



President's Letter June 2025

Artificial Intelligence in Medicine- The Promise and Perils for Physicians

Dear Colleagues,

In the technological revolution of healthcare, artificial intelligence (AI) presents unprecedented opportunities and challenges for physicians. The integration of AI into medical practice has been occurring rapidly since its inception. The implications affect our profession, our patients, and our healthcare systems, demanding our careful consideration. “We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run,” Roy Amara’s Law.

Physicians will need to learn how to interact with this new technology to continue to practice medicine. It will be necessary to adapt to this new way of working in our clinics and our daily lives. From the development of expanded differential diagnoses and treatment plans to the transcription summary of the patient’s clinical visit to the submission of billing-based codes, AI is already commonplace.

Colorado, in particular, faces significant challenges in addressing its workforce deficit. We are projected to be short 2,424 physicians, with primary care alone facing a deficit of 1,773 providers, and over 30% of our physicians approaching retirement age (Cicero Institute Sept 10, 2024 <https://ciceroinstitute.org/research/colorado-physician-shortage-facts/>). Rural regions outside of Denver are serving as many as 5,636 residents per primary care provider. This physician shortage makes AI’s potential to augment physician capabilities not just attractive, but essential.

Healthcare industry leaders note that AI-powered tools can process huge amounts of clinical data to suggest differential diagnoses within seconds, saving time on information gathering. Its algorithmic processing may facilitate decision making for the physician, especially those already overtaxed or with limited experience. In addition to the usual list of differential diagnoses, the technology may identify rare conditions that might otherwise be overlooked. AI could potentially enhance diagnostic accuracy. System algorithms can analyze patterns across thousands of similar cases, identifying subtle presentations of complex conditions that human pattern recognition might not detect.

AI-assisted technology may supplement patient encounters, providing evidence-based treatment recommendations, drug interaction alerts, and population-specific guidelines, enhancing care quality while reducing cognitive load. AI systems could help identify patients at risk for complications or readmissions, enabling proactive interventions that improve outcomes. The gain may be multifold: to enhance patient care, to free up resources for additional patients, to reduce unnecessary costs of extended care or readmission, and to potentially facilitate end-of-life discussions. (“How AI Can Improve End-of-Life Care”, Nigam Shah, Stephanie Harman, med.stanford.edu)

Enhanced diagnostic accuracy may also positively affect patient workflow. Rapid differential diagnosis generation could theoretically enable physicians to see more patients. Given Colorado’s physician shortage, AI could help short-staffed hospitals and clinic physicians effectively manage larger patient volumes. This may become particularly important in underserved areas. (“Harnessing AI’s Potential to Lift Up Underserved Communities, Sept 17, 2024, chcf.org).

It is debated whether AI can achieve what it promises to decrease cognitive load without sacrificing the quality of care or adversely affecting the patient experience. The efficiency gains from AI must not come at the expense of the physician-patient relationship that remains central to effective healthcare. Remember the early days of interviewing and examining your patient, scribing a quick note, and calling on your training and experience to determine what ailment your patient might have? Not long ago, we morphed into data entry personnel rapidly keying the patient history into an EHR while barely making eye contact to meet the newest demands of EHR. We are now at the forefront of one of the most significant technological advances in our history, yet most of us are only utilizing a small component of its capabilities, such as ambient transcription (“Ambient Artificial Intelligence Scribes to Alleviate the Burden of Clinical Documentation” (catalyst.nejm.org, A Tierney, Kristine Lee, Vol 5, No 3, March 2024). According to Google CEO Sundar Pichai, “AI is more important than fire or electricity as far as a transformative technology”.

The implications for AI will likely have the greatest effect in medical education training. The integration of AI into healthcare will fundamentally reshape medical education. New graduates will become institutionalized in the use of AI in every aspect of their training. Medical schools and residency programs are evolving curricula to prepare physicians for an AI-augmented practice environment, ensuring that future physicians can leverage technology. While AI may increase efficiency, it could affect the economic model of healthcare delivery, potentially further decreasing physician compensation.

The potential effects on data processing, independent thinking, and decision making will create a different way of thinking. Future physicians should understand how AI systems work, their limitations, and appropriate use cases. The challenges will be learning to work effectively with AI tools while maintaining clinical judgment. Future physicians will need to assess AI recommendations and understand when and how to override them.

An uncharted territory for future physicians will be in ethical decision-making. How do you navigate complex situations where AI recommendations may conflict with clinical intuition or patient preferences? As AI systems become more sophisticated, questions arise about responsibility when AI-assisted decisions lead to adverse outcomes and whether they result from physician error or the AI processing algorithm. AI systems trained on biased datasets may perpetuate or amplify healthcare disparities, particularly concerning for Colorado's diverse population, especially in underserved or underrepresented populations. ("Bias in AI-based Models for Medical Application: Challenges and Mitigation Strategies, Nature npj Digital Medicine 2023, 6:113).

Colorado has positioned itself at the forefront of AI regulation with the Colorado AI Act (SB 24-205) legislation that establishes comprehensive requirements for AI systems used in healthcare, including "provisions for algorithmic discrimination prevention and transparency requirements". While this regulatory framework provides important patient protections, it also creates compliance obligations for which healthcare organizations must be aware (<https://www.laborandemploymentlawinsights.com>).

As physicians, we must approach AI integration thoughtfully and strategically by: 1.) understanding AI capabilities and limitations to use these tools effectively and safely; 2.) advocating for appropriate regulation; 3.) maintaining clinical knowledge, skills, and patient-centric judgment; 4.) and protecting the human aspects of medical care.

The integration of AI into healthcare practice represents our greatest opportunity and our most significant challenge. For Colorado, with our acute physician shortage and diverse population needs, AI could provide crucial support in delivering quality care to all residents. However, success will require thoughtful implementation, ongoing education,

and a strong commitment to maintaining the human-centered approach that defines excellence in the practice of medicine.

The Denver Medical Society is presenting an educational series on “Informatics and Artificial Intelligence,” hosted by Dr Howard Saft, Associate Professor of Pulmonary, Critical Care and Sleep Medicine at National Jewish. The time and location to be determined soon, so please watch for future Bulletin Announcements.

DMS will continue to advocate for policies and practices that optimize AI’s potential while preserving the integrity and skills that make physicians irreplaceable.

Together, we can shape a future where technology serves both our patients and our profession,

Kelly McAleese MD

President, DMS