AI & Other New Technologies

If you are only able to read a few of the many books about AI and Medicine, I would suggest these:

The AI Revolution in Medicine by Peter Lee, Carey Goldberg & Isaac Kohane, Pearson, May 2023.
Teaching Effectively with ChatGPT by Dan Levy & Angela Albertos, July 2024
Co-Intelligence by Ethan Mollick, Portfolio, April 2024
How AI will Revolutionize Education by Sal Khan, Viking, May 2024

Here are a few papers (of the MANY) that are worth taking a quick look at to give you some background and insights into how AI tools are being utilized in medical education today. There are a number of issues and challenges to consider.

Mollick E, Mollick L. Using AI to Implement Effective Teaching Strategies in the Classroom. *Wharton Interactive* – full text at https://ssrn.com/abstract=4391243

This paper provides 5 detailed strategies and practice prompts for teachers to consider using AI tools in the classroom. They have also created a set of YouTube videos that are excellent: https://www.youtube.com/playlist?list=PL0EdWFC9ZZrUAirFa2amE4Hg05KqCWhoq

Lomis K, et al. Artificial Intelligence in Health Professions Educations. *National Academies of Medicine Perspective*. September 2021.

This paper, and the subsequent 2023 workshop series (https://www.nationalacademies.org/our-work/maximizing-the-promise-and-mitigating-the-peril-of-artificial-intelligence-in-health-professions-education-a-workshop) are a useful introduction to key issues in AI in health professions education.

Cooper A, Rodman AM. AI and Medical Education – A 21st Century Pandora's Box. *NEJM* 389;5. August 3, 2023.

A thought provoking reflection on the rapidity of change and the new challenges that AI tools bring to medical education.

Goodman KE, Rodman AM, Morgan DJ. Preparing Physicians for the Clinical Algorithm Era. *NEJM* 389;6. August 10, 2023.

A very early set of suggestions for how training programs may want to consider utilizing AI tools for training learners.

Chang B. Transformation of Undergraduate Medical Education. JAMA 330;16. October 24/31, 2023 and Hswen Y, Abbasi J. AI Will–and Should–Change Medical School, says Harvard's Dean for Medical Education. JAMA 330;19. November 21, 2023.

This pair of pieces in JAMA's excellent series on AI's impact on medicine and medical education feature Dr. Bernard Chang, the HMS Dean for Medical Education. Dr. Chang shares his thoughts and visions for the opportunities and challenges that exist currently and lie ahead for the age of AI in medicine and medical education.

Hashimoto DA, Johnson KB. The Use of Artificial Intelligence Tools to Prepare Medical School Applications. *Academic Medicine* 98;9. September 2023.

A practical review of how AI tools could be utilized in the preparation of medical school admissions essays with suggestions for ways to do this in a way that preserves originality and creativity.

Other great sources of information to consider

Ethan Mollick's substack - https://www.oneusefulthing.org/

Recent Symposium on Precision Medicine focused on AI in education at HMS (Ethan Mollick is one of the featured speakers).

https://dbmi.hms.harvard.edu/events/precision-medicine-annual-conference/2024-education-ai-era

Instructions – click on the link to go to YouTube and in the top right hand corner, select each of the 9 videos.

Mary Meeker is a venture capitalist at BOND Capital (formerly Kleiner Perkins). In the past she and her team have produced an incredible report called Internet Trends (roughly from 1996-2019). After a 5 year hiatus, she released a Trends in AI report (340 slides!) filled with interesting data. I will show a few of these slides, but if you want to look at the whole report, it is available here at https://www.bondcap.com/reports/tai

As we will discuss in the session, I have also prompted ChatGPT to scan the last year of health care education literature and provide a summary of key papers to consider reviewing with references attached. Here is the list that you might consider digging into in further detail. The point of doing this is not to use this list as THE list of key articles but rather to

provide an example of how one might start using genAI as a digital assistant to begin the process of a literature review.

1) Field direction & consensus (2025)
What's new

- The **Academic Medicine (Sept 2025) special supplement** (Macy Conference) provides concrete, near-term priorities across admissions, teaching, assessment, and program evaluation. Lippincott Journals+1
- Two **Macy Innovation Reports** synthesize the evidence and innovators' recommendations for implementation (competencies, validation, equity). PubMed+1
- **AAMC principles** now cover both (a) responsible AI in/for medical education and (b) AI use in **selection systems** (admissions & residency). AAMC+1

References

- *Conference participants. Josiah Macy Jr. Foundation Conference on Artificial Intelligence in Medical Education: Proceedings and Recommendations. Academic Medicine. 2025;100(9S Suppl 1):S4–S14. doi:10.1097/ACM.0000000000006099.* PubMed
- *Boscardin CK, Abdulnour R-EE, Gin BC. Macy Foundation Innovation Report Part I: Current Landscape of Artificial Intelligence in Medical Education. Academic Medicine. 2025;100(9S Suppl 1):S15–S21. doi:10.1097/ACM.0000000000006107.* PubMed
- *Gin BC, LaForge K, Burk-Rafel J, Boscardin CK. Macy Foundation Innovation Report Part II: From Hype to Reality… Academic Medicine. 2025;100(9S Suppl 1):S22–S29. doi:10.1097/ACM.0000000000006117.* PubMed
- *Association of American Medical Colleges. Responsible Use of AI in and for Medical Education: Principles. 2025.* AAMC
- *Association of American Medical Colleges. Principles for AI in Medical School and Residency Selection Systems. 2025.* AAMC

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2) Learning outcomes / effectiveness
Key points

- **Synthesis:** A 2025 **systematic review & meta-analysis** finds **knowledge parity** vs. traditional teaching but **advantages for practical/skills tasks** with GenAI support—good justification for targeted pilots. BioMed Central
- **RCT—knowledge support:** 129 students; **ChatGPT** as study aid in orthopedics improved short- and longer-term test performance. PubMed Central+1
- **RCT—skills / history-taking:** GPT-based simulated patient training improved history-taking vs. role-play. BioMed Central+1
- **Digital patient systems:** LLM-driven virtual patients enhanced history-taking skills in a controlled study—supports simulation pilots. PubMed Central+1

References

- *Li J, et al. Effectiveness of generative AI–based teaching vs conventional methods: systematic review & meta-analysis. BMC Medical Education. 2025;25:—.* BioMed Central
- *Gan W, et al. Integrating ChatGPT in Orthopedic Education for Medical Undergraduates: Randomized Controlled Trial. J Med Internet Res. 2024;26:e57037.* PubMed Central

- *Wang Z, Fan T, Li M, et al. Feasibility study of using GPT for history-taking training in medical education: randomized clinical trial. BMC Med Educ. 2025;25:—.* BioMed Central
- *Luo MJ, et al. A large language model digital patient system enhances medical history-taking skills. NPJ Digital Medicine. 2025;—.* PubMed Central
- *(Keep for background scoping): Gordon M, et al. BEME Guide No.84—Scoping review of AI in medical education. Medical Teacher. 2024. doi:10.1080/0142159X.2024.2314198.* Taylor & Francis Online

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3) Assessment & feedback (grading, OSCEs, notes)

Key points

- **Free-text notes:** LLMs can score students' H&P notes with **agreement approaching human raters**—appropriate first for **formative** use, with local validation. mededu.jmir.org
- **OSCE artifacts:** 2025 study shows LLMs applying **analytic rubrics** to **post-encounter notes** with promising reliability; consider checklists/analytic rubrics and human review. Taylor & Francis Online+1

References

- *Burke HB, et al. Assessing the Ability of a Large Language Model to Score Medical Students' Free-Text History and Physical Notes. JMIR Med Educ. 2024;10:e56342.* mededu.jmir.org
- *Runyon C, et al. Using large language models to apply analytic rubrics to score post-encounter notes. Medical Teacher. 2025. doi:10.1080/0142159X.2025.2504106.* Taylor & Francis Online

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4) Policy & governance

Key points

- Adopt institutional policy aligned to **AAMC principles** (human-centered use, transparency, privacy, equity, monitoring) and the **AAMC selection-systems principles** (authorship, fairness, oversight). AAMC+1
- Map local efforts to the **Macy supplement's** recommendations to prioritize near-term, high-value pilots. Lippincott Journals

References

- *AAMC. Responsible Use of AI in and for Medical Education: Principles. 2025.* AAMC
- *AAMC. Principles for AI in Medical School and Residency Selection Systems. 2025.* AAMC
- *Academic Medicine. September 2025;100(9S):S1–S48 (Macy supplement).* Lippincott Journals

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5) Implementation playbook & metrics

Key points

- Start **1–2 small pilots** (e.g., formative note-feedback; digital patient practice). Build in **QA, equity review, IRB (when needed), and a kill-switch**. Train faculty for supervision and **assessment redesign**. PubMed Central+1

- Track: learning gains; agreement vs. human raters; **time saved**; **equity impact**; model drift; faculty uptake. Use a **pragmatic assessment guide** for exam design in the GenAI era. PubMed Central

References

- *Newton PM, Jones S. Education and Training Assessment and Artificial Intelligence: A Pragmatic Guide for Educators. British Journal of Biomedical Science. 2025;82:—.* PubMed Central
- *Luo MJ, et al. LLM digital patient system… NPJ Digital Medicine. 2025;—.* PubMed Central
- *AAMC. Responsible Use of AI in and for Medical Education: Principles. 2025.* AAMC