



The integral partnership between history and medical education, in three parts

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Abstract

What use has the past? This paper explores its specific utility to the field of medical education. It particularly focuses on the value of history for educators (as opposed to students) by highlighting its potential to contribute in three areas. First, it examines the professional rupture in medical history as an example to avoid – and provides specific suggestions to retain unity. Second, in comparing how the humanities foundation of history privileges different modes of inquiry than the social sciences, it highlights how such methodology – in particular oral histories and material culture – might enrich educational scholarship. Finally, it suggests different ways of incorporating history into the classroom, such as interleaving eponyms, as a way to improve student retention and facilitate their ability to think more broadly, more ethically, and more empathetically.

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“Those who do not study the past are doomed to repeat it” – or at least so goes the hackneyed axiom trotted out to justify history whenever its valence comes into question. Like all tropes, it holds some validity, but one need only look to recent events, such as public responses to pandemics, to recognize that knowing the past does not spare society from its repetition (Dolan & Rutherford, 2020). What purpose, then, does the field retain? Philosophers and historians have long debated this question on a macro level, musing on its role in helping understand or guide society (McCullough, 2025; Wood, 2008). Few similarly challenge medical education. While fierce debates rage over what to teach future clinicians and

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the best ways of doing so, society does not question the underlying need to train the next generation of medical practitioners.

This special issue investigates the intersection of these two fields. I approach the topic from the perspective of a formally trained clinician-historian who, while passionate about teaching medical learners, lacks an academic background in education. Instead, this article examines how history might benefit medical educators and the field of medical education. The analysis ranges from big-picture interdisciplinary thoughts to in-the-moment teaching techniques, broken down into three sections: structural integrity; cross-purpose methodology; and didactic tools.

History and medical education have long intersected, with dozens of works analyzing the history of education (Bonner, 1995; Ludmerer, 1985; Numbers, 1980). Moreover, generations of physicians and historians have argued for the importance of history within medical education as an essential element for producing thoughtful, ethical, and competent clinicians (*Clio Project*, 2025; Duffin, 2021; Jones et al., 2015; Steere-Williams et al., 2023). These authors generally expound on several key arguments, with recent scholarship cleaving the study of history to the vague (and problematic) “professionalism” theme that is omnipresent in contemporary medical education (Ellis et al., 2023; Kirk, 2007).

Indeed, history possesses the potential to foster a sense of both civic responsibility and professional belonging, highlighting past episodes to exemplify the proper – and improper – roles physicians have played (Duffin, 2021). The constant change of what is “right” or “best” instills a sense of humility and exposes students to the process of knowledge production, specifically the social, cultural, economic, and political contingencies of that endeavor, complicating the simplistic notion of objective laboratory data (Cunningham & Williams, 1992; Gavrus & Lamb, 2022). Turn-of-the-century advocates such as William Osler highlighted the potential of history to re-humanize physicians in the face of over-specialization, commercialization, and objectification of the patient, clearly a need that persists today in the Global North (Bryan & Longo, 2013). More recent arguments in applied medical history seek to employ past examples to facilitate students’ understanding of present-day issues, such as minority mistrust in the healthcare system or the convoluted payment schemes that daunt each country (Keirms, 2023; Kushner, 2008a).

This article explores a different facet of that relationship: rather than asking how history benefits future physicians, it interrogates its role for medical educators, expanding on the work of Boudreau, Hodges, and others (Boudreau et al., 2018; Hodges, 2005). The paper focus on three features, moving from broad to specific: first, what can medical education as a field learn structurally and culturally from history? Second, how can historical methodology contribute to medical education from both a research and practical perspective? Here, it highlights oral history and material culture as practical tools that could contribute to educational scholarship. Third, how can specific historical examples influence the actual act of teaching? Certainly, many of the aforementioned arguments justifying its presence in medical schools retain validity in this sphere, but our focus remains squarely upon the teachers.

Professional identity & structural integrity: benefits of a unified field

Many clinicians are dedicated to teaching the next generation. Similarly, many clinicians love the history of their profession. At the same time, the fields of education and history contain a cohort of PhD-bearing professionals who have varying levels of connection to the clinic. How the disciplines incorporate these different yet equally valuable perspectives affect their ability to shape events, impact students, and generate further scholarship. This section explores medical history's failure to integrate its clinical and academic camps and how medical education might learn from and avoid this mistake.

The two fields share similar origin stories. Both began with interested physicians studying and publishing on the subject. Whereas medical history started to professionalize in nineteenth century Germany (Rütten, 2004), medical education emerged as an academic discipline in North America in the 1950s (Kuper et al., 2010; Norman, 2011). Especially in the last few decades, formally trained historians and educators have dedicated their careers to advancing the knowledge, skill, and practice of their subjects. Moreover, scholars from related disciplines such as psychology, communications, and anthropology have increasingly entered this space, bringing their own methodologies and biases (Albert et al., 2007). Yet each has retained substantial interest in and from the clinical community. Understanding how history has navigated through – and crashed upon – the rocky shoals of professional integration may help guide the field of medical education to a more integrated stance than medical history has been able to retain.

Medical history currently exists as a house divided (Barr et al., 2025; Huisman & Warner, 2006; Kushner, 2008b). On one side, academic historians armed with PhDs explore social and cultural perspectives in articles and books that infrequently address clinical practice. These works go largely unread by many clinician historians, who maintain a strong passion for their heritage, even if they lack the historiographic sophistication of their professorial colleagues. Their interest evidences itself in the hundreds of history articles each year that appear in clinical journals, which, in turn, largely escape the attention of academics (Barr & Nesbit, 2020). This separation resulted from a series of conscious decisions in the 1970s and 1980s that, with some notable exceptions, resulted in each group retrenching into its own comfortable habitat. Formally trained historians criticized clinicians for focusing on the great doctors to the exclusion of other perspectives (Reverby & Rosner, 1979). They also expressed concern about the methodological rigor of clinician scholarship, scorning ahistorical arguments of unabated progress and judgments of the past based on current scientific standards. Clinicians, in turn, critiqued academics for writing “medical history without the medicine” and found the scholarship far afield from their own interests. Both sides had valid points but failed to find common ground. Thus, the house divided.

Such a schism is regrettable. Not only do the different approaches maintain intrinsic value, they also, and more importantly, work better together, with scholarship, passion, and expertise in one arena informing, challenging, and sharpening that of the other. There have been some recent efforts to reunite these groups, but aside from the few dually trained MD-PhDs in the history of medicine and a handful of other intrepid souls, the two communities remain effectively separate today (Clio Project, 2025).

The field of medical education should strive to avoid this fissure. Previous articles have debated the value of what they term “production for producer” v. “production for user” (Albert, 2004; Albert et al., 2007). While careful to recognize that most scholarship exists

along the continuum between these poles, Mathieu Albert and others analyzed the arguments wielded by proponents of each perspective. With “production for producer” favoring methodologically rigorous, theory-based studies building off a thorough knowledge of extant research, and “production for user” prioritizing more readily accessible, if less exacting, efforts to bring immediately practical lessons into medical school classrooms, these tropes resonate with the debates that tore medical history asunder in previous decades. Specific ways to maintain a partnership are less-discussed in the literature but may include: actively positioning medical educators within medical centers; holding conferences that not only include perspectives from the clinic and the academy but actively seek to integrate them through panels and roundtables; hosting workshops that facilitate both a discussion of the latest methodologies as well as immediate practical needs; sponsoring essay/poster contests for young clinicians to catalyze their involvement in the education field; and ensuring each group feels valued and respected by the other.

Despite the real challenges that exist in aligning seemingly disparate interests, maintaining a unified field holds paramount importance. Practically, the “production for user” cohort usually resides inside medical schools, bringing funding, access to students, and the ability to implement changes rapidly. The “production for producer” cohort proffers the time and effort necessary to create and maintain the infrastructure required for an academic discipline, including journals, conferences, and mentorship. Intellectually, they drive the profession forward, developing new methodologies, seeking higher standards of scholarship, and delving into spaces clinical practitioners might ignore. Those same practitioners, however, signal what topics are currently of greatest interest to teachers and students of medicine. Analogous groupings exist within medical history. In each instance, a marriage, with all its associated frustrations and squabbles, creates a symbiotic partnership that benefits the field and should be strengthened moving forward.

Research methodology, or historical techniques to buttress medical education

History is not the past just as an EKG is not someone’s heartbeat. Both are representations of what happened. Thus, both the historian and the clinician must interpret evidence (be it an ancient document or a CT scan) place it into its larger context, determine its relevance, and decide how to proceed. Yet how they do so differs based on education and background. Lessons, tools, and techniques from one provide cross-fertilization for the other.

History is a bit like a fine dessert at a fancy restaurant. The diner enjoys its savory taste only vaguely aware of the chef’s creativity in concocting the recipe, discernment in selecting the ingredients, precision in meting them out, and care in their preparation. So too does historical scholarship appear at the table with minimal evidence of its creation. Practically no history paper contains the “methods” section that is standard in the natural and social sciences; statistics and quotations alike appear with only a citation to an obscure archival source. While some historians have demanded a more visible methodology, that practice remains the exception (Gaddis, 2002).

This style partly reflects the identification of history as a humanity. Although historians in the French *Annales* school of the 1920s attempted to push history into the social sciences by emphasizing quantitative methods and generalizability, that effort largely failed (Burke,

1990). Indeed, while repeatability remains, at least in theory, the ideal to which the sciences aspire (Shapin, 1985), most historians scorn the idea that different scholars examining the same data would arrive at identical conclusions (Gaddis, 2002). Emphasizing the importance of the narrative and situating both the subject and the scholar within a socio-cultural context, historians expect different people could examine the same sources and arrive at drastically different yet equally valid conclusions. Despite this tendency to “hide its work,” history is methodologically rigorous, and applying some of these methodologies – specifically oral history and material culture – can provide additional tools to medical education scholars.

Oral histories/interviews: how to improve the process

Oral histories seek to fill gaps in the written record by interviewing individuals and recording their interpretation of their lived experience (Ritchie, 1995). Historians often receive formal training in the nuances of this tool: not just the logistical steps necessary to conduct them effectively but also the theoretical precepts that render them a valuable source of evidence (Llewellyn et al., 2015; Perks & Thomson, 2016). This training emphasizes different facets of the technique as compared to interviews in the social sciences. Whereas the latter frequently seeks as many subjects as logistically feasible – often documenting the response rate in an effort to demonstrate the generalizability of their results – humanists often focus on far fewer subjects. Indeed, one of the best oral histories in the field remains Saul Benison’s interview of one virologist, for over 60 hours: Tom Rivers (Benison, 1967). Social scientists tend to prefer a homogenous group of respondents – say, all 3rd year medical students – to ensure validity, whereas historians often seek highly variegated perspectives, perhaps best practiced by Studs Terkel in *Hard Times*, *The Good War*, and other collections (Terkel, 1970, 1984). Thus, rarely do historians seek the “truth,” or even “what really happened,” instead attempting understand individual perspectives and motivations. They use open-ended questions in an effort to obtain a narrative from the subject elucidating the why and how. Often, like Terkel, historians will compare the experience of, say, a general and private fighting the same battle to highlight just how different history is, depending on your perspective. Each technique possesses intrinsic value, but medical educators might consider borrowing some of the historical methods for studies exploring specific innovations or experiences to capture a more holistic portrayal. For example, they may integrate administrator, teacher, student, and patients to assess the impact of a new teaching style from multiple points of view, or follow a few students longitudinally through their education and into practice, which may not be representative *per se* but nonetheless could provide an informative portrayal of the process.

Moreover, educators could transplant this research methodology directly in the classroom, using it to teach patient interview skills and emphasize the importance of the patient experience. Certainly, medical educators have been working to improve student interviews for generations (Keifenheim et al., 2015). But oral histories are distinct from the patient interview process, which often seeks specific information from a time-limited longitudinal course. Using historical interviews as an additional teaching tool offers individualized models to facilitate skill acquisition. They could demonstrate how not only do the physician and patient experience the same disease dramatically differently but so too does patient A compared to patient B, pending their cultural background, socioeconomic status, co-mor-

bidities, and innumerable other variables. In both oral histories and clinical interviews, the goal is to contextualize events and to capture the subjective and affective experience. This aligns with recent efforts to document the patient narrative into the electronic health record, which can often be lost among auto-populating smart phrases (Charon, 2001). Oral history highlights empathy and the importance of obtaining multiple perspectives, to educator and student alike, helping teach medical students to conduct more thorough, nuanced, and ethical patient encounters, not by providing a list of questions to ask, but by teaching a feel for the dance of the interview.

Material culture: cross-disciplinary research techniques

If oral history captures transcendental stories, material culture instead focuses on physical objects, their provenance, usage, and survival (Cavallo, 2021; Riello, 2022). Focusing on these material objects using some of history's methodologies provides additional avenues of research for medical education. Merging with technology studies, historians of medicine might, for example, select an object such as the stethoscope and utilize that to explore not just the practice of medicine but also ways of discovery, knowledge transfer, and sources of authority (Duffin, 1998; Howell, 1995). Building off this literature, educators could analogously explore how students interact with specific artifacts, be it round tables in the classroom or high-fidelity mannequins. This line of inquiry has even more potential if educators expanded the notion of material to include the digital – admittedly intangible but nonetheless an increasingly omnipresent feature in learners' lives (Healey, 2022). Digital test preparation software like Uworld®, Pathoma, and Anki now dominate a substantial portion of students' study time (Kann et al., 2024). Exploring these third-party, unaccountable programs from their inception to implementation, just as one might interrogate the origins of the stethoscope, would be a powerful lens to help understand how students learn (Lawrence et al., 2023).

Adopting this technique to the classroom also has immediate crossover, clinical application. Here, in addition to serving as a research methodology, educators can utilize it pedagogically by challenging students to consider the physical objects in a patient's world when trying to understand the daily and medical experience of that individual. As historian and curator Katherine Ott explains, materiality mediates the patient experience and is imbued with meaning, making invisible experiences of health visible and thus more socially acceptable (Ott, 2014). For instance, medical educators may advise students to examine the wear and tear on an assistive walking device to understand how a patient actually uses it. Asking who helps an elderly patient fill a pill box may reveal that patient's support structure. Thus, material culture has the power to expose how the experience of illness is shaped not only by the disease itself but also by the built environment and the degree of accessibility in design.

From the universal to the specific: how history can help teach future clinicians in the classroom

The value added by history comes not just through the larger, theoretical framework it provides but also through the specific ways educators can employ it to teach and inspire their students. Moving away from the aforementioned problematic term of professionalism (Ellis

et al., 2023), this section instead highlights instances where history has particular, “practical” value, at least as learners see it. Possibilities are bountiful; this paper highlights three: diagnosing, emotional affect, and interleaving, using them to demonstrate how they can help produce competent, empathetic, and ethical practitioners.

Historical methods as a tool for reaching clinical diagnosis

Patients rarely present with their diagnosis in hand. They come to the doctor with a non-linear story, an often emotion-laden narrative(ish) that is usually buttressed with various forms of evidence by way of physical signs, laboratory values, and imaging studies. From this muddled mess of information, physicians must elucidate a differential diagnosis, a list, roughly in order of likelihood, of diseases from which their patient may be suffering (Ely et al., 2011). That list might then prompt additional investigation or an intervention to treat the presumed condition. While macro-historical debates argue about what constitutes disease and the (relatively recent) emphasis on diagnosis as part of the doctor-patient interaction (Aronowitz, 2015; Rosenberg, 2002), expectations of the physician, patient, and the insurance company paying for the encounter demand a named condition. This process of coming up with one – ideally the correct one – parallels historians’ efforts to interpret the past. Thus, educators can use the historical research process as a way to help teach differential diagnosis.

Historians similarly assemble and try to prove a thesis from a variety of sources. They too suffer from missing pieces, non-linear presentation of information, and the difficulty of discerning fact from opinion from outright fiction. Historians typically approach a question from multiple angles, hoping that different perspectives, when combined, provide a more accurate portrayal of the situation, a particularly useful strategy given the complexity of some clinical presentations (Bloch, 1953; Gaddis, 2002). Equally important, they realize the difference between discarding distracting data and carefully accounting for contradictory results. Pulling together myriad forms of non-synchronous yet relevant evidence to create a logical, viable story is the very essence of historians’ craft (Howell & Prevenier, 2001). Exposing students to some of the aforementioned techniques and methods that historians utilize in their practice through selected readings may, in turn, sharpen students’ prowess as diagnosticians.

Emotion in the clinical encounter: how to privilege subjective content

Sickness is an inherently emotional experience (Turner & Kelly, 2000). Feelings of fear, anxiety, guilt, anger, sadness ... and, hopefully, joy upon being cured saddle every medical encounter. Despite patients and practitioners alike grappling with the affective aspects of the clinical encounter, the medical record typically extirpates this emotion entirely. Perhaps this exorcism represents an effort at scientific objectivity (however flawed that notion may be) (Daston & Galison, 2007); perhaps it is a strategy to protect clinicians from the burnout affiliated with internalizing their patients’ feelings (Jackson-Koku & Grime, 2019); perhaps it is a logistical byproduct of the Epic® smartphrases that dominate medical documentation today (Dalky, 2018). Whatever the reason, its absence in both charts and in the scientific literature misrepresents the lived experience. Students, making their first forays into this world, may fail to recognize this disconnect (Bhatti, 2018). Learning, in part, by reading,

they may consciously or unconsciously idealize the allegedly neutral objectivity omnipresent in articles and charts.

Historians, in contrast, have demonstrated the importance of centering emotions in their analysis as a key tool in knowledge production (Ahmed, 2004). Sara Ahmed theorizes emotions as a mode of boundary-making, creating ontological categories by which to understand the world through the adherence of emotions to objects and ideas and by coherence of these emotions to the knower experiencing emotions. She builds on psychoanalysis in thinking about affect as a form of capital that produces value by its circulation. This raises an interesting counterfactual: what happens when we deny the circulation of affect, as is so common in the record of the clinical encounter and scientific literature? Leveraging this methodology through simply a frank acknowledgement of its frequent absence, medical educators might be better positioned to create more affective physicians who not only could empathize with their patients' circumstances but also provide more effective and personalized care.

Interleaving, or how exploring eponyms and other historical anecdotes might improve knowledge retention and insert lessons in ethics and empathy into clinical learning

Students can only memorize the bones in the foot or the steps of the Krebs Cycle for so many hours before their attention span wanes and their retention ability degrades. Academics call this phenomenon the attention-attenuation hypothesis; students say they are “hitting a wall” (Wahlheim et al., 2011). To minimize this effect and maximize the utility of increasingly limited curricular hours, educators have been exploring different pedagogical strategies. Multiple studies over the last twenty years have demonstrated the value of integrating subjects in a technique called interleaving (Firth et al., 2021). Interleaving has been relatively slow to gain traction, particularly in medicine and especially in the pre-clinical years, although the stochastic nature of clinical services inherently injects an interleaving model into clerkship and residency rotations (Thompson & Hughes, 2023; Van Hoof et al., 2022).

History has tremendous utility as an interleaving alternative in the preclinical curriculum. Educators can utilize historical anecdotes – most accessibly through eponyms – to help cement the scientific lesson while simultaneously exploring different facets, including medical ethics and the process of knowledge production. Whether taught through organ systems or the more traditional longitudinal coursework, anatomy, biochemistry, pathology and the like require vast memorization. They are also replete with eponyms. While eponyms have recently come under scrutiny, they remain both omnipresent and a facile entry into the past (Gross, 2023; Jeffcoate, 2006; Lysanets & Bieliaieva, 2023; Woywodt & Matteson, 2007). Capitalizing on this feature enables teachers not just to give students' brains a brief break but also to tell them a tale that cements the significance of a given lesson into their memory. This ranges from interesting anecdotes like how Armand Trousseau diagnosed himself with cancer using his previously described sign of migratory thrombophlebitis to more trenchant discussions surrounding the nature of scientific discovery and the propriety of assigning it to a single, often incorrect, individual (Metharom et al., 2019).

More poignantly, certain medical eponyms offer profound lessons in medical ethics, particularly those named after prominent Nazi scientists such as Reiter's Syndrome and Wegener's Granulomatosis. To varying degrees, Hans Reiter, Frederick Wegener, and other Nazi physicians experimented on Jews and other persecuted minorities during the Third Reich,

professionally profiting off their suffering and death (Proctor, 1988; Strous & Edelman, 2007). Recent efforts to rename these syndromes have gained traction, with granulomatosis with polyangiitis replacing Wegner, for example (Falk et al., 2011). Discussion around Austrian anatomist Eduard Pernkopf's anatomical atlas remains more nuanced (Yee et al., 2019). Recognized as resulting from the dissection of Jews killed as part of the Holocaust, it nonetheless remains the most accurate portrayal of human nervous anatomy. How should surgeons balance its utility and value in helping patients today while acknowledging its horrid origins? What do students think about this tension? (Coombs & Peitzman, 2017) Utilizing examples such as these simultaneously teaches medicine and raises complex ethical questions, prompting greater engagement and retention.

Conclusion

The future of medical education is both rock-solid and profoundly unsettled (Bowen & Abdulnour, 2025). Students will continue to study anatomy, physiology, and pharmacology while developing skills in examining patients, interpreting laboratory results, and performing procedures. And yet despite these core structural consistencies, much else remains in question. Artificial intelligence (AI) reigns as the *topic de jour*, serving as a point of rupture that exposes longstanding tensions to even greater scrutiny (Chan & Zary, 2019). What should students spend time memorizing in an era where increasingly advanced computers can process terabytes of data instantly, picking up on patterns no human mind can identify? How can physicians capitalize on this technology when the pace of knowledge expansion has been exponentially increasing: the estimated doubling times of medical knowledge in 1950 was 50 years; 1980: 7 years; 2020: 0.2 years (Densen, 2011). While knowledge and computing power increase, the number of hours learners spend in the hospital has decreased through both formal restrictions and a generational shift favoring quality of life (Ludmerer, 2015). This combination of reduced hours and introduction of new technologies – be it stethoscopes or AI – re-raises decades-old concerns over physicians' declining ability to take a history or perform a physical exam (Faustinella & Jacobs, 2018).

Medical educators have to respond to – ideally to anticipate – these changes to train the next generation of compassionate, ethical, and competent practitioners. History can help them. It provides the medical educators leading the charge a wider perspective on these seemingly monumental changes: it was not so long ago that professors stressed over how to adapt to the printing press and wider availability of texts. Who would attend their lectures if students could just read the material in newly accessible books? (Nutton, 2005) Medical history as a field emphasizes the value of collaboration and integration between serious scholars in the discipline and clinically-oriented practitioners. Its theoretical precepts provide frameworks educators can use to improve pedagogy. And specific historical examples provide memorable and purposive learning opportunities in the classroom. As this special issue demonstrates in a multitude of contexts, medical history and medical education are natural allies and should continue to work closely together in the future.

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References

- Ahmed, S. (2004). Affective economies. *Social Text*, 22(2), 117–139.
- Albert, M. (2004). Understanding the debate on medical education research: A sociological perspective. *Academic Medicine*, 79(10), 948–954.
- Albert, M., Hodges, B. D., & Regehr, G. (2007). Research in medical education: Balancing service and science. *Advances in Health Sciences Education: Theory and Practice*, 12(1), 103–115.
- Aronowitz, R. A. (2015). *Risky medicine: Our quest to cure fear and uncertainty*. University of Chicago Press.
- Barr, J., Doroshow, D. B., Olszewski, T. M., & Ehrenberger, K. (2025). Who wins? Professional identity and the American Association for the history of medicine's early career scholar awards. *Journal for the History of Medicine and Allied Sciences*, 81(1), 111–120.
- Barr, J., & Nesbit, R. R. Jr (2020). We are what we write: 133 years of history in 4 surgical journals. *Annals of Surgery Open*, 1(2), e012.
- Benison, S. (1967). *Tom rivers: Reflections on a life in medicine and science*. MIT Press.
- Bhatti, A. (2018). Cognitive bias in clinical practice - Nurturing healthy skepticism among medical students. *Advances in Medical Education and Practice*, 9, 235–237.
- Bloch, M. (1953). *The historian's craft* (P. Putnam, Trans.). Vintage Books.
- Bonner, T. N. (1995). *Becoming a physician: Medical education in Britain, France, Germany, and the United States, 1750-1945*. Oxford University Press.
- Boudreau, J. D., Cassel, E., & Fuks, A. (2018). *Physicianship and the rebirth of medical education*. Oxford University Press.
- Bowen, J. L., & Abdunour, R.-E.-E. (2025). Moving past “business as usual” for medical education. *New England Journal of Medicine*, 392(24), 2472–2473.
- Bryan, C. S., & Longo, L. D. (2013). Perspective: Teaching and mentoring the history of Medicine: An Oslerian perspective. *Academic Medicine*, 88(1), 97–101.
- Burke, P. (1990). *The French historical revolution: The Annales School, 1929-1989* (2nd ed.). Stanford University Press.
- Cavallo, S. (2021). Objects. In E. Leong, & C. Stein (Eds.), *A cultural history of medicine in the renaissance* (pp. 111–140). Bloomsbury.
- Chan, K. S., & Zary, N. (2019). Applications and challenges of implementing artificial intelligence in medical education: Integrative Review. *JMIR Medical Education*, 5(1), e13930.
- Charon, R. (2001). Narrative medicine: A model for empathy, reflection, profession, and trust. *Journal of the American Medical Association*, 286(15), 1897–1902.
- Clio Project. (2025). Retrieved May 24, 2025 from <https://www.clioproject.org>
- Coombs, D. M., & Peitzman, S. J. (2017). Medical students' assessment of Eduard Pernkopf's Atlas: topographical anatomy of man. *Annals of Anatomy-Anatomischer Anzeiger*, 212, 11–16.
- Cunningham, A., & Williams, P. (Eds.). (1992). *The laboratory revolution in medicine*. Cambridge University Press.
- Dalky, A. F. (2018). *Evaluating usability of an electronic health record smartphrase: Triage nurses use and perceptions*. University of Rhode Island.
- Daston, L., & Galison, P. (2007). *Objectivity*. Zone Books.
- Densen, P. (2011). Challenges and opportunities facing medical education. *Transactions of the American Clinical and Climatological Association*, 122, 48–58.
- Dolan, B., & Rutherford, G. (2020). How history of medicine helps us understand COVID-19 challenges. *Public Health Reports*, 135(6), 717–720.
- Duffin, J. (1998). *To see with a better eye: A life of R. T. H. Laennec*. Princeton University Press.
- Duffin, J. (2021). *History of medicine: A scandalously short introduction* (3rd ed.). University of Toronto Press.
- Ellis, J., Otugo, O., Landry, A., & Landry, A. (2023). Dismantling the overpolicing of black residents. *New England Journal of Medicine*, 389(14), 1258–1261.

- Ely, J. W., Graber, M. L., & Croskerry, P. (2011). Checklists to reduce diagnostic errors. *Academic Medicine*, 86(3), 307–313.
- Falk, R. J., Gross, W. L., Guillevin, L., Hoffman, G., Jayne, D. R. W., Jennette, J. C., Kallenberg, C. G. M., Luqmani, R., Mahr, A. D., Matteson, E. L., Merkel, P. A., Specks, U., & Watts, R. (2011). Granulomatosis with polyangiitis (Wegener's): An alternative name for Wegener's granulomatosis. *Annals of the Rheumatic Diseases*, 70(4), 704.
- Faustinella, F., & Jacobs, R. J. (2018). The decline of clinical skills: A challenge for medical schools. *International Journal of Medical Education*, 9, 195–197.
- Firth, J., Rivers, I., & Boyle, J. (2021). A systematic review of interleaving as a concept learning strategy. *Review of Education*, 9(2), 642–684.
- Gaddis, J. L. (2002). *The landscape of history: How historians map the past*. Oxford University Press.
- Gavrus, D., & Lamb, S. (2022). Introduction. In D. Gavrus, & S. Lamb (Eds.), *Transforming medical education: Historical case studies of teaching, learning, and belonging in medicine* (pp. 3–27). McGill-Queen's University Press.
- Gross, R. E. (2023, June 20). Doing Nazis' bidding, yet honored by science. *New York Times*, p. 4. <https://www.nytimes.com/2023/06/19/science/medicine-eponyms-nazis.html>
- Healey, J. (2022). Bodies in bits: Historicizing anatomy's digital turn. In D. Gavrus, & S. Lamb (Eds.), *Transforming medical education: Historical case studies of teaching, learning, and belonging in medicine* (pp. 361–385). McGill-Queen's University Press.
- Hodges, B. D. (2005). The many and conflicting histories of medical education in Canada and the USA: An Introduction to the paradigm wars. *Medical Education*, 39(6), 613–621.
- Howell, J. D. (1995). *Technology in the hospital: Transforming patient care in the early twentieth century*. Johns Hopkins University Press.
- Howell, M. C., & Prevenier, W. (2001). *From reliable sources: An introduction to historical methods*. Cornell University Press.
- Huisman, F., & Warner, J. H. (Eds.). (2006). *Locating medical history: The stories and their Meanings*. Johns Hopkins University Press.
- Jackson-Koku, G., & Grime, P. (2019). Emotion regulation and burnout in doctors: A systematic review. *Occupational Medicine*, 69(1), 9–21.
- Jeffcoate, W. J. (2006). Should eponyms be actively detached from diseases? *The Lancet*, 367(9519), 1296–1297.
- Jones, D. S., Greene, J. A., Duffin, J., & Harley Warner, J. (2015). Making the case for history in medical education. *Journal of the History of Medicine and Allied Sciences*, 70(4), 623–652.
- Kann, M. R., Huang, G. W., Pugazenthi, S., Kann, R., Chen, D., Hardi, A., & Zehnder, N. (2024). Unlocking medical student success: A systematic review and meta-analysis of third-party resources used for medical education and USMLE board preparation. *Medical Science Educator*, 34(6), 1603–1622.
- Keifenheim, K. E., Teufel, M., Ip, J., Speiser, N., Leehr, E. J., Zipfel, S., & Herrmann-Werner, A. (2015). Teaching history taking to medical students: A systematic review. *BMC Medical Education*, 15(1), 159.
- Keirns, C. (2023). History of health policy: Explaining complexity through time. *Journal of the History of Medicine and Allied Sciences*, 78(1), 34–45.
- Kirk, L. M. (2007). Professionalism in medicine: Definitions and considerations for teaching. *Proceedings of Baylor University Medical Center*, 20(1), 13–16.
- Kuper, A., Albert, M., & Hodges, B. D. (2010). The origins of the field of medical education research. *Academic Medicine*, 85(8), 1347–1353.
- Kushner, H. I. (2008a). History as a medical tool. *The Lancet*, 371(9612), 552–553.
- Kushner, H. I. (2008b). Medical historians and the history of Medicine. *The Lancet*, 372(9640), 710–711.
- Lawrence, E. C., Dine, C. J., & Kogan, J. R. (2023). Preclerkship medical students' use of third-party Learning resources. *JAMA Network Open*, 6(12), e2345971–e2345971.
- Llewellyn, K. R., Freund, A., & Reilly, N. (Eds.). (2015). *The Canadian oral history reader*. McGill-Queen's University Press.
- Ludmerer, K. M. (1985). *Learning to heal: The development of American Medical Education*. Basic Books.
- Ludmerer, K. M. (2015). *Let me heal: The opportunity to preserve excellence in American Medicine*. Oxford University Press.
- Lysanets, Y., & Bieliaieva, O. (2023). The use of eponyms in medical case reports: Etymological, quantitative, and structural analysis. *Journal of Medical Case Reports*, 17(1), 151–170.
- McCullough, D. G. (2025). *History matters*. Simon and Schuster.
- Metharom, P., Falasca, M., & Berndt, M. C. (2019). The history of Armand Trousseau and cancer-associated thrombosis. *Cancers*, 11(2), 158.
- Norman, G. (2011). Fifty years of medical education research: Waves of migration. *Medical Education*, 45(8), 785–791.
- Numbers, R. (Ed.). (1980). *The education of American physicians*. University of California Press.

- Nutton, V. (2005). Books, printing and medicine in the renaissance. *Medicina Nei Secoli: Journal of History of Medicine and Medical Humanities*, 17(2), 421–442.
- Ott, K. (2014). Disability things: Material culture and American disability history, 1700–2010. In S. Burch, & M. Rembis (Eds.), *Disability histories* (pp. 119–135). University of Illinois Press.
- Perks, R., & Thomson, A. (Eds.). (2016). *The oral history reader* (3rd ed.). Routledge.
- Proctor, R. (1988). *Racial hygiene: Medicine under the Nazis*. Harvard University Press.
- Reverby, S., & Rosner, D. (1979). Beyond ‘the Great Doctors’. In S. Reverby, & D. Rosner (Eds.), *Health care in America: Essays in social history* (pp. 3–16). Temple University Press.
- Riello, G. (2022). The ‘Material turn’ in World and global history. *Journal of World History*, 33(2), 193–232.
- Ritchie, D. A. (1995). *Doing oral history*. Twayne Publishers.
- Rosenberg, C. E. (2002). The tyranny of diagnosis: Specific entities and individual experience. *The Milbank Quarterly*, 80(2), 237–260.
- Rütten, T. (2004). Karl Sudhoff and “the Fall” of German medical history. In F. Huisman, & J. H. Warner (Eds.), *Locating medical history: The stories and their meanings* (pp. 95–114). Johns Hopkins University Press.
- Shapin, S., & Schaffer, S. (1985). *Leviathan and the air-pump: Hobbes, Boyle, and the experimental life*. Princeton University Press.
- Steele-Williams, J., Barr, J., Clark, C. D., & Lopez, R. N. (2023). Remaking the case for history in medical education. *Journal of the History of Medicine and Allied Sciences*, 78(1), 1–8.
- Strous, R. D., & Edelman, M. C. (2007). Eponyms and the Nazi era: Time to remember and time for change. *Israel Medical Association Journal*, 9(3), 207–214.
- Terkel, S. (1970). *Hard times: An oral history of the great depression*. Pantheon Books.
- Terkel, S. (1984). *The good war: An oral history of world war two*. Pantheon Books.
- Thompson, C. P., & Hughes, M. A. (2023). The effectiveness of spaced learning, interleaving, and retrieval practice in radiology education: A systematic review. *Journal of the American College of Radiology*, 20(11), 1092–1101.
- Turner, J., & Kelly, B. (2000). Emotional dimensions of chronic disease. *Western Journal of Medicine*, 172(2), 124–128.
- Van Hoof, T. J., Sumeracki, M. A., & Madan, C. R. (2022). Science of learning strategy series: Article 3, interleaving. *Journal Continuing Education in the Health Professions*, 42(4), 265–268. <https://doi.org/10.1097/ceh.0000000000000418>
- Wahlheim, C. N., Dunlosky, J., & Jacoby, L. L. (2011). Spacing enhances the learning of natural concepts: An investigation of mechanisms, metacognition, and aging. *Memory & Cognition*, 39, 750–763.
- Wood, G. S. (2008). *The purpose of the past: Reflections on the uses of history*. Penguin Press.
- Woywodt, A., & Matteson, E. (2007). Should eponyms be abandoned? Yes. *British Medical Journal*, 335(7617), 424–425.
- Yee, A., Zubovic, E., Yu, J., Ray, S., Hildebrandt, S., Seideman, W. E., Polak, R. J. A., Grodin, M. A., Coert, J. H., & Brown, D. (2019). Ethical considerations in the use of Pernkopf’s Atlas of Anatomy: A surgical case study. *Surgery*, 165(5), 860–867.

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