



Issue Brief

AI and the Future Primary Care Workforce

Artificial Intelligence (AI) uses technology to perform complex tasks traditionally believed to require human intelligence, such as summarizing information, interpreting data, and generating text. Early AI used rules-based computing (e.g., if this, then that). Today, improved computing systems and data availability have paved the way for new AI techniques, including:¹

- ▶ **Predictive AI:** Computers use statistics to identify trends in data to predict future outcomes.
- ▶ **Machine Learning (ML):** Computers process large amounts of data and improve their own performance over time.
- ▶ **Deep Learning (DL):** Computers build complex neural networks with minimal human oversight with this subset of ML.
- ▶ **Natural Language Processing (NLP):** Computers learn to understand, interpret, and generate human language.
- ▶ **Large Language Models (LLM):** Computers leverage DL and NLP to process massively large data sets to summarize and generate text-based content.
- ▶ **Generative AI:** Computers generate new content, including text, images, audio, and visuals.

While AI isn't new, these recent advancements have produced an explosion of innovation in AI programs and applications that has generated excitement and concern. The purpose of this issue brief is to explore the implications of AI for the future primary care workforce. To produce this issue brief, which is part of a primary care workforce-focused project funded by CHCF, researchers interviewed AI

thought leaders working in primary care, attended webinars, and consulted published literature on this topic.

In the context of primary care, AI should be considered a tool and should not be expected to fix the multifaceted workforce issues that have developed over decades due to misaligned incentives in the US health care system. As one expert stated, "we can't expect AI to fix a broken health care system — there are underlying structural problems that won't magically disappear." High-quality primary care depends on trusted human relationships over time. The nature of primary care work may shift with widespread implementation of AI, but the front lines will need to be staffed with a sufficient supply of trusted teams that are free of exhaustion and burnout and that can work together seamlessly to effectively care for patients and families.

Uses of AI in Primary Care

Predictive AI is already being used extensively in primary care. Examples of widespread AI applications include algorithms to support clinical decisionmaking and risk modeling. Generative AI is the latest innovation that is expected to revolutionize many industries. The tasks that existing and emerging generative AI tools are performing or could perform in primary care in the near future include:²

Administrative Tasks

- ▶ Scribing and documentation
- ▶ Determining patient and practice costs and reimbursements for services

- ▶ Drafting prior authorization and appeals letters
- ▶ Scheduling, including schedule optimization (e.g., using data to improve the flow of patients and staff)
- ▶ Triage or responding to patient messages
- ▶ Cleaning up the electronic health record (EHR, e.g., medication reconciliation)

Diagnosis and Treatment Support

- ▶ Reading and summarizing patient charts to support clinician-led diagnosis and treatment
- ▶ Running patient data through clinical decisionmaking algorithms to generate personalized diagnosis and treatment recommendations

Population Health Management

- ▶ Visualizing, synthesizing, and organizing population health data
- ▶ Analyzing patient data using risk models that learn from system data to inform resource deployment (e.g., support for specific populations)

Patient Care, Education, and Self-Management Support

- ▶ Monitoring symptoms and medication adherence (e.g., by integrating patient-collected data from wearable devices or apps into the EHR)
- ▶ Developing and distributing patient education materials that are easy to understand and in multiple languages)
- ▶ Triage patient care and providing care navigation

AI Adoption

There will be, and already has been, a delay between when AI tools are developed to perform the tasks above and when they are adopted. AI experimentation is rapid, and any list of AI capabilities is destined to become outdated quickly. On the other hand, system change is typically slow. Some factors that will influence the pace of AI adoption in primary care include:

Resource constraints: Well-resourced and large health systems with IT departments and project managers will have the easiest time implementing new technologies.

Complexity: AI tools will probably be more quickly adopted in settings where patient problems are more homogenous and predictable than they are in primary care (e.g., radiology).

Care team and patient demand: Many primary care team members and patients want AI to be a part of their work and care.

Concerns about and resistance to AI implementation: Many people have well-founded concerns about using AI in primary care, including those related to:

- ▶ Accuracy and transparency (e.g., general lack of understanding of how AI programs work, limited ability to monitor their accuracy, difficulty diagnosing problems because AI doesn't "show its work")
- ▶ Equity: There are known and unknown human biases in the data AI is learning from. Without thoughtful intervention, AI may perpetuate existing inequities.³
- ▶ Patient consent and privacy
- ▶ Risk management, liability, and other legal implications (e.g., how to protect patient data from bad actors, who is sued if AI-based recommendations cause harm)
- ▶ Costs and dependence on the companies that develop, maintain, and license AI tools
- ▶ Lack of alignment on ethical frameworks and guardrails for AI use (several ethical frameworks have been developed but have not yet been widely adopted)
- ▶ Environmental impacts (AI algorithms are energy-intensive)
- ▶ Job displacement

- ▶ Losing team capacity to do work that cannot be managed by AI, especially in understaffed primary care settings (e.g., a scribe may have responsibilities besides scribing or support primary care team work in other ways; these tasks would need to shift to other team members if the scribe is replaced by AI)
- ▶ AI creating burden (e.g., teams may need to manage AI and solve tech challenges or soothe patients who are frustrated by their own experiences with AI)
- ▶ AI reducing clinician autonomy and expertise (e.g., as clinicians start relying on AI to inform treatment, their own critical thinking and decisionmaking faculties may atrophy)⁴

At the time of writing, scribing and EHR documentation software are the most widely adopted generative AI tools in primary care. Multiple AI scribes are available (e.g., Abridge, Aura AI Scribe, Freed), and large health systems and academic settings are leading in their implementation (e.g., Kaiser Permanente, Stanford, University of California). Early adoption of AI scribes is driven by the fact that scribing is a relatively simple, low-risk task to use AI for, and manual EHR documentation poses a significant burden to care teams.⁵ Health system leaders are looking to AI scribes to reduce care team burnout and optimize workforce efficiency. Early research suggests the use of AI scribes is acceptable to clinicians and patients and can reduce the amount of time clinicians spend documenting clinical encounters.⁶

While generative AI implementation is currently limited, broad-scale adoption is eventually likely. Many primary care practices are eager to adopt AI tools. As larger systems move towards AI charting, other systems (e.g., payer systems, regulatory bodies) are likely to adapt to AI-generated notes. As has occurred with EHRs, practices that use AI may eventually replace practices that don't.⁷

Adoption may also be driven by primary care team and patient demand for AI tools. Overburdened and understaffed primary care teams are excited about the

potential to offload tasks, especially tedious administrative tasks that AI can manage well. Many people who were previously unfamiliar with AI tools are using them for tasks in their personal lives, too. As new AI technologies become more trusted and commonplace, enthusiasm and demand for them in healthcare settings is likely to grow. Younger generations of “digital natives” may accelerate adoption of AI tools in primary care as they enter the workforce.

Potential Implications for the Primary Care Workforce

While it is impossible to know the eventual impact that generative AI adoption will have on the primary care workforce, here we consider AI's potential implications in the near term for administrative burden, job displacement, care quality, and the technical skills of the primary care workforce.

The most promising contribution of AI to the primary care workforce in the near term is the reduction of administrative burden on clinicians and staff. At present, many clinicians are responsible for the care of an unreasonably large group of patients, leading to poor work-life balance, exhaustion, and burnout. Clinicians are over-burdened with administrative work, including documentation. Many expect the use of AI will offload most of this administrative work and allow primary care teams to focus on building the trusted healing relationships with patients and families that are foundational to high-quality primary care. There are also some concerns that AI may increase care team burden rather than reduce it. This skepticism is informed by experiences with EHR implementation, which promised to reduce documentation burden but actually increased it.⁸ AI tools, however, are less dependent on human input than EHRs and have demonstrated the ability to manage documentation. In addition, unlike with EHRs, there is significant clinician enthusiasm for AI adoption. Even with these advantages, health system and clinic leaders should apply the lessons learned during

EHR implementation to minimize stress for primary care teams as AI tools are integrated into care.

Job displacement is often raised in discussions about AI adoption and the workforce.⁹ This is a reasonable concern, as the introduction of new technologies has historically led to job displacement and shifting (e.g., low-skill jobs have been replaced with technical jobs).¹⁰ In the near term, positions for people who only perform a handful of low-complexity tasks (e.g., scribes) are most likely to be replaced by AI in primary care practices. In the long term, some experts are concerned about more sweeping job displacement that could result in the deterioration of the foundational human relationships that are at the core of high-quality, team-based primary care. As one expert put it, “by replacing trusted humans on the front lines of primary care with AI to perform individual tasks, we could lose things we didn’t mean to lose and not be able to get them back.” In the context of current workforce shortages, AI should be leveraged to support the struggling primary care infrastructure and to shore-up understaffed teams, rather than to replace staff members.¹¹

Generative AI tools have the potential to improve care quality in important ways. For example, AI is expected to be better at identifying rare conditions than a busy clinician because it is exceptionally good at data analysis and pattern identification.¹² The nature of quality improvement work will also change because unlike humans, computers do what they are told and have no concept of change fatigue. AI-powered systems will also be able to generate insights from a practice’s own data, which will transform evidence-based medicine and the pipeline from research to practice. However, improvements in care quality are not a guarantee in every situation. Clinicians might assume AI is working properly and fail to notice a problem that leads to widespread harm. More technically accurate care is also not necessarily better care, and the balance of medicine as a science and an art needs to be considered.¹³

To successfully leverage AI, the primary care workforce of the future will need technical skills and informatics support.¹⁴ Education and training programs for primary care team members at all levels will need to carefully incorporate AI applications, limitations, and extensions in practice.¹⁵ Training competencies related to working with AI and identifying AI failures should be developed and incorporated into undergraduate, graduate, and continuing medical education programs.¹⁶ In addition, large organizations will likely hire additional staff with technical skills to understand, regulate, monitor, and repair AI tools.¹⁷ The future primary care workforce will likely include programmers, engineers, data scientists, and IT security experts.¹⁸ What is more, as digital natives enter the workforce, AI tools become more user-friendly, and primary care staff grow more accustomed to working with AI, targeted AI training and dedicated staff may become unnecessary.

Conclusion

Generative AI is being developed and tested for multiple use cases in primary care, but reductions in needed primary care staff due to AI are unlikely to occur in the near future due to barriers to widespread adoption and current workforce shortages. In the near term, some less specialized tasks, such as scribing, will almost certainly be taken over by AI. It is also likely that AI will be widely adopted to support a variety of administrative and patient care tasks. Care teams will need to learn how to work with AI, and new informatics positions will likely be added to the extended primary care team. As AI tools evolve and become more widespread, and as digital natives enter the primary care workforce, the nature of primary care work could look very different in the future.

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About the Foundation

The **California Health Care Foundation** (CHCF) is an independent, nonprofit philanthropy that works to improve the health care system so that all Californians have the care they need. We focus especially on making sure the system works for Californians with low incomes and for communities who have traditionally faced the greatest barriers to care. We partner with leaders across the health care safety net to ensure they have the data and resources to make care more just and to drive improvement in a complex system.

CHCF informs policymakers and industry leaders, invests in ideas and innovations, and connects with changemakers to create a more responsive, patient-centered health care system.

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