

## PERSPECTIVE ARTICLE

## Healthcare leadership in the modern age of artificial intelligence: Are we organizationally ready?

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## Abstract

Organizational artificial intelligence (AI) readiness in healthcare has gained significant attention, given the excitement of transforming healthcare in new and innovative ways. While many healthcare organizational leaders have expressed a strong desire to leverage AI to automate processes, improve productivity, and increase staff/patient satisfaction, most are still in the beginning stages of identifying, strategizing, and implementing foundational elements that transform an organization from one that utilizes AI to one that embraces AI as a key partner in delivering healthcare. Given the complex nature of integrating technology tools/solutions like AI within clinical and operational workflows, the paper will highlight widespread interest for AI integration among healthcare leaders; introduce individual and organizational factors that affect adoption of AI tools/technologies; and provide an overview of organizational AI readiness examples to assist healthcare organizations on their AI journey.

**Keywords:** Organization; Artificial intelligence; Readiness; Adoption factors; Technology; Healthcare; Transformation

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**1. Introduction**

Artificial intelligence (AI) in healthcare is often referenced given its promise to improve productivity, increase operational efficiency, and solve some of healthcare's most complex challenges. There is little doubt that the present and future of healthcare will advance in partnership with machine learning, neural networks, deep learning, and various automation tools.

According to the American Hospital Association Center for Health Innovation, approximately 43% of healthcare executives are prioritizing business process automation, and over 90% of healthcare executives reported that hiring and training AI talent is a vital part of their organizational plan.<sup>1</sup>

Yet, despite enthusiasm amongst healthcare system executives regarding AI's potential impact in healthcare, just 6% have organizational strategies for AI integration.<sup>2</sup> Furthermore, the Scottsdale Institute (2024) reported that >70% of healthcare executives believe that demonstrating an informatics return on investment is a "moderate" or "severe" problem organizationally, whereas just 22% report that informatics in their organization is "leading the way."<sup>3</sup>

As technological innovation continues to rapidly permeate the healthcare space, identifying and strategizing how critical organizational and individual AI readiness factors will be approached systematically is key to value-added AI transformation. Unsurprisingly, the leap for healthcare organizations to a successful AI-integrated system is rooted in the very fundamentals that shape an institution's structure and function.

## 2. Organizational AI readiness and the fundamentals

### 2.1. Organizational AI readiness models

According to Sriharan *et al.*,<sup>4</sup> AI transformation in healthcare systems requires that organizations successfully execute AI integration across four functional areas: Technological (e.g., AI technical skills, innovation, and interdisciplinary subject matter expertise); strategic (e.g., organizational alignment, workflow integration, effective communication, and change management); operational (e.g., governance, ethics and risk management, data privacy and security, and an understanding of regulatory factors); and organizational (e.g., culture, building trust, stakeholder engagement, incentivizing staff, and a collaborative work environment).<sup>4</sup> Functional domains are further supported by organizational healthcare leaders that display technical capacity such as AI literacy, subject matter expertise, change management, and innovative thinking; adaptive capacity including systems thinking, the ability to identify opportunistic emerging technologies, agile thinking, and transformational mindset; and interpersonal capacity such as teambuilding skills, the ability to develop partnerships across numerous organizational areas, understanding various stakeholder perspectives, integrity, a sense of humility, and the capacity to influence adoption.<sup>4</sup>

Finally, additional vital areas include contextual factors that affect organizational AI readiness, such as organizational (e.g., transparency and innovation spirit), technological (e.g., subject matter expertise, technical talent, and resource management), and regulatory impact.<sup>4</sup>

In addition, other organizational AI readiness models from the literature share similar ideas such as the importance of organizational culture, strategy, healthcare leadership support and communication, stakeholder engagement, digital literacy, governance, technological alignment, workflow integration, ethical decision-making, and regulatory factors.<sup>5-12</sup>

### 2.2. Practical AI healthcare applications: A review of organizations demonstrating readiness

While reaching the pinnacle of organizational AI readiness in the healthcare industry is still a work in progress, several healthcare institutions are spearheading AI readiness in unique and exciting ways. Included below are three

examples of healthcare systems that demonstrate their journey to organizational AI readiness in functional areas (technological, strategic, operational, organizational); healthcare leadership capacity (technical capacity, adaptive capacity, interpersonal capacity); and/or contextual domains (organizational, technological, regulatory).<sup>4</sup>

#### 2.2.1. Case A: Stanford university<sup>13</sup>

Stanford University implemented an AI playground that provides an opportunity for faculty, students, and additional staff to test-drive large language models and other AI solutions on their custom-developed platform. The "Stanford AI Playground" is a novel concept that demonstrates organizational AI readiness from a functional standpoint (e.g., technological focus, such as development and access to tools to improve AI literacy, and organizational alignment through stakeholder engagement and establishing a culture that supports AI innovation).<sup>4</sup>

#### 2.2.2. Case B: Duke Health<sup>14</sup>

Duke Health developed a governance framework for the management of AI tool deployment to ensure safe and effective integration of AI organizationally. Their framework includes quality assurance (known as "checkpoint gates") for the entire AI lifecycle from creation of models to evaluation phases to deployment and continuous monitoring.

Duke Health's structure highlights functional domains such as operational (robust governance, inclusive of factors such as data-driven decision-making, risk management, and regulatory compliance to ensure the highest quality) as well as strategic (given their emphasis on breaking down siloes, aligning technology with workflows, and rigorous validation). Furthermore, contextual factors are apparent such as organizational (demonstrated by organizational-wide transparency, consistency, standardization, and knowledge sharing with staff) and technological (e.g., a commitment to resourcing governance and the involvement of interdisciplinary subject matter experts such as data scientists, biostatisticians, informatics, policy and legal personnel, implementation specialists, and clinical staff that provide guidance on interpretation and appropriate application of AI model output during clinical decision-making).<sup>4</sup>

#### 2.2.3. Case C: The Permanente Medical Group (TPMG)<sup>15</sup>

TPMG, one of the largest integrated health systems in the United States, was an early pioneer implementing ambient dictation in the clinical setting. While ambient dictation (a natural language processing tool that captures

audio dialogue between providers and patients via the use of a smart phone) has been commonly utilized across numerous healthcare systems, TPMG’s approach to organizational readiness stands out. During deployment, TPMG included a variety of strategies for approximately 10,000 providers such as training sessions, peer-to-peer support, patient resources, and sustainment plans demonstrating measurable outcomes such as increased quality of documentation, decreased provider workload burden, and patient satisfaction.

TPMG’s focus on functional areas include strategic (e.g., effective workflow integration, change management planning, and provider, staff, and patient support before and during AI tool deployment); operational (e.g., data privacy during provider-patient encounters, regulatory requirements involving clinical documentation, and risk mitigation preparedness involving use of the technology); and organizational (such as building trust across the organization and encouraging collaboration and a strong teamwork culture). In addition, healthcare leadership capacity areas are emphasized including that of adaptive capacity (e.g., transformational thinking and taking advantage of emerging technologies to benefit patients, providers, and staff); interpersonal capacity (such as identifying clinical champions, engaging staff, and facilitating AI adoption); and technical capacity (e.g., developing provider training plans to grow AI literacy and utilize this technology in meaningful and effective ways).

### 3. AI readiness adoption factors: Planning your work and working your plan

Healthcare management is complex and multifaceted. Any AI or technological alignment with the organization’s mission and vision is challenging; however, achieving this goal and realizing return on investment is possible if you plan for it. In fact, the Scottsdale Institute (2024) reported that over 20% of healthcare organizations believe their informatics program is “leading the way” from analytics and quality to improved operational processes, outcomes, and patient experience.<sup>3</sup> Healthcare institutions that are committed to an organizational AI transformation involving people, process, and technology have demonstrated correlation with organizational performance.<sup>6</sup>

#### 3.1. “Planning your work” (individual and organizational AI adoption factors)<sup>1-12</sup>

Healthcare system AI readiness can be affected by numerous individual and organizational adoption factors. [Figure 1](#) outlines essential questions healthcare organizations may consider exploring during their AI journey.

- Individual AI adoption factors**

  - Clinician attitudes: What is the digital literacy amongst interdisciplinary team members? Are front-line staff aware of the future direction of the organization and how their skillset in alignment with AI supports (not substitutes for) their workflows?
  - Clinical context: Has clinical context, risk, and level of human involvement been discussed?
  - AI model design: Has there been consultation with various clinical and technical subject matter experts on data sources and types/subtypes of AI model designs to utilize for your area of study?
  - Workflow integration: Have baseline workflow assessments been completed? Have specific opportunities been identified to identify scope and focus of patient or organizational impact?
  - Cognitive biases: Have cognitive biases been articulated? Is there a plan to address them?
  - Guidelines: Are AI point of contact (s) and AI use case process owners aware of current organization or industry-wide AI guidelines?
  - Liability: Are clinicians aware that clarity regarding liability is unknown?

**Organizational AI adoption factors**

  - Organizational culture: Are AI and other technology applications aligned with the organizational mission and strategy? Does the organization have a “build” or “buy” culture?
  - Organizational strategy: Is the organizational mission and strategy aligned with AI innovation?
  - Organizational priorities: Is the project of focus considered a high organizational priority? Is the timing right? Are high-priority organizational initiatives seeking AI solutions as opportunities to improve (not fix) operational or clinical areas of care?
  - Organizational resources and governance: Has the organization committed to resources and established governance (including ethics) for AI oversight, AI lifecycle strategic planning, and AI innovation?
  - Organizational teams and structure: Does the organization have the necessary structure in place to manage AI projects? Are the appropriate clinical, operational, AI, and other technical subject matter experts in place?
  - Organizational change management: Does the organization invest in change management resources? Are there organizational training and change management plans? Opportunities for local involvement with validation?
  - Organizational training: Has the organization committed to hiring/developing AI talent and investing in AI growth? Does the organization have a plan to increase digital literacy across the healthcare system?
  - Local validation: Is there a trusted local clinical and AI subject matter expert who can assess risk and provide input on local AI model training, testing, validation, and deployment?
  - Systems impact: Has the totality of AI model design, training, and validation been considered prior to deployment such as transparency, workflow impact, limiting bias, fair and equitable systems, etc.?
  - Regulation and standards: Is the project lead a subject matter expert, or does the project team have an AI regulation and standards expert?
  - Evaluation and validation: Is there a clinical and AI subject matter expert who can provide input on local AI model design or engage with vendors regarding intricate details pertaining to explainability, outcomes, and risk?

**Figure 1.** Outline of key individual and organizational artificial intelligence adoption factors

**Table 1. Transforming organizational AI thinking—healthcare leaders, clinical staff, and additional healthcare professionals**

For healthcare and administrative leaders	For healthcare clinical staff	For any healthcare professional
<ul style="list-style-type: none"> <li>AI healthcare system transformation is hard and alignment with the organizational mission and vision are critical to realize return on investment utilizing AI tools.</li> </ul>	<ul style="list-style-type: none"> <li>AI is not a substitute for clinical decision-making. Responsible, safe, and trustworthy AI in healthcare should be seen as augmented intelligence (humans and AI working together to improve decision-making and new discovery).</li> </ul>	<ul style="list-style-type: none"> <li>Start with the basics and focus on the fundamentals which are vital to the success of any AI, technology, or process improvement project.</li> </ul>
<ul style="list-style-type: none"> <li>Neither AI nor any technology will fix organizational processes, operations, or culture.</li> </ul>	<ul style="list-style-type: none"> <li>AI model bias may be reflective of human bias.</li> </ul>	<ul style="list-style-type: none"> <li>Technology is not the answer if there are people and process gaps.</li> </ul>
<ul style="list-style-type: none"> <li>An executive leadership team member champion or executive sponsor for AI-based projects/initiatives and governance demonstrates support and engagement to organizational staff.</li> </ul>	<ul style="list-style-type: none"> <li>A clinical expert does not automatically become an AI expert, just like an AI subject matter expert does not automatically become a clinical expert.</li> </ul>	<ul style="list-style-type: none"> <li>Educate yourself first before educating others.<sup>a</sup></li> </ul>
<ul style="list-style-type: none"> <li>Leadership engagement, commitment, and resource support for multi-disciplinary teams are some of the most important factors involved with AI and technology adoption.</li> </ul>	<ul style="list-style-type: none"> <li>Respective clinical subject matter experts with domain expertise and workflow know-how should always be involved in providing AI model training and conducting local validation.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure your project aligns with the organizational mission and/or priorities.</li> </ul>
<ul style="list-style-type: none"> <li>Organizational focus on recruitment and/or developing people in the AI industry is one of the most essential and value-added investments one can make (upskilling/reskilling is a strategic resource).</li> </ul>	<ul style="list-style-type: none"> <li>Interpreting AI studies and AI model performance outcomes differs from historical clinician training involving statistical analysis.</li> </ul>	<ul style="list-style-type: none"> <li>Building multi-disciplinary teams with respective clinical and technical is a good start; identifying like-minded people and champions is even better.</li> </ul>
<ul style="list-style-type: none"> <li>Organizational structure and governance involving AI technology standards, guidelines, innovation, design, implementation, adoption, and fine-tuning/maintenance are vital.</li> </ul>	<ul style="list-style-type: none"> <li>AI regulations and standards are rapidly evolving, and clarity regarding liability remains an unanswered question.</li> </ul>	<ul style="list-style-type: none"> <li>AI can identify correlation but cannot validate causation.</li> </ul>

Notes: <sup>a</sup>Per the National Health Service AI Lab and Health Education England, a suggested education and training approach may consider three steps in the following.

### 3.2. “Working your plan” (transforming organizational AI thinking – healthcare leaders, clinical staff, and additional healthcare professionals)<sup>1-12</sup>

In addition to examining vital individual and organizational AI adoption factors, it is also important for healthcare systems to identify and bridge organizational gaps throughout all levels of the organization (Table 1).

The National Health Service AI Lab and Health Education England suggests the following AI education and training approach:

- (1) Educational groundwork: Increase workforce AI awareness and facilitate the “adoption of change and innovation in healthcare settings.” For example, what AI is and what it isn’t (AI is not a substitute for clinical decision-making).
- (2) Foundational and advanced AI education:
  - Foundational: Improve general AI literacy including understanding “limitations and risks of using AI technologies.” For instance, staff should be aware of a general sense that AI models usually suggest correlation, not causation.
  - Advanced: Developing staff with more in-depth AI

skills/knowledge in alignment with their domain expertise. For example, a board certified clinical informaticist that combines AI knowledge with clinical subject matter input to deploy AI tools.

- (3) Product-specific training: A deeper understanding of specific AI technologies integrated into workflow settings. For instance, a trained, tested, and validated machine learning model(s) application being utilized in patient flow operations.<sup>10</sup>

### 4. Conclusion

Organizational areas such as strategic insight, technological alignment, operational planning, workflow integration, organizational culture, leadership support and communication, stakeholder engagement, governance oversight, increasing organizational-wide digital literacy, and resource commitment to invest in reskilling/upskilling are germane to realizing AI return on investment.

While most healthcare organizations are still in the beginning stages of developing organizational plans to effectively utilize AI technology, several healthcare institutions have demonstrated return on value by strategically executing key organizational AI readiness

factors illustrated in the literature. Educating healthcare institutions in the early stages of their AI journey about organizational AI readiness frameworks may potentially help healthcare systems navigate the complexities of integrating AI solutions productively and efficiently.

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Not applicable.

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