Radiology: Artificial Intelligence

SPECIAL REPORT

The Cases for and against Artificial Intelligence in the Medical School Curriculum

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Although artificial intelligence (AI) has immense potential to shape the future of medicine, its place in undergraduate medical education currently is unclear. Numerous arguments exist both for and against including AI in the medical school curriculum. AI likely will affect all medical specialties, perhaps radiology more so than any other. The purpose of this article is to present a balanced perspective on whether AI should be included officially in the medical school curriculum. After presenting the balanced point-counterpoint arguments, the authors provide a compromise.

Artificial intelligence (AI) is a multidisciplinary field that enables machines to simulate human intelligence and behavior. AI likely will have important implications for the future of medicine, especially for specialties such as radiology. Currently, there is a lack of formal AI instruction in undergraduate medical education. Numerous frameworks have been proposed on how to advance the medical education curriculum to include AI. A staged model has been recommended, which includes learning about different aspects of AI depending on the students' level of medical education (1). For example, in the preclinical years, students would be exposed to AI fundamentals and explore medical datasets, followed by the clinical years, when students would develop a familiarity with AI-based clinical applications.

Another unifying theme is the need for the AI medical curriculum to include training to develop AI literacy, or the ability to critically assess AI applications, similar to evaluating a research article detailing a novel medication or procedure (2). To achieve this competency, it has been suggested that medical schools develop curricular and extracurricular opportunities for students to learn about AI clinical usage, limitations, and ethical concerns (3). However, before developing a formal curriculum, there needs to be a consensus best-practice method for clinical evaluation of AI algorithms in medicine (2).

The dearth of knowledge regarding AI may influence medical students' perceptions of radiology, but whether the effect is positive or negative remains uncertain (4). Interestingly, the number of U.S. medical student applicants for radiology residency has been increasing in recent years, from 899 in 2020, to 989 in 2021, to 1156 in 2022 (5). Numerous factors, including AI, might explain this. However, as AI is still in its infancy, there are numerous questions regarding its role in medicine, including at the undergraduate medical school level (6). This report focuses on the relevance and feasibility of including AI in the medical school curriculum. There are valid arguments from both AI enthusiasts and critics alike. The pros and cons are presented in a point-counterpoint style.

The two medical student authors both have engineering backgrounds and have published two basic articles on AI (7,8). The senior author is an academic radiologist who also has published on medical AI.

The Case for AI in the Medical School Curriculum

Current Initiatives for AI Curricular Advancement and Collaboration

AI technology is advancing inexorably into medicine. Consequently, physicians must be ready to address its clinical, technical, and ethical aspects. Because AI is not in widespread use clinically, a medical student might benefit most from learning the basics of AI and how to interpret medical AI research articles. Several medical schools—including University of Toronto, Harvard Medical School, Stanford University, New York University, and the University of California, Irvine—have begun integrating AI into medical school through formal lectures, certification programs, interest groups, electives, and collaborations with engineering colleges (1). AI is an opportunity to facilitate greater interdisciplinary collaboration and initiatives with nearby engineering schools and technology companies. The Institute for Innovations in Medical Education at New York University Langone Health and The Sharon Disney Lund Medical Intelligence and Innovation Institute (affiliated with the University of California, Irvine) are two medical school collaborative initiatives that have pipelines to engage medical students with the latest research efforts of AI in medicine (1). Medical schools are beginning to recognize that AI is enhancing the nexus between physicians, scientists, and engineers.

Although there are various ongoing efforts to provide AI education to medical students through lectures, modules, and small-group learning, there is no clear consensus

Abbreviations

AI = artificial intelligence, AMA = American Medical Association, RSNA = Radiological Society of North America

Summary

This work serves to promote discussions of artificial intelligence in medical education and encourage its inclusion, in some form, into the undergraduate medical education.

Key Points

- Despite the growing use of artificial intelligence (AI) in health care, there is a dearth of formal AI instruction in undergraduate medical education, the medical school years before students receive their professional medical degree.
- There is a clear need for AI instruction for medical students so that they can understand AI's potential clinical applications, as well as the ethical and legal challenges of AI that may directly influence patient care and outcomes.
- Currently, challenges include uncertainty about how to deliver AI curriculum effectively, limitations in available curricular hours, and lack of faculty expertise; nonetheless, we recommend AI be included in the medical school curriculum, with emphasis on medical informatics and the basics of AI literacy.
- Because of radiology's leading role in implementing AI systems, radiologists can offer important contributions to medical student education in AI.

Keywords

Artificial Intelligence, Medical Education, Medical School Curriculum, Medical Students, Radiology, Use of AI in Education

on how to deliver the AI curriculum (1,3,6,9). The current educational approaches to AI emphasize the importance of hands-on learning with AI tools and the necessity to develop AI literacy (2,3). Once a best-practice method to critique AI algorithms in medicine has been developed, medical educators might have a better picture on how to create a standardized AI curriculum (2). In the meantime, more studies need to be conducted to assess the effectiveness of current AI educational initiatives (6).

AI education also has been introduced beyond the medical student level. At the Emory University School of Medicine, radiology fellows work on research projects that develop AI algorithms for image interpretation. At the University of Pennsylvania, there is a year-long informatics fellowship that teaches radiologists how to evaluate AI tools critically (10). The American Medical Association (AMA) 2019 Council Report on AI explicitly advocates for the inclusion of engineers and data scientists into medical school curriculum workgroups to assist in accelerating the integration of AI (11).

Benefits of AI Knowledge for Medical Students

In like fashion, medical schools have an opportunity to introduce the basics of AI literacy to develop future physician leaders in medical technology. With AI knowledge, medical students potentially can protect both their patients and eventual colleagues from misinterpreting the results or capabilities of AI applications (12). Medical students can enhance clinical care by identifying which problems are amenable to AI input, assessing the appropriateness of AI for clinical scenarios, and critically analyzing AI performance with the aid of attending physicians. Many commercial algorithms must be evaluated for proper implementation into clinical practice, particularly for radiology (13). Medical students who already have a strong foundation in AI can collaborate with physicians and industry leaders to help facilitate the best use of AI for patients.

Medical students, especially in the first 2 years, have more freedom and time to develop additional skills outside of strictly medical knowledge (physiology, pathology, pharmacology), and AI could become a prime target for them to begin to master. Additionally, interested medical students could then apply their AI knowledge to pursue AI research projects aimed at addressing clinical challenges encountered in their 3rd- and 4th-year clinical rotations. These research projects can be emphasized in their residency applications. Just as most clinical attending physicians are not AI experts, not all medical students need to become AI experts.

Requests for AI Instruction in Medical School

AI is gaining recognition among medical educators. There has been widespread interest in incorporating AI into medical school education. At the Artificial Intelligence in Healthcare: Is Europe Ready? 2019 seminar, hosted by the Federation of European Academies of Medicine, there were recommendations to introduce AI in medical schools (14). A 2020 United Kingdom study found that a large majority of surveyed medical students believe that AI in medical education would be beneficial to their careers (430 of 484 [89%]). Furthermore, 378 (78%) of those 484 students want it to be taught in medical school (15). A 2016 AMA survey revealed that the majority of physicians (85%) expressed interest in the benefits of digital technology (16). A multi-institutional 2018 study in Germany of 263 medical students reported that 203 (77%) of 263 students believe that AI will revolutionize radiology (17). This study further suggested that AI should be included in medical education (218 of 263, 83%), and that AI will not replace physicians (187 of 263, 71%). In 2018, the AMA adopted a new policy, Augmented Intelligence in Health Care, and has released a list of medical school initiatives to spearhead AI in medical education (1,11). Incorporation of AI into medical education is desired at the undergraduate medical level.

Potential Opportunities to Incorporate AI into the Curriculum

Although the medical curriculum is crowded currently, there is potential to create curricular space for AI materials in the near future. The National Board of Medical Examiners announced in February 2020 that the Step 1 United States Medical Licensing Examination (USMLE) would transition to a pass-fail format in January 2022. This transition will benefit medical schools that dedicate their curriculum toward content not formally assessed on USMLE examinations, such as health politics, patient advocacy efforts, medical Spanish, and cultural diversity. The pass-fail format will alleviate pressure on medical students because they will not have to focus their time and energy solely toward Step 1 content. Students will now have the availability to pursue topics such as AI, which they can use to customize and diversify their medical educa-

tion. Medical educators likewise will have more freedom to add AI topics—potentially by creatively integrating AI basics and discussions into content that is traditionally tested on Step 1. The pass-fail nature of Step 1 does not signify that medical schools should devote less time to content tested on Step 1. Rather, it creates more opportunities for curriculum committees to take innovative approaches to the preclinical years, because there is less pressure to maximize performance on the multiple-choice examination.

Many methods exist to incorporate AI material into the current curriculum. Numerous medical schools have introductory bioinformatics lectures or longitudinal advanced technology curricula in which an AI fundamentals lecture or module could be aptly placed (1,3,18). AI topics also could be incorporated into ethics lectures to address the medicolegal complexities of implementing AI into clinical practice. In schools with a research track embedded in the curriculum, an AI elective or research project can be made available for students who express interest. AI can even be discussed or introduced in the medical school newspaper. For example, the authors of this article engaged their peers and faculty with an article in our school's newspaper entitled, "Artificial Intelligence (AI): What Is It and What Does It Mean for Us?" (19). Knowledgeable medical students also can organize an AI interest group to introduce AI to their peers, as we also have done.

Medical students might benefit most from longitudinal exposure to AI in the curriculum. The preclinical curriculum could consist of several 60-minute lectures and/or active learning (team-based or problem-based) interspersed throughout an organ-system based or basic science curriculum. Topics could range from medical informatics with hands-on medical dataset exploration, to AI fundamentals, ethics, and law. Additionally, the clinical curriculum might focus on the clinical utility and applications of AI through integrated lectures in numerous core and elective rotations, such as internal medicine, emergency medicine, psychiatry, neurology, and/or radiology.

Career Opportunities for Medical Students and AI Clinician Experts

For those medical students with backgrounds in engineering and computer science, AI opportunities will provide new career possibilities. For example, Agent Health (Montreal, Canada) is a technology company that is developing AI medical tools in space medicine. The company's personnel include 25 represented medical specialties, as well as physicians on the leadership team in an advisory and chief medical officer role. When AI becomes more mainstream in the future, there may be teaching positions in medical schools available for clinicians with AI backgrounds to work alongside interdisciplinary data scientists (1,9). AI is also an exciting field of study for medical students who are interested in partnering with industry leaders to advance AI in medicine. Health AI Partnership—a collaboration between Duke University, University of California, Berkeley, Mayo Clinic, DLA Piper, and other major participants—aims to address the difficulties of designing bias-free algorithms by creating a standardized curriculum for health care providers (20). Artificial Intelligence Industry Innovation Coalition is another collaboration between leaders in academia, health care, and technology that seeks to devise AI solutions to improve societal and health care outcomes (21). Knowledge and experience with AI throughout medical school will increase career opportunities for medical students. Although AI's inclusion in the curriculum is not necessary for medical students to pursue AI research, the exposure to curricular AI may spark interest in students who were not familiar with AI previously.

Potential faculty members to recruit for AI lectures in medical school include those with backgrounds in bioinformatics, computer science, and biomedical engineering. Faculty members at the University of Arizona College of Medicine – Phoenix identified a subset of clinicians—those with a background in clinical informatics, biomedical engineering, or precision medicine—as being potential faculty mentors for AI. Additionally, they were enthusiastic about incorporating AI into the formal medical curriculum. All 12 members of the University of Arizona College of Medicine – Phoenix's curriculum committee discussed whether AI should be included in the medical school curriculum; six individuals reported yes, one reported no, and the remaining five had no comment. Medical schools also can reach out to engineering schools, local AI companies, and other medical schools for collaborative lectures and projects.

The goal of medical school is to train students to be future doctors who can optimally address the needs of their patients and contribute to their specialty of choice. AI has ongoing contributions across several medical specialties (22) in many dimensions of health care delivery today—clinical decision-making, diagnostic interpretation, predictive algorithms, and health monitoring (23). AI is currently transitioning from theoretical to the practical. For example, the sepsis predictor, *InSight* (Dascena), is used actively in many U.S. hospitals (24). Medical students do not need to become fully equipped programmers or mathematicians to develop AI literacy. Rather, similar to how all medical students are trained in the basics of statistics—specificity versus sensitivity, Kaplan-Meier estimators, median lethal dose—the basics of AI eventually will become necessary knowledge for physicians in the digitally advanced future medical era.

Awareness of AI Challenges and Limitations

Medical students also may benefit from understanding AI's limitations. Currently, AI algorithms rely heavily on correctly and completely labeled datasets to learn and make accurate predictions. If these algorithms are tested with datasets that differ from their original training set or contain labeling errors, they may perform poorly (25). This greatly limits AI's generalizability to diverse datasets and patient populations. Additionally, AI may make the correct diagnosis for the wrong reasons. For example, an AI model trained to detect pneumothorax on chest radiographs performed significantly better with the presence of a chest tube compared with no chest tube. The algorithm learned that chest tubes predicted the presence of pneumothorax, an inaccurate conclusion by AI (26). Thus, the algorithm may fail to diagnose untreated pneumothorax, leading to adverse patient outcomes.

Before AI can make a substantial impact on health care, numerous ethical and legal challenges must be addressed as well. There are data security and privacy concerns regarding AI and its access to enormous volumes of patient information (27). Furthermore, hackers can meddle with AI algorithms to make flawed medical recommendations that could harm patients on a wide scale (28). AI depends heavily on complete datasets that are accurate representations of the population to generate proper medical advice. However, if limited nonrepresentative datasets are used, AI has the potential to exacerbate health care inequality and make incorrect suggestions for patient care (29). A single physician mistake is harmful to one patient; an error in an AI algorithm could be catastrophic to innumerable patients. The myriad of ethical and legal obstacles surrounding AI's implementation into health care is yet another reason to integrate AI into the medical school curriculum now.

Navigating the ethical component of using AI in medicine also will develop medical students' critical thinking and compassion. An online 2020 survey to patients found that a negative perception of AI stems from the absent humanistic factor (30). Thus, medical students who understand AI will be able to explain AI applications to patients—how it works, what the results mean—with empathy and compassion, as they address their future patients' concerns about AI. While future physicians are not expected to create AI algorithms, they will be the necessary supervisors, gatekeepers, and curators of AI delivery to patients.

Importance of AI in Medical Education

According to the Accreditation Council for Graduate Medical Education, AI impacts the following core medical school competencies: patient care, practice-based learning and improvement, interpersonal and communication skills, and systems-based practice (31). Medical students will learn how to explain AI, both to their teams and patients, as they identify clinical and hospital workflow protocols that may benefit from AI applications and gain experience with those systems. For example, medical students can use the DXPlain clinical decision support system (Massachusetts General Hospital) to guide a differential diagnosis, given a set of clinical symptoms (32). Another AI tool that medical students can use on clinical rotations is the Human Dx Project, an open-source AI tool that collects and tracks clinical reasoning data from clinicians globally in an attempt to build an accurate, evolving diagnostic tool (33). An *AAMC News* article reported that 40% of internal medicine teaching programs use the Global Morning Report, a collection of teaching cases generated from the Human Dx Project (34). AI is neither a hypothetical concept nor a theoretical tool that is inaccessible to medical students. Rather, medical students can use AI tools right now to improve patient care, to educate their teams, and to prepare themselves for future residency programs.

Currently, medical students have the unique opportunity to advocate for AI incorporation at their respective institutions. For example, the authors of this article created the first AI Interest Group at our medical school. Faculty members at our medical school were queried regarding the importance of AI in medical education, and our senior associate dean agreed that AI would be a timely topic to incorporate into the biomedical informatics longitudinal curricular theme in the near future. The other faculty members who were interviewed emphasized how AI topics would fit well into automated clinical decision support tools, a necessary topic in medical training.

Increasingly, AI is being incorporated into residency training. For example, an AI program in a virtual reality surgery simulator was used to assess surgical performance in a cohort of residents—neurosurgery, orthopedics, spine surgery, medical students—from four Canadian medical schools (35). Additionally, medical schools, such as at Stanford University School of Medicine, have created a dedicated track and certificate for completing AI training (1).

Effects of AI on Residency Applicants to Radiology and Other Specialties

Medical students who have experience with AI can distinguish themselves during residency interview season for those programs that offer AI research opportunities. Students who already have a background in AI will be more prepared and motivated to pursue AI research in their future residencies. Introducing AI at the undergraduate medical school level is appropriate because it is a time when students explore various scholarly interests (eg, public health, epidemiology, nutrition, master of public health, certificates of distinction). Medical students can use their AI foundational knowledge to become more attractive candidates for residency and to prepare themselves to be the next generation of physician leaders in health care technology.

AI has affected medical students' choice of specialty, especially technologically oriented specialties such as radiology. A recent survey of 32 U.S. medical schools highlighted that one-sixth (78 of 463, 17%) of medical students were deterred from pursuing radiology due to the emphasis on AI (36). However, this negative perception of AI is precisely why it is imperative to include AI education in medical school because the reality is that radiologists are the ones spearheading AI research. The Radiological Society of North America (RSNA) launched the journal *Radiology: Artificial Intelligence* to present the latest research in AI clinical applications (37). AI's potential role in radiology includes triaging the images from the emergency department (38), opportunistic screening of incidental findings on various CT windows (39), reducing the number of CT scans in follow-up imaging after cancer treatment, and augmenting clinical decision-making through radiomics (40). Additionally, AI can assist with screening the abundance of chest radiographs, helping automate the more tedious tasks for radiologists (41). As stated by Langlotz, "AI won't replace radiologists, but radiologists who use AI will replace radiologists who don't" (42). Medical students need to be accurately informed on how to enhance patient care through intelligent use of AI; such information will allow them to become advocates for AI rather than being deterred from it and dissuaded from radiology and other specialties.

The Case against AI in the Medical School Curriculum

Major Obstacles to Inclusion of AI in the Curriculum

As technology companies stand at the forefront of AI innovations, medical education currently is not ready for the implementation of AI. The logistics are exceptionally complex—the curriculum is already jam-packed, there is a dearth of qualified experts who can teach AI, and it is unclear what aspects of AI could and should be taught. Furthermore, much of AI's use in health care currently is unknown, which is a reason to oppose the immediate inclusion of AI into the medical school curriculum. Additionally, the actual implementation of AI in health care is riddled with technical, ethical, and legal complexities (12). The distant future of AI in medicine may be bright, but in its current state, AI is merely a primitive tool with limited application in the clinical realm (43).

Is AI Suitable in Undergraduate Medical Education?

AI technology is a topic that might pique the interest of young, innovative medical students. However, is medical school the right place to introduce AI? There are numerous barriers to AI's integration into the medical curriculum. With an already crowded curriculum filled with basic science, clinical knowledge, and professional competencies that need to be met, squeezing in AI is challenging. At the medical school level, students are swamped with developing the foundational knowledge and skills to be successful physicians. They might benefit from understanding how automated clinical decision support tools work to assist physicians in analyzing patient data to reach a diagnosis and learning about informatics to improve patient care, as the amount of health care data continues to rise. However, outside of these areas, AI is a topic best suited for graduate medical education (eg, fellowships in AI or data science) and beyond, when students' clinical knowledge, skills, and understanding of clinical decision-making and workflow are more developed. Proper implementation of AI in health care requires that those helping to integrate AI into medicine have substantial insight into the ins and outs of medical practice that medical students assuredly have not yet mastered.

Curriculum committee members might suggest that interested students do independent reading on clinical decision-making tools and explore AI on their own time. Other recommendations could include forming student-led organizations, such as interest groups or journal clubs. These endeavors would be almost exclusively student-driven because the vast majority of faculty members are unfamiliar with AI. Academic deans and curriculum committee leaders at our school were queried about their thoughts on AI in medical education. Notably, none of the academic deans participated in our interview, presumably because they had little to no knowledge or interest in AI.

The United Kingdom and other countries use a medical education structure that includes up to 6 years of training or beyond for certain specializations. These relatively longer curricula might be able to accommodate the addition of AI electives or extracurriculars. However, countries with a shorter, more rigid curriculum, such as the United States which use an undergraduate medical education model of 4 years or less, have less room for curricular expansion to include AI.

Lack of AI Instructors and Uncertain Curricular Benefit for Medical Students

The number of qualified experts in medical schools who can teach AI are few and far between. Finding an instructor who can adequately instruct AI and present the information from a clinical perspective would be no simple task. This further begs the question, "Do medical students even want to learn about AI in medical school?" A multi-institutional survey conducted at four medical schools in Ireland found that when students were asked whether they intended to learn about AI in medicine, 99 of 241 (41%) said yes, 29 of 241 (12%) said no, and 112 of 241 (46%) said maybe (44). The average medical student may not find much value in learning about a heavily technical topic like AI and might prefer to spend the additional time studying for examinations and honing his or her clinical skills.

If current medical students were interested in learning about AI, what and how much would they need to know? Understanding AI terminology and how to derive algorithms are beyond the scope of medical students. One could argue that students should be responsible for appreciating the practical applications of AI in medicine. While there are numerous potential applications of AI, there exist obstacles to AI's widespread use in clinical medicine. Important considerations pertain to whether AI is efficacious in actual medical practice, is generalizable to various practice models, and has the ability to impact clinical decision-making and patient outcomes. Additionally, the AI education students receive today might not be applicable for long, given that new AI algorithms are being created constantly, and existing ones are updated or become obsolete.

Possible Adverse Effects of AI in the Curriculum

Medical students who have a keen interest in AI, such as those with engineering or computer science backgrounds or those on an MD-PhD track, represent a distinct minority of students. Medical schools can support these select few students by helping them connect with appropriate faculty members and facilitating collaborations with engineering schools and informatics departments. However, teaching AI at the undergraduate medical school level should not be a requirement for all students. The goal at this stage of training is to foster the knowledge and skills to be compassionate doctors who engage in critical thinking. AI could be distracting or a nonfactor for most students who want to focus on the numerous core competencies needed for entrance into residency. A possible adverse effect of AI is that it may be used as a crutch for medical diagnosis and/or clinical decision-making, hampering growth of clinical reasoning abilities by medical students. In the future, AI will likely become a useful tool clinically, but it will not replace physicians; therefore, it should not displace or detract from the foundational training that medical students receive at the undergraduate level.

Is There Enough Current Clinical Usefulness of AI to Warrant a Place in Medical School Curriculum?

AI is applicable to the entire field of medicine, from diagnosing cardiovascular diseases and neurologic conditions to predictive modeling in the emergency department and more (45). The recent advances in natural language processing have further amplified AI's potential. Diagnostic radiology has seen particular focus for AI research due to the massive amounts of available digital data, digital standardization in radiology, and advancements in computer vision (46,47). However, use of AI in the medical field as a whole is still primarily speculative, given the current limitations of algorithms and technology. It would be difficult to convince medical school curriculum committees and academic deans that AI warrants sufficient attention at the undergraduate medical student level. For example, there are over 130 companies dedicated to developing AI algorithms for radiology, and the clinical usefulness of AI is still being determined.

AI has been clinically integrated in the workflow and actively used in various instances. Lahey Hospital & Medical Center has integrated six AI algorithms to assist in diagnosing and triaging imaging studies for possible critical findings to prioritize studies and potentially improve patient care (48). Other algorithms seeing integration into the clinical workflow include one used for determining total kidney volume for patients with polycystic kidney disease (49) and another algorithm used for lymphoscintigraphy examinations (50). Despite the AI advancements being made in radiology, AI adoption in health care is lagging. The slower clinical adoption could be due to numerous factors, including financial incentives, deficiency of information technology support in various health care systems, and a relative lack of clinical informaticists and experts who are pivotal to connecting industry, research, and clinical applications. To justify inclusion in an already crowded curriculum, a topic should be sufficiently important in the present state of medical education and have relevance for medical students today. Teaching medical students about AI, while it has yet to show major, concrete roles in patient care, will not be convincing to curriculum committees.

AI for Medical Students in a Limited Form

The best approach for current medical students who are interested in AI is to gain a basic understanding of AI and its current capabilities by reading and becoming familiar with common terminology. As these students progress through their medical training, they should keep an open mind to the possibilities and opportunities to improve medical efficiency and accuracy through AI and stay up-to-date on pertinent literature. The current generation of medical students is in a prime position to develop clinical acumen in tandem with advancements in AI over the course of their careers. However, at this time, there is no need to introduce AI substantially into the undergraduate medical school curriculum. Doing so might benefit the minority of students who are interested in AI but is not appropriate for the overwhelming majority of students.

Conclusion

There are a multitude of positives and negatives surrounding formal integration of AI into the medical school curriculum. The predominant positive points are the clear need for AI instruction for medical students as evidenced by a myriad of research studies (2–4,6,9), the necessity of addressing the ethical and legal challenges of AI that can directly impact patient safety and privacy, and the potential AI has to improve clinical workflow and patient outcomes through widespread applications (38–41,45). The main negative points include the absence of a clear consensus on how to deliver the AI curriculum effectively (6), the limited curricular hours, the paucity of faculty expertise on AI (1,9), and the fact that AI's use and generalizability in actual medical practice remains unknown, despite the high number of potential applications in medicine. These are the aspects that curriculum committees will need to consider when evaluating the implementation of AI education in their own institutions. A compromise between the two positions would be to include AI in the curriculum but in a limited capacity, focusing on a general understanding of medical informatics and the basics of AI literacy.

AI is likely to have a major impact on the medical field, especially for radiology. Increased knowledge about AI may help allay medical student fears regarding radiology as a specialty and potentially promote student interest in radiology. There are creative ways to incorporate AI into the curricula, from development of a hybrid course that provides a general understanding of medical informatics and AI, to including background AI information into each clinical rotation. Noncurricular approaches can also be taken to introduce AI at the medical school level. We have started an AI Interest Group and held two national radiology research symposia at our medical school to introduce AI to medical students. Additionally, the authors suggest exploring the Magician's Corner, found on the *Radiology: Artificial Intelligence* website *(https://pubs.rsna.org/page/ai/magicians_corner)*, to gain a better understanding of deep learning related to AI. The RSNA Imaging AI Certificate program also may be helpful for radiologists or aspiring radiologists to learn about the foundations of AI on an interactive, educational platform. A free online and largely nontechnical course titled "AI For Everyone," taught by Andrew Ng on Coursera, may also serve as an excellent starting point to improve AI knowledge.

Radiologists are leaders in implementing AI systems and are especially qualified to educate medical students in AI. Because radiologists are involved in teaching anatomy and clinical imaging at many medical schools, they could integrate nontechnical AI information into their existing lectures for medical students. Given their clinical and AI expertise, radiologists also may serve as the ideal mentors for medical students, as well as strong advocates for AI in medical education.

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