Digital Health Action Collaborative

Meeting Highlights: October 30, 2024

Workforce Implications of Artificial Intelligence in Health and Medicine

Digital Health Action Collaborative Aim: Developing health data as a secure, essential utility for the common good—a virtual health data trust.

Meeting Focus: Artificial intelligence (AI) technologies harness vast amounts of health data to analyze patterns, provide predictive insights, and support decision-making in health care. This meeting will explore the potentially transformative impact of AI on the health and health care workforce, with a focus on reimagining professional roles and education, addressing workforce well-being, and shaping policy recommendations. Participants will engage in discussions that highlight recent AI advancements, their implications for healthcare delivery, and strategies to align the workforce with the demands of an AI-driven future.

Motivating Questions:

1. What categories make up the workforce in health and medicine?
2. How might their roles and responsibilities change with the emergence of AI?
3. What are the skills and competencies necessary to thrive in an AI-driven environment?
4. How might professional education be restructured to support these changes?
5. What ethical challenges does AI introduce in health and health care?
6. How build and maintain trust among professionals and patients in an AI-driven environment?
7. What collaborative actions can stakeholders take to ensure AI improves patient outcomes and aligns with the future needs of the health care workforce?
8. How can we navigate the implementation challenges and/or potential job displacement caused by AI while supporting the moral and psychological well-being of the health care workforce?

Desired Outcomes: Identify priority issues related to the health and health care workforce that can be further explored through ongoing activities such as a health professions forum on AI in health and medicine.

BACKGROUND

The Digital Health Action Collaborative (DHAC) was created to provide a venue for joint activities among industry and health leaders in information technology that can accelerate development of the digital health architecture and progress towards the digital infrastructure necessary for continuous improvement and innovation in health and health care. On October 30, 2024, DHAC held a meeting of key health professions stakeholders—including representatives from medicine, nursing, physical therapy, pharmacy, and physician associates (PA)—on the implications of artificial intelligence (AI) on the health and health care workforce. Attendees discussed current and emerging workforce challenges and strategies relevant to the integration of AI technologies into education, training, and practice. Further workforce topics were identified for the establishment of a forum for regular convening and conversations among health professional groups and AI developers, a health professions forum. Key themes from the discussions are described below.

MEETING THEMES

1. AI is accelerating the digital transformation of health and health care, with significant implications for the workforce.

Ongoing disruption and expansion of the digital health landscape, accelerated by AI, is driving transformative changes in health and how health care is delivered. Attendees shared knowledge and experience on areas where AI is already making significant contributions, including ambient AI for documentation, diabetic retinopathy screening, revenue cycle management, and patient education. Participants emphasized the disruptive potential of these use cases on existing workforce challenges, particularly in primary care, which faces a crisis of retiring clinicians and declining interest among trainees. AI provides a "greenfield" opportunity to assist health and health care professionals and augment care delivery.

Emerging models, such as digital co-pilots and integration with robotic automation and virtual reality, offer promise but require careful management to address clinician gaps in knowledge and edge cases. Participants stressed the importance of balancing AI adoption with maintaining the patient-provider relationship, noting that workforce skills such as AI literacy, data literacy, and digital literacy will be critical for success.

2. Educational competencies for health professionals need to evolve to meet the demands of AI.

The rapid evolution of health and health care processes due to AI demands a similar transformation in health education. Both current professionals and future practitioners need adaptable and continuously updated curricula to help them understand, evaluate, and integrate AI into practice. Participants noted the ways in which current approaches to educating and training health professionals lag behind, with technology seldom included in existing curricula. For example, in medicine, health systems are investing in AI tools with minimal guidance for actors within the learning health system. Physicians often lack foundational knowledge of AI, limiting their ability to assess tools, interpret metrics, or critically evaluate outputs.

Speakers discussed the need for education to shift to competency-based assessments that incorporate informatics and technology development. One participant identified five critical competencies for AI integration in medical education: foundational knowledge, clinical applications, collaborative care, critical appraisal, and continuous improvement. The continuing medical education (CME) and continuing professional development (CPD) enterprise was highlighted as a possible opportunity, requiring alignment with the evolving needs of health care systems and communities. Participants emphasized the need to develop these competencies through interdisciplinary approaches, fostering collaboration across medicine, nursing, pharmacy, and other professions. One participant emphasized the need to include non-clinical health managers and executives in these educational efforts, particularly given how AI applications are increasingly prevalent in human resources, IT, and administrative operations. To enable this work, there was a call for purposeful investment from health systems and specialty societies in both education and educational research.

The discussion also addressed cultural barriers to integrating AI into health education. The notion of AI challenges traditional professional identity in medicine, where perfectionist norms may hinder the adoption of tools requiring clinicians to navigate uncertainty and ambiguity. Furthermore, for clinicians, there might be reluctance to rely on AI tools, particularly when they do not fully understand the models and fear potential risks to their professional licensure or litigation. Underscoring the importance of continuous education and supports in the face of these fears, participants called for a shift in focus from knowledge retention to critical inquiry and teamwork, especially as AI becomes more embedded in practice.

AI's impact extends beyond clinical training to have implications on teaching and learning processes themselves, providing real-time feedback, reducing educators' administrative workloads, and fostering critical thinking among learners. Participants noted that while students are often early adopters of AI, faculty members may require institutional guidance to keep pace with technological advancements and address the growing use of AI in educational settings.

3. AI has the potential to reduce burnout, but only if workflows adapt appropriately.

Workforce shortages, exacerbated by high levels of burnout among health professionals, presents a critical challenge for health systems, with the U.S. health system facing a projected shortfall of 3.2 million workers by 2026. Participants stressed the urgency of leveraging solutions, including AI, to improve workforce well-being and improve retention. Workforce initiatives such as the American Academy of Physician Associates' HealthFORCE are seeking to address workforce shortages through interdisciplinary collaboration and advocacy.

Participants reflected on how AI might alleviate administrative burdens and improve workforce well-being if implemented thoughtfully. Tools like AI-driven chart summarization, ambient transcription, and predictive analytics show promise in reducing or shifting cognitive loads. Participants discussed examples of how these tools are helping providers work "at the top of their license," allowing them to focus on patient care rather than documentation. One speaker shared how AI tools have enabled him to reduce "pajama time" spent charting, now spending this time managing his in-basket instead.

However, poorly designed systems risk exacerbating stress and workflow disruptions. The challenge of "upskilling" an already overburdened workforce, amid widespread overwork and burnout, further complicates progress. Participants expressed concerns that AI's promise to save time could paradoxically increase clinical workloads, exacerbating workforce strain. One speaker emphasized the importance of involving health care professionals in the design and implementation of AI solutions to ensure usability, effectiveness, and alignment with goals for patient care.

4. For AI to effectively enable shared decision making, trust and transparency are crucial.

Speakers explored how AI might serve as a tool for personalized decision-making that supports clinicians while empowering patients. They emphasized that "data travels at the speed of trust," underscoring the importance of transparent communication about how AI tools are developed, evaluated, and implemented. Building this trust is vital to fostering confidence among clinicians and patients alike. However, one participant noted a critical challenge: the average time spent on shared decision-making during a clinical encounter is only 2–2.5 minutes, raising questions about how the introduction of AI might influence these interactions.

Transparent and ethical AI governance emerged as a key theme, with one participant emphasizing the importance of ensuring patients retain autonomy over their health data. They pointed to AI tools that personalize care decisions and enable patients to query their own data, fostering more informed and collaborative interactions with providers. Another participant highlighted the need to consider disparities in patient experiences, noting that many individuals, especially those from marginalized groups, enter medical encounters from a defensive stance. These individuals, they argued, value more coaching and community-based support, and many participants agreed that where and how to integrate relevant community voices in the AI lifecycle is a critical question.

Participants agreed that leveraging AI to enhance providers' contextual knowledge and deliver more tailored care was an important application. Using AI to integrate social determinants of health (SDOH) into care workflows was raised as a promising example. However, significant challenges remain, including access to high-quality data and the uneven distribution of AI resources across health care settings. Addressing these issues will require deliberate policies and investments to ensure that AI-driven innovations equitably benefit all populations.

5. The rate of innovation underscores a need to do things differently.

Participants discussed how AI is advancing at an extraordinary pace, with today's limitations likely to evolve rapidly as technology continues to progress. This acceleration challenges humans to think in exponential terms and adapt to a landscape where direct-to-consumer models and industry partnerships play a growing role. Attendees noted that direct-to-consumer AI solutions are disrupting traditional health care delivery, with companies outside the health system often innovating faster than regulatory and clinical integration efforts. This trend highlights the need for the health sector to adapt and collaborate with these innovators while ensuring alignment with ethical and patient-centered principles.

Similarly, a recurring theme among public stakeholders and industry representatives alike was the importance of public-private partnerships to address the rapid landscape changes brought about by AI's pace of development. One example shared was the AI@VA Community at the U.S. Department of Veterans Affairs, which brings together a network of public and industry stakeholders to develop trustworthy AI capabilities.

Attendees emphasized the significant influence of financial incentives and business models on AI's impact in health and health care. One participant stressed the need to develop payment structures that capture productivity gains from AI while ensuring clinicians have the time and resources to engage in meaningful patient interactions. Another participant highlighted how equity and access to care are often more dependent upon the business models surrounding new technologies than the technologies themselves, underscoring the need for holistic appraisal of the implementation of AI tools for patient care.

6. Flexible regulatory frameworks that balance innovation and safety.

Participants discussed the need for flexible regulatory frameworks that balance fostering innovation with ensuring safety and accountability. Regulatory frameworks are an essential tool for demonstrating to the health and health care workforce that a given AI technology is safe, effective, and worthy of their trust. While the FDA has authorized AI-enabled Software as a Medical Device (SaMD) technologies, participants highlighted the need to monitor tools more vigilantly in the post-market realm. One proposed idea was to regulate AI similarly to medical professionals—requiring an initial "passing grade" followed by continuous evaluation and updates from a regulatory body focused on outcomes. Such an approach could enhance trust and accountability while adapting to the evolving nature of AI technologies. Participants also stressed the importance of avoiding overregulation, which could hinder innovation, particularly for smaller developers.

7. Balancing "human in the loop" approaches with the growing sophistication of artificial general intelligence (AGI) and artificial superintelligence (ASI).

The exponential risks posed by advanced AI systems that eventually outperform humans was raised, including artificial general intelligence (AGI) and artificial superintelligence (ASI). One attendee highlighted how shifting algorithms over the past two years suggest that AGI may be achieved in the next 5-10 years, posing implications for what professional roles might look like in the health and health care workforce. Participants considered how AGI/ASIs could start to develop their own ethical frameworks, posing critical questions for health and health care, a field imbued with ethical considerations. While the possibilities remain uncertain, the discussion underscored the importance of fostering public understanding, ensuring ethical development, and preparing the workforce for a future where AI capabilities continue to expand.

Conclusion and Next Steps

The convening concluded with a discussion on shaping the future of an AI-driven health workforce, with participants sharing insights on the key efforts needed to ensure that health professionals are prepared for accelerating changes on the digital health landscape due to AI. The possibility was raised of NAM establishing an ongoing forum to steward conversations between the various health professions societies, technology developers and related stakeholders to foster better and more seamless communication and cooperation among and between the key stakeholders. Issues such as which generative AI approaches lend best to work

with patients, what is the state of play with over the counter and direct-to-consumer AI tools, what are the lessons for ways in which an appropriate regulatory framework might evolve, what are the implications of artificial general intelligence (AGI) and artificial superintelligence (ASI) come on line, and how can a strong business case be made to the approach to adoption of clinically-applied AI were raised. Another suggestion raised the merits of a contextualized, informed publication that synthesizes relevant stakeholder perspectives on the topic. The meeting concluded with an invitation to hear more insights and suggestions from attendees.