, *Transplant: From Myth to Reality* (New Haven: Yale University Press, 2003); David Cooper, *Open Heart: The Radical Surgeons Who Revolutionized Medicine* (New York: Kaplan, 2010); David S. Jones, *Broken Hearts: The Tangled History of Cardiac Care* (Baltimore: Johns Hopkins University Press, 2013); Shelley McKellar, *Artificial Hearts: The Allure and Ambivalence of a Controversial Medical Technology* (Baltimore: Johns Hopkins University Press, 2018).

[80] Allan M. Brandt and Martha Gardner, "The Golden Age of Medicine?" in Roger Cooter and John Pickstone, *Companion to Medicine in the Twentieth Century* (New York: Routledge, 2003), pp. 21-38.

[81] See, for a brief overview of these concerns, Starr, *Social Transformation of American Medicine* (n. 5), pp.408-9; Nancy Tomes, *Remaking the American Patient: How Madison Avenue and Modern Medicine Turned Patients into Consumer* (Chapel Hill: University of North Carolina Press, 2016). These critiques will be discussed in more detail in readings for sessions on The History and Ethics of Human Subjects Research and The Role of Medicine.

the bill included language that specifically enabled "separate but equal" hospital wards. Hospitals which received Hill-Burton funding had to admit Black patients, but they could admit them to segregated wards, and there was no oversight of how equal those were.[82] Racist assumptions remained so pervasive that the USPHS Syphilis Study at Tuskegee could publish follow-up reports about the natural history of untreated syphilis in Black men in prominent medical journals without engendering anything other than isolated objections.[83]

Frustration with continuing segregation in health care led some groups to take matters into their own hands—as they had done earlier in the century. In 1968 the Black Panther Party began to establish its own network of Peoples' Free Medical Clinics as an alternative site of care for Black and oppressed people.[84] A parallel movement of Latinx activism, most evident in the work of the Young Lords, also pursued a radical vision of community health. They commandeered health services, including a brief takeover of a New York hospital, to demand health care that prioritized community needs.[85]

Third, the scientific and technological transformation of medicine since the late nineteenth century came with another cost: the ***rising price of health care***.[86] In the nineteenth century (and before), medical care was remunerated through a series of informal mechanisms. Patients paid doctors and other healers directly, if they could, with money or barter arrangements. Many physicians provided charitable care for patients who could not pay. Hospitals were funded by trustees, patients would pay nothing, and attending physicians were not paid. There was neither health insurance nor government involvement in health care (other than the Marine Medical Service, which provided free health care to sailors in major ports).

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[82] Alyssa Botelho, in progress.
[83] This episode is discussed in the readings for the session on The History and Ethics of Human Subjects Research.
[84] Alondra Nelson, *Body and Soul: The Black Panther Party and the Fight against Medicalization* (Minneapolis: University of Minnesota Press, 2011).
[85] Johanna Fernandez, *The Young Lords: A Radical History* (Durham: University of North Carolina Press, 2020); Emma Francis-Snyder, "Takeover," *New York Times,* 2021, available at https://www.youtube.com/watch?v=aK_ALMA1NMk.
[86] Again, see Starr, *Social Transformation of American Medicine*, for extended discussion of these issues. See also Rosemary Stevens*, In Sickness and in Wealth: American Hospitals in the Twentieth Century* (New York: Basic Books, 1989).

The initial transformations of medical (and especially surgical) practice and hospitals in the late nineteenth century, in parallel with changes in the economy and rising standards of living, led to increasing costs in medicine and to a growing number of people who could pay for care. But the increasing costs of care, especially for acute, hospitalizable conditions, quickly exceeded the ability of most people to pay. This led many workers' groups to establish mutual aid societies, an early form of health insurance: each week workers would leave money (if they could) in a collection box; workers who needed help with medical expenses could then take money from the box.

Other countries responded differently. Germany, most famously, established ***government-funded health insurance*** in 1883. Most European countries followed suit. When Theodore Roosevelt ran for president in 1912 on the Progressive Party Ticket, he promised national health insurance on the German model. He was defeated by Woodrow Wilson. World War I soon erased any interest in a German-style health care system. The Great Depression provided a major challenge, both for patients (who could not afford health care) and physicians (who could not find paying patients). President Franklin Delano Roosevelt tried to enact health care insurance in the 1930s. Opposition groups, led by the AMA, denounced his efforts as socialism. In 1945 President Truman proposed compulsory health insurance, but the AMA again condemned this as socialized medicine.

In the absence of government action, private systems took root. In 1929 the Dallas teachers' union made a deal with Baylor Hospital: every teacher contributed $0.50 each month to a fund that would cover up to 21 days of hospitalization if required (this became Blue Cross). A similar arrangement covered physician services (this became Blue Shield). Similar models of ***employer-based health insurance*** appeared around the United States. During World War II, in the setting of labor shortages and government-imposed wage caps, more employers offered health insurance (along with vacation, paid sick-leave, and other benefits) to attract and retain employees. By 1950, half of the US population was covered by private health insurance (vs. 0% in 1900 and 70% in 1970).

In the 1950s and 1960s, however, it became clear that this system left out people who were unemployed or under-employed: the poor and the elderly. Motivated by sympathy for aging people unable to pay for health care, President Kennedy proposed providing health benefits to recipients as part of social security. The American Medical

Association fought furiously against these reforms, which they perceived as intrusion by the federal government into health care. It hired actor Ronald Reagan in 1961 to condemn government-funded health care. In an audio recording distributed nationwide, he called on Americans to write letters to Congress to state their opposition. Reagan celebrated the free market: "under our free-enterprise system we have seen medicine reach the greatest heights that it has in any country in the world." But he warned about a looming threat: "One of the traditional methods of imposing statism or socialism on a people has been by way of medicine." If the government inserted itself into health care, it would soon take over all areas of life. Reagan encouraged doctors to take action to oppose the proposed legislation, otherwise reforms "will pass just as surely as the sun will come up tomorrow and behind it will come other federal programs that will invade every area of freedom as we have known it in this country … we will wake to find that we have socialism, and if you don't do this and I don't do this, one of these days we are going to spend our sunset years telling our children and our children's children, what it once was like in America when men were free."

Despite this opposition, Lyndon Johnson worked with Congress and in 1965 enacted ***Medicare*** (health insurance for every person age 65 and older) and ***Medicaid*** (health insurance for everyone living below 133% of the federal poverty line). These programs, which provided substantial federal funding for health care, in fact did give the government leverage over hospitals and doctors. The government, for instance, pushed hospitals to desegregate.[87] While this reform provided unprecedented access to

[87] David Barton Smith, *The Power to Heal: Civil Rights, Medicare, and the Struggle to Transform America's Health Care System* (Nashville: Vanderbilt University Press, 2016).

health care for many Black Americans, the outcomes were far from perfect. Many health care services (as happened with schools) remained segregated in practice though not by law. Black and Indigenous patients continued to have many reasons to distrust medicine. Even though physicians had resisted government involvement in health care for decades, they proved to be major beneficiaries of Medicare: physician salaries rose dramatically after 1965 as government funding poured into health care.

As these private and government systems developed to provide insurance for medical care, dental care was often partitioned off.[88] Some employers did offer dental insurance to employees, but such policies were distinct from other medical insurance and fewer employees enrolled. Medicare, meanwhile, did not cover outpatient dental service (which includes nearly all dental care). Medicaid eventually required states to provide dental insurance to children covered by Medicaid, but not to adults. The net result was that rates of insurance coverage for dental care have been far lower than for medical care. In 2012, for instance, 40% of Americans lacked dental insurance while 13% lacked health insurance (by 2016, even as both dental and health insurance rates improved, the ratio of the uninsured remained nearly 3:1).[89] Many people face high out-of-pocket costs for dental care, if they can afford it at all.

By 1970, the combination of new medical technology and new sources of health care funding had begun to fuel dramatic increases in the cost of health care. Physicians could do far more for patients in the 1970s than they could have done in the 1920s: x-rays were joined by ultrasound and CAT scans; expensive new medications proliferated rapidly; specialized services offered dialysis, chemotherapy, organ transplantation, intensive care, and cardiac surgery. Hospitals continued to expand and offer more services. Patients no longer paid for these services directly.

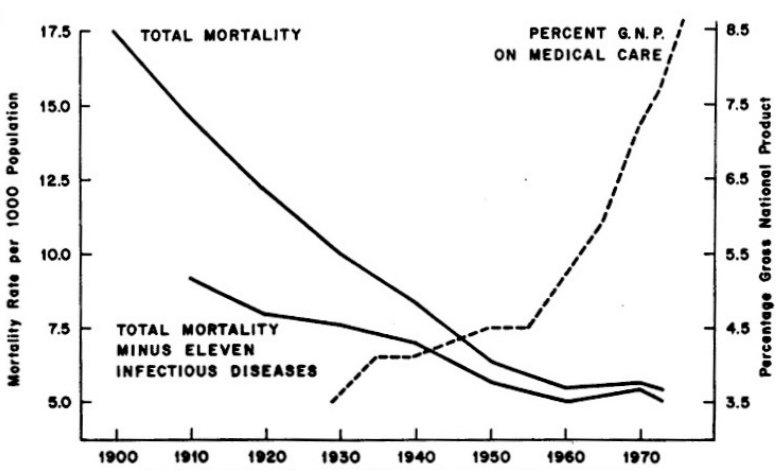


FIG. 2. Age-and Sex-Adjusted Mortality Rates for the United States 1900–1973, Including and Excluding Eleven Major Infectious Diseases, Contrasted with the Proportion of the Gross National Product Expended on Medical Care.

Instead, so-called ***third-party payers***, either a private or government insurer, covered the costs of health care. The people making health care decisions — patients and physicians — did so without concern, often even without awareness, of the financial

[88] Alyssa Picard, *Making the American Mouth: Dentists and Public Health in the Twentieth Century* (New Brunswick: Rutgers University Press, 2009).
[89] See, e.g., the National Association of Dental Plans, "Who Has Dental Benefits Today," at https://www.whydental.org/about/understanding-dental-benefits

costs of their decisions. Spending rose steeply, from 4% of the GDP in 1950 to over 18% in 2021.

Anxiety about the rising costs of health care appeared by 1970. Ever since that time, politicians and health care leaders have sought to expand access for the millions of people who remain uninsured (e.g., working people whose employers do not offer health insurance, immigrants without legal status, etc.), while slowing (and ideally reversing) the growth of health care costs. In the 1980s and 1990s this effort focused on ***managed care*** and an emphasis on prevention to reduce costs. Insurers, especially private insurers, tried many techniques, from capitated payments to restricted formularies and provider networks, to regulate the practice of medicine and steer physicians towards lower cost (and hopefully higher value) care. After a century in which physicians worked to head off government regulation of health care, it turned out to be private insurers, and not the government, that posed the greatest threat to medical sovereignty in the late twentieth century.[90] Physicians have pushed hard against the idea that costs should influence medical decision making. Only recently has thinking about this begun to change as some physicians increasingly recognize a role as responsible stewards of financial resources.

Health Care in the Twenty-First Century

By the early 2000s there was widespread dissatisfaction with the provision of health care, whether about lack of access (e.g., roughly 20% without insurance), costs, or specific methods used by health insurers to reduce their risk (e.g., refusing to offer insurance to people with pre-existing conditions; rescission of policies when patients

"Uh-oh, your coverage doesn't seem to include illness."

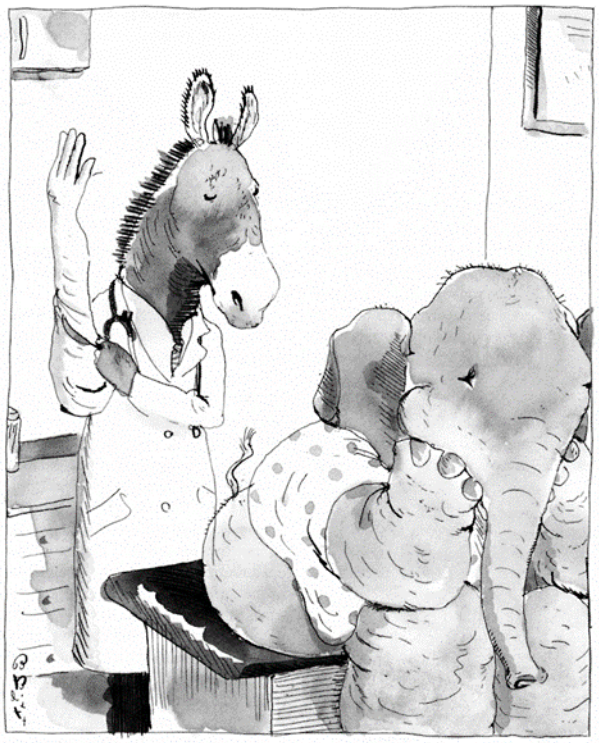
[90] Starr, *Social Transformation of American Medicine* (n. 5), chapter 5.

fell ill, etc.). President Barack Obama seized on this discontent and led an effort to reform health care. His efforts had to contend with the legacies of history. Even though progressives had long favored a single-payer system of government-funded health care, as established in most other high-income countries, resistance against this remained as vigorous as it had been since 1916. Instead, picking up on a proposal originally made by President Richard Nixon, Obama developed a system which provided government subsidies to individuals so that they could buy insurance on the marketplace. His plan also provided subsidies to the states to expand eligibility for Medicaid. In addition to these interventions to increase the number of people with health insurance, government imposed a range of regulations on insurers (e.g., insurers must offer policies to people with pre-existing conditions, policies must cover contraception, and many others). It also required that individuals buy insurance or pay a penalty; this mandate pushed healthy people into the market, decreasing insurance costs for those who were sick.

The ***Affordable Care Act (ACA)***, passed in 2010, succeeded in reducing the portion of the population without insurance from 20% to 8%, and it slowed the increase in health care costs (e.g., health care spending in 2016 grew at the lowest rate since 1960). However, many problems persisted. Republicans, citing the fears of

uncontrolled costs and federal intrusion into health care, undermined key features of the ACA. For instance, many states refused to expand Medicaid, leaving a significant share of their population uninsured (not poor enough for traditional Medicaid, but too poor to qualify for subsidies on the marketplace). This resistance in part reflected persistent racist attitudes: some poor white people in these states, who would have

benefited from Medicaid expansion, opposed the ACA because they did not want Black people in their state to benefit from the reforms.[91] Republican senators also blocked certain subsidies to insurers that had been intended to buffer them against the risk of high-cost patients. The penalty for enrolling in insurance remained low enough that many people chose to pay the penalty instead of paying premiums for insurance. Without enough healthy people buying insurance, premiums for those who did buy insurance rose. In the weeks before the 2016 election, many voters received notice (or saw media coverage) explaining that premiums would rise, on average, by 22%. This discontent contributed to the victory of Donald Trump, who had campaigned on a promise of a full repeal of the ACA.



Even with control of the presidency and both houses of Congress, Republicans failed to repeal and replace the ACA (in part because they could not agree on a replacement). However, they did end the mandate that people sign up for insurance or instead pay a tax penalty. Much to the surprise of health economists, most patients continued to pay for (subsidized) health insurance and the government marketplaces survived even without the mandate. A coalition of states, however, challenged the ACA, arguing that that ACA was unconstitutional without the mandate: in 2012 the Supreme Court had upheld the ACA as a legitimate use of Congress's power to tax; without that mandate-tax, this rationale disappeared. The Supreme Court heard arguments in this case in November 2020 and upheld the ACA once again.

As Trump and Republicans attacked the ACA, Democrats seized on public anxieties (especially fears about losing protections for people with pre-existing conditions) to mobilize enthusiasm for universal health care, especially the idea of "Medicare for All." This would require a complete restructuring of health insurance and health care finance. Debate about this issue, however, largely dissipated after Joseph Biden's election; he focused his health care policy attention instead on the COVID-19 pandemic. Biden did, however, use the COVID crisis to expand subsidies that allow more people to obtain health insurance through the Obamacare exchanges. The re-election of Donald Trump in 2024 once again creates uncertainty about the

[91] Jonathan Metzl, *Dying of Whiteness: How the Politics of Racial Resentment Is Killing America's Heartland* (New York: Basic Books, 2019).

future of the ACA, and of Medicaid more broadly. Public anger at the insurance industry, meanwhile, has surged, with anger about denials of coverage apparently fueling the assassination of a prominent insurance executive.

At its core, these questions of health care policy raise fundamental questions of health and ethics, ones that physicians and citizens in the United States have debated for over a century. Is health care a commodity, to be purchased like any other good or service? Is it a public good, like police and fire services, that governments should provide, and fund through taxation? Is it an entitlement, like Social Security, part of the social contract between citizens and the government? Is it a human right, something that any person should be able to access, regardless of ability to pay, insurance status, or citizenship? This last position was written into the constitution of the World Health Organization, which states that "The highest attainable standard of health is one of the fundamental rights of every human being." Clear consensus has never emerged about these questions in the United States. The 1986 Emergency Medical Treatment and Active Labor Act (EMTALA) mandated that all hospitals evaluate and stabilize any patient that presents to an Emergency Department, regardless of ability to pay. But that is the extent of the legal requirements in the United States, as if Americans have a right to life-saving care but nothing more.

Meanwhile, fundamental concerns persist about the problems of race and racism in health care. Fifty years after Medicare attempted to desegregate hospitals, many hospitals remain partially segregated not by law but in practice. A 2017 investigation by the *Boston Globe* Spotlight team found alarming problems in Boston hospitals.[92] Many minority patients report that they do not feel welcome in the city's academic medical centers. The medical profession still bears scars of the Flexner Report and decades of continuing discrimination: even though African Americans make up over 13% of the American population, they only comprise 5% of physicians and 3.6% of medical faculty. [93] Fifty years after committing to affirmative action, Harvard Medical School continued to work aggressively to recruit minority students; the Supreme Court's 2023 decision to end affirmative action disrupted this effort. Faculty diversity is an even larger problem, with the percent of white men increasing at each professorial rank. Analyses of this problem have identified many contributing causes, from the pipeline of students entering the health professions, to limited diversity in Harvard-affiliated residency programs, to problems with recruiting and retention that arise from Boston's reputation as a racist city.

When Dean Jeffrey Flier stepped down as dean in 2016, HMS students invoked the school's regrettable actions in 1850 and petitioned Harvard President Drew Faust to appoint someone other than another white man as dean. Faust named Michelle

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[92] Spotlight Team. "Boston. Racism. Image. Reality." *Boston Globe*, December 2017. Available at https://apps.bostonglobe.com/spotlight/boston-racism-image-reality/

[93] AAMC, Diversity in Medicine: Facts and Figrues 2019. Available at https://www.aamc.org/data-reports/workforce/interactive-data/figure-18-percentage-all-active-physicians-race/ethnicity-2018.

Williams as dean at HSPH and George Daley at HMS. Responding to calls from students and faculty, Dean Daley created a task force on diversity and inclusion. The death of George Floyd in May 2020 intensified calls for race justice in the United States. Many physicians and medical students wrote eloquently about the need for antiracist reforms throughout health care, from curricula, to the composition of the profession and clinical care.[94] An exposé about the medical curriculum at the University of Pennsylvania showed that many racist assumptions persist in medical curricula.[95] HMS launched an initiative to transform itself into an antiracist institution. It stripped Holmes's name from one of its academic societies; it was renamed for William Augustus Hinton, the first tenured Black professor at Harvard.[96] This is not the first time that structural racism has been identified as a problem in medicine. Determined action will be required for these reforms to succeed where past efforts have not.

Substantial efforts have also been made to challenge the residues of scientific racism in medical theory and practice. In the 1990s and 2000s doctors developed a series of race-adjusted diagnostic tests and clinical algorithms. The tool creators hoped that these would be progressive interventions, providing a form of "personalized medicine" for minority patients. The tools did have some basis in empirical data (e.g., many studies had indeed found that Black people in the United States have lower lung volumes than white people). However, many of the assumptions behind these tools reflected ideas that could be traced back to slavery. And many of the tools, if used as directed, actually directed health care attention and resources towards white patients. Beginning in 2016, students at HMS helped to lead what became a national effort to question race-adjusted tools in medicine.[97] This effort gained momentum in 2020, leading to Congressional hearings and the establishment of task forces by many medical specialties.[98]

Other forms of medical racism have been targeted as well. For instance, in 2015 physicians at BWH noticed a puzzling disparity: when the ED admitted patients with heart failure to the hospital, white patients more often ended up on the cardiology

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[94] For two examples, see: Rachel R. Hardeman, Eduardo M. Medina, and Rhea W. Boyd. "Stolen Breaths." *NEJM* 283 (16 July 2020; online first 10 June): 197-199; Clyde W. Yancy, "Academic Medicine and Black Lives Matter: Time for Deep Listening." *JAMA* 324 (4 August 2020; online first 30 June): 435-436.

[95] Christina Amutah, Kaliya Greenidge, Adjoa Mante, Michelle Munyikwa, Sanjna L Surya, Eve Higginbotham, David S. Jones, Risa Lavizzo-Mourey, Dorothy Roberts, Jennifer Tsai, and Jaya Aysola. "Misrepresenting Race — The Role of Medical Schools in Propagating Physician Bias." *New England Journal of Medicine* 384 (4 March 2021): 872-878.

[96] Meera S. Nair, "Harvard Medical Society Renamed in Honor of First Black Tenured Professor, Physician-Scientist Hinton," *Harvard Crimson*, 7 October 2020. See also Podolsky, "Oliver Wendell Holmes, Racism, and Remembrance."

[97] Bridget Balch, "Confronting Race in Diagnosis: Medical Students Call for Reexamining How Kidney Function Is Estimated," *AAMC News*, 24 September 2020.

[98] Darshali A. Vyas, Leo G. Eisenstein, and David S. Jones, "Hidden in Plain Sight—Reconsidering the Use of Race Correction in Clinical Algorithms," *NEJM* 383 (27 August 2020; online first 17 June): 874-882; Usha Lee McFarling and Katie Palmer, "Inside the Bruising Battle to Purge Race from a Kidney Disease Calculator," *STAT*, 5 September 2024.

service at BWH while Black and Hispanic patients ended up on the medicine service at Faulkner Hospital.[99] Investigations found several factors that contributed to the disparity, including patient self-advocacy and having previously established care with a cardiologist.

Significant reforms have now followed. BWH implemented reforms to its admissions processes: it now provides a preferential admissions option that encourages the admitting physician to consider sending Black and Hispanic patients with heart failure to the cardiology service instead of the general medicine service.[100] Task forces have recommended dropping race from kidney function tests, pulmonary function tests, and many others. These reforms, however, alter the balance of how medical resources (e.g., access to kidney transplants, or disability payments for chronic lung disease) are allocated in the United States.[101] This has contributed to the growing backlash against "woke" medicine.

Conclusions

Over the past two centuries, doctors in the United States have accrued enormous power and prestige, even as they continue to bristle at constraints on their autonomy. In the absence of decisive government leadership, many physicians and institutions had long implemented policies of providing health care to all comers and sorting out payment after the fact. The increasing bureaucratic complexity of health care and the increasing pressure to control spending make it difficult to continue these policies. What obligations will clinicians have, with respect to both patient care and advocacy, as health care policy and priorities shift? Should citizens accept certain health care costs (whether through taxes or premiums) so that the risks of disease and health care costs are distributed broadly across the population, or should they favor policies that minimize risk sharing in favor of individual responsibility for health care?

Access and cost are just two of the many problems facing health care in the United States in the 21st century. Long-standing racism has left countless scars in the structure and composition of the professions and their institutions. Structural racism, from enslavement through Jim Crow, red-lining, and mass incarceration have created profound health inequities. Can health care transform itself around a new commitment to antiracism? Can health professionals lead efforts that will alleviate health inequities? Answers to these questions will remain at the heart of political and medical debates in the United States for years to come.

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[99] Lauren A. Eberly, Aaron Richterman, Anne G. Beckett, Bram Wispelwey, Regan H. Marsh, Emily C. Cleveland Manchanda, Cindy Y. Chang, Robert J. Glynn, Katherine C. Brooks, Robert Boxer, Rose Kakoza, Jennifer Goldsmith, Joseph Loscalzo, Michelle Morse, and Eldrin F. Lewis, "Identification of Racial Inequities in Access to Specialized Inpatient Heart Failure Care at an Academic Medical Center," *Circulation: Heart Failure* 12 (November 2019).

[100] Bram Wispelwey and Michelle Morse, "An Antiracist Agenda for Medicine," *Boston Review* (17 March 2021).

[101] Felice J. Freyer, "The Downstream Effects of Fixing a Racist Lung Test," *Undark*, 24 September 2024.

Suggestions for Further Reading:

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Figures:

Title Page: Harvard Medical School, Longwood Campus, early 20th century. HMS moved to its present location in 1906, four years before the publication of the Flexner Report.

Page 3: Scene of a medical encounter from ancient Greece, notable for both physical examination as well as the association with the staff of the divine Asclepius.

Page 4: From L.A. Green et al., "The Ecology of Medical Care Revisited," *NEJM* 344 (2001): 2021-2025.

Page 5: Port of Boston, early 18th century.

Page 6: Robert Thom, "Benjamin Rush," Great Moments in Medicine (1948-1964).

Page 7: "Brisk Cathartic," satiric print by James Gillray, 1804.

Page 8: William Buchan's *Domestic Medicine*. Countway Library's copy of the 1769 first edition has been fully digitized.

Page 9: Holden Chapel, Harvard Yard, first site of Harvard Medical School.

Page 9: Anatomy Lecture (given by John Warren) Attendance Certificate for Levi Bartlett in 1785, engraved by Paul Revere.

Page 10: Insignia of the Massachusetts Medical Society, founded in 1781.

Page 11: Massachusetts General Hospital, circa 1821, Bullfinch Building (with the dome serving to illuminate the operative theatre, eventually known as the "ether dome" after the 1846 first public demonstration of ether by William Morton and John Collins Warren).

Page 11: Illustration from *Harper's Weekly*, 1860, showing the conditions at Bellevue Hospital. Rats had reportedly attacked (eaten?) the delivered baby of the woman in the foreground.

Page 12: The first article to appear in the first volume of the *New England Journal of Medicine and Surgery* (as it was then called), written by HMS co-founder John Warren, father of John Collins Warren, co-founder of the journal (as well as of MGH).

Page 13: Early photograph of a tooth extraction.

Page 14: Samuel Thomson had sold over 100,000 of these patents to use his "do-it-yourself" botanical medical system to individual subscribers in mid-19th century America.

Page 15: Insignia of the American Medical Association, founded in 1847, as organized medicine attempted to draw boundaries between orthodox and unorthodox medicine.

Page 16: *Ether Day, 1846*, by Warren and Lucia Prosperi, painted in 2001 (with many contemporary MGH clinicians standing in for their historical counterparts), and presently hanging in the ether dome itself.

Page 17: The Agnew Clinic, painted by Thomas Eakins in 1889, University of Pennsylvania. Note the presence of surgical nurse Mary Clymer, as surgery

began to evolve into the carefully orchestrated, team-based, aseptic intervention we know today.

Page 18: Boston City Hospital, founded in 1864.

Page 19: Louis Pasteur (1822-1895), painting by Albert Edelfelt, 1885. This image has served as the iconic representation of the medical scientist.

Page 20: An early fluoroscope, c. 1910.

Page 21: Johns Hopkins University School of Medicine, founded in 1893.

Page 22: "Philadelphia Physician Factory" appearing in *Puck* magazine in April, 1880. See David Alan Johnson, "John Buchanan's Philadelphia Diploma Mill and the Rise of State Medical Boards," *Bulletin of the History of Medicine* 89 (2015): 25-58.

Page 22: Abraham Flexner (1866-1959).

Page 23: Flexner's proposed "Reconstruction" of American Medicine, with a dramatic reduction in the number of medical schools. In Medical Education in the United States and Canada [i.e., The Flexner Report] (Carnegie Foundation, 1910), pp. 152-153.

Page 25: Exhibit from the American Eugenics Society Fair, Topeka, KS, 1929. Image courtesy of the American Philosophical Society.

Page 26: The Four Founders of the Johns Hopkins University School of Medicine: William Osler, William Welch, William Halsted, and Howard Kelly.

Page 27: Petition by Harvard Medical School students, protesting the admission of black students to medical lectures.

Page 29: First class of women admitted to Harvard Medical School, 1945. In the Archives for Women in Medicine, Center for the History of Medicine, Countway Medial Library. Available online.

Page 31: Pharmaceutical advertisement for penicillin during World War II. Penicillin, developed during the war as the result of large-scale cooperation across the U.S. pharmaceutical industry, served as a harbinger for the post-WW II therapeutic revolution notable for the development of steroids, anti-psychotics, minor tranquilizers, anti-hypertensives, novel classes of antibiotics, and massive pharmaceutical marketing campaigns.

Page 32: Senator Estes Kefauver (D-TN), shown here on the cover of *Time* in 1952 for taking on organized crime. By 1959 he had turned his attention to the increasingly profitable pharmaceutical industry.

Page 33: Dr. Charles Bailey, shown here on the cover of *Time* in 1957, was a pioneer in open heart surgery.

Page 34: Flyer for the People's Free Health Clinic, Black Panther Party, 1971.

Page 35: Theodore Roosevelt (1858-1919).

Page 36: Through the AMA's "Operation Coffee Cup," a copy of Reagan's recording was sent to the wives of physicians nationwide. Wives were supposed to meet in groups, listen to the recording, and write to their congressmen to condemn

government-funded health care (lists of congressmen were included in the mailing). The Countway Library's Center for the History of Medicine has an original copy of the album, with intact instructions and congressional listings. The album is now easy to find and play online.

Page 36: Lyndon B. Johnson, signing Medicare into law, at the Harry S. Truman Library and Museum in Independence, Missouri, July 30, 1965.

Page 37: From John B. McKinlay and Sonja M. McKinlay, "The Questionable Contribution of Medical Measures to the Decline of Mortality in the United States in the Twentieth Century," *Milbank Memorial Fund Quarterly* 55 (1977): 405-429.

Page 38: *New Yorker*, January 16, 2006.

Page 39: President Barack Obama, signing into law the Affordable Care Act, March 23, 2010.

Page 40: Barry Blitt, "Horse Doctor Examines Elephant Patient," cover submitted to (but not published by) *New Yorker,* c. 2009.