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Can AI Crack the Interoperability Code?

Applying AI to achieve interoperability and a smarter patient workflow

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Introduction

AI tools can support improved interoperability. Evidence supports the growing sentiment that AI can deliver substantial, not just incremental, improvements in interoperability across clinical and administrative settings. Health care providers, researchers and policymakers are also showing interest and optimism around AI's potential to improve interoperability, as evidenced by recent developments, including:

- Many stakeholders, including public and private organizations, are actively **developing AI standards, policy and guidance for health care interoperability.**
- Multiple studies have found **AI accuracy rates for extracting health data often reach or surpass 90%.** [1]
- AI solutions surpassed EHR optimization as the **top IT spending priority among hospitals in 2026** according to an analysis by Sage Growth Partners. [2]
- **AI adoption has progressed at a rapid pace in health care**: AI use among physicians has more than doubled since 2023, and 28% now leverage AI for purposes such as summarizing medical research, documenting billing codes and generating discharge instructions, among other uses. [3]
- **64% of health care professionals believe AI can accelerate interoperability across the health care ecosystem**, while only 9% do not, according to a 2026 survey of 73 hospital leaders, conducted by Concord Technologies. [4]

What does this confluence of developments mean for hospitals? This report provides an overview of current attitudes and evidence on AI's capabilities and limitations for improving health care interoperability, drawing on recent research, surveys and interviews.

EXECUTIVE **INSIGHT**

AI solutions surpassed EHR optimization as the top IT spending priority among hospitals in 2026.

Source: Sage Growth Partners, 2026.

How AI supports interoperability

One of the reasons there is widespread optimism that AI can improve interoperability is its ability to process unstructured data. Health care delivery and administrative operations are often based on best-practice, highly structured processes – but most health care data are unstructured (80% is a frequently cited level). While standards work to harmonize data structures and flows, hospitals and the entire health care ecosystem need to continue accommodating unstructured data.

There is a need in the health care space to identify more efficient methods for receiving unstructured data and to make it more accessible with the appropriate context for providing care, according to Kevin Hodak, Vice President of Strategy and Integration at Concord Technologies, a leading provider of secure data exchange, intelligent document processing and interoperability solutions serving the health care field.

"Being able to process data in the native, received format is also frequently a challenge," he says. "AI demonstrates strong capabilities in recognizing patterns, contextualizing data and extracting what is relevant. It is already well established as a valuable supplement in medical imaging and other clinical applications, and it is widely used today as an effective administrative support tool."

AI can reduce the human and information system effort required to review and process high volumes of structured and unstructured data. It can be used to review incoming documents and messages (paper and digital); extract patient identifiers, medical record numbers (MRNs), International Classification of Diseases (ICD) codes, test orders and other data points; and integrate with workflow management systems to route the data to other software and systems that require it. Reported results suggest that

"Now we can have LLMs translate unstructured data, rather than requiring the data to be structured in a format like CCDA, FHIR or HL7. There's a place for both, but LLMs allow us to skip that translation step, which would have been quite challenging two or three years ago."

— **KEVIN HODAK** —
Vice-President of Strategy and Integration
Concord Technologies

"Converting [data formats and structure] from one [EMR] to another is a complex, error-prone undertaking that requires significant time, concentration, and expertise.... Large language model (LLM)-based AI tools appear well-suited to this challenge and are ready to be explored as the basis for a near-term solution.[6]"

— **BOOZ ALLEN** —
AI Can Bridge the Health Data Interoperability Gap

organizations can expect AI accuracy rates to exceed 90%. [6]

These characteristics make it a powerful complement to intelligent automation (IA) systems and to reduce repetitive manual workflows. For example, a GPT (generative pre-trained transformer) model trained on the Fast Healthcare Interoperability Resources (FHIR) standard had a 90% exact match rate for recognizing snippets of clinical texts, outperforming the researchers' existing methods.

As researchers who studied AI's ability to execute ICD-9-CM code conversion concluded, "The LLMs hold vast potential for enhancing medical data exchange without complex standardization for medical terms and data structure."

The next big step is not about AI's ability to extract insights from unstructured data — it's about enabling hospitals to operationalize that extraction within real workflows, securely, at scale and with accountability. Standards may help make unstructured data more interoperable, but standards are more tools than solutions. Hodak of Concord Technologies, which processes more than 4 billion pages of protected data annually, notes that there is still inconsistency in how standards are applied, limiting their effectiveness.

"There are differences among the standards as they are written and as they are implemented and used among organizations. That makes that part of the interoperability puzzle challenging," he says. "Now we can have LLMs translate unstructured data, rather than requiring the data to be structured in a format like CCDA, FHIR or HL7. There's a place for both, but LLMs allow us to skip that translation step, which would have been quite challenging two or three years ago."

EHR and services provider athenahealth also states AI can be effective at making unstructured data useful, citing successful examples. "Now more than ever, the unstructured information we're getting is directly available to providers," said Sam Lambson, Vice President of Data and Ecosystem Product Management at athenahealth during a panel discussion at the HIMSS Global Health Conference, which brought together leaders from across the health care ecosystem to discuss how AI can improve interoperability. "We do a lot of work collecting and converting unstructured data into structured data. We're now working on pulling the lab analysis into tables so it's viewable in the charts. Things like this are really making an impact at the point at which that information is useful, which is during the chart review."

In experiments involving 3,671 snippets of clinical text, FHIR-GPT achieved an exact match rate of more than 90%, surpassing the performance of existing methods. FHIR-GPT improved the exact match rates of existing NLP pipelines by:

- **3% for routes**
- **12% for dose quantities**
- **35% for reasons**
- **42% for forms**
- **More than 50% for timing schedules.**

These findings show the potential to leverage LLMs to enhance health data interoperability.

Source: YIKUAN et al, FHIR-GPT Enhances Health Interoperability with Large Language Models [5]

Barriers to AI-driven interoperability

As AI models evolve, we are learning more about common hindrances faced by health care providers seeking to increase interoperability with the technology. Organizations cited technology limitations and legacy systems as some of their strongest barriers to achieving interoperability, and rated attaining organizational alignment and technical expertise as some of their biggest challenges in adopting AI for interoperability. Hospitals can overcome these obstacles by having a strong oversight program in place and giving ongoing attention to how changes in AI capabilities and use cases could impact security, processes, policies, strategy and more.

Cost/budget also ranked among the challenges hospitals cited for improving interoperability and applying AI. Other obstacles include limitations associated with new technology and vendors, legacy systems and data, workforce limitations and organizational readiness.[4]

"Cost was certainly a factor [for our AI interoperability project], but the bigger hurdle was adoption," said Curt Swanson-Lewis, Director of Operations at North Shore Community Health in Massachusetts, a Federally Qualified Health Center (FQHC), during the HIMSS 2026 panel discussion. "Convincing staff that the AI tools were reliable and would make their work easier took time. In our case, building confidence took about six to eight months. We started with referrals, a common pain point in health care. Once staff saw how much easier the process became, AI adoption grew quickly." North Shore's use cases have reduced the amount of phone calls and emails that clinical and other staff need to respond to complete referrals and prescriptions, which saved time and raised internal support for the new processes.

North Shore Community Health's experience with AI adoption highlights a challenge many other hospitals and health systems face: Beyond assessing whether AI tools are ready to address the organization's specific interoperability challenges, leaders must also assess whether their organizations are ready for AI. Specifically, organizations will need clarity on how models are trained and maintained, how data is used, where it is stored and who can access it. Building strong in-house AI governance and management capabilities now can support organizations in adopting technologies as the landscape evolves. Many stakeholders — including hospitals and health systems — are encouraging policy and standards that enable greater AI transparency.

AI itself is not new in health care; hospitals and health systems have been using AI for decades. However, the newer classes of LLM-based and agentic AI models are still early in their adoption within the field, making it difficult for organizations to build a reliable organizational case or draw on long running programs to guide expectations for costs, benefits and implementation strategies.

At the same time, the capabilities of these newer models are evolving quickly. Earlier solutions primarily focused on sorting, categorizing and delivering information, while current approaches increasingly involve agentic systems that can autonomously execute processes. As more of these solutions enter the market, organizations may find it difficult to determine which use cases offer meaningful value, making partners with proven, long standing experience in successful deployment and adoption especially important.

DATA POINTS

Top barriers to achieving interoperability

- Vendor or technology limitations
- Legacy systems
- Staffing resources or cultural resistance
- Costs
- Regulatory constraints

Source: Concord Technologies 2026 AI-Interoperability survey

Top challenges to adopting AI to improve interoperability

- Organizational alignment
- Technical expertise
- Data quality
- Budget
- Regulatory compliance

Source: Concord Technologies 2026 AI-Interoperability survey

A practical path to AI-powered interoperability

Thoughtful discussion about how to harness AI's ability to extract data and execute workloads should consider if and how humans should be involved. Jason Cain, Senior Unified Communications Engineer at WakeMed advocates for designing "human-in-the-loop" (HIL) workflows in which humans review AI summaries, results and recommendations and retain control over any resulting decisions or actions. "I think AI is good, I think we can use it, but I also think we still need validation," he says.

Another panelist at the previously mentioned HIMSS panel discussion offered an example of how this process could work in practice. In behavioral health, a significant portion of clinical information is unstructured, often arriving as lengthy reports that staff must manually review. Using large language models to summarize and structure this information could allow clinicians to quickly understand key details and make timely decisions, dramatically improving efficiency and helping patients reach the appropriate level of care faster. The panelist emphasized, however, that teams must continuously validate outputs to ensure accuracy as systems evolve. Building this "training to trust" mindset is essential for safe and effective use of AI in clinical workflows.

For rollouts, traditional best practices for managing technology implementations and process changes still apply – early and consistent communication, small pilots, gradual scale-ups, phased implementations and promoting early successes all help build confidence in AI.

"First, employees need to understand that you're not trying to replace them with AI; you're using it to take repetitive, low-value tasks off their plates," says Cain of WakeMed. "These initiatives aren't designed to eliminate roles but to improve productivity so we can avoid hiring incremental FTEs. As the scale of the data we receive and manage grows, our FTE costs have been rising. That's a major reason we're pursuing automation. We want to prove that AI can help us reach patients faster, get them to the right place with fewer clicks or call transfers, and ultimately deliver the best possible experience for our patients." (For more information about WakeMed's AI projects, see the case study within this report).

EXECUTIVE **INSIGHT**

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— JASON CAIN —
Senior Unified Communications Engineer, WakeMed

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CASE **STUDY** **WakeMed**

WakeMed looks to build on modernization gains with AI

Serving the community since 1961, WakeMed is a not-for-profit health care system founded and based in Raleigh, North Carolina. WakeMed exists to improve the health and well-being of their community by providing outstanding and compassionate care to all. WakeMed's 973-bed system comprises a network of three full-service hospitals, a mental health and well-being hospital, eight emergency departments, a dedicated Children's Hospital and Rehabilitation Hospital, two Trauma Centers — a Level I Trauma Center in Raleigh and a Level III Trauma Center in Cary, and more than 175 physician and physical therapy practice offices. WakeMed's mission-driven team includes more than 12,800 employees, 1,300 volunteers and 1,300 affiliated physicians along with a network of over 900 primary care and specialty providers.

The organization has achieved well-documented benefits from its automation, AI and cloud efforts, and is looking to apply that experience to improve patient experience and interoperability in its contact center operations.

Challenge

WakeMed's contact center is often a patient's first touchpoint with the health system. Staff handle inbound calls, schedule appointments and manage patient record transfers, all while maintaining a standard of answering 70% of calls within 20 seconds. Their responsibilities extend beyond phone support — they also ensure that incoming faxes are processed correctly so key information flows into Epic and ultimately into the patient chart. This can mean handling more than one million faxes each month. "That can be a huge, time consuming process," says Jason Cain, Senior Unified Communications Engineer at WakeMed. "The more time we spend on it, the less time we have to take calls and help patients."

Strategy & Solutions

WakeMed is automating its fax operations by using the Concord Connect™ platform from Concord Technologies and is solving some of its growth and scalability issues by switching from on-premises operations to Concord

CASE STUDY WakeMed

Cloud Fax. The platform includes APIs, EHR connectors and AI to enhance interoperability, with a goal of enabling straight-through processing of patient information across various workflows across departments.

WakeMed has a strong track record of deploying AI solutions across the organization, and several of these initiatives highlight the potential value of applying AI to contact center operations. WakeMed uses a commercial AI platform to analyze mortality and readmission rates, reviewing records to identify documentation or coding errors that could affect diagnostic accuracy or the completeness of patient records. A similar AI driven surgical support system is credited with saving 17 lives, preventing 37 readmissions and reducing manual data entry by 18 hours each month.

Cain thinks similar benefits are possible in the contact center to help with the millions of faxes and billions of data points it handles annually.

"There is consistent data on the forms that we receive, but it is presented differently. That really adds to the processing time," he says. "I think AI can help because I think we can use it to summarize incoming faxes and save time. I think it will be good, but we'll still need human validation. Our ability to secure the system and validate the results will probably determine our pace of adoption."

Determining which tasks contact center staff will continue to handle and which can be automated is a central focus of WakeMed's AI planning. Cain believes humans will remain essential even as operations become more automated, but he also recognizes that staff may worry AI is being introduced to replace their roles. Setting expectations, communicating transparently and supporting staff through change will be critical to WakeMed's evolution.

"The first thing we need to do is help our contact center agents understand that the goal isn't to replace them. It's to take repetitive, low value tasks off their plates — things like patient portal password resets — so they can focus more of their time on supporting patients," says Cain. "AI can save time, the ROI is real and automation will help us grow without adding more FTEs. Ultimately, giving staff back time means we can deliver the best possible experience for our patients."

Conclusion

AI is proving its ability to improve interoperability and has a growing body of research and real-world hospital success stories to validate the results. The results referenced in this report provide a small but illustrative sample: WakeMed credits AI-driven accuracy improvements with saving lives and saving time, and for a multimillion-dollar revenue improvement from improved documentation. North Shore Community Health saved time for its staff by using AI-supported automation to reduce the need for manual intervention in some recurring, high-volume processes. The FHIR-focused study found AI outperformed other existing methods for converting clinical narratives into FHIR resources.

Improving interoperability has already proven its ability to reduce effort and improve accuracy in health data handling, which can improve care continuity and quality besides saving time and associated costs. AI can be an accelerant to these benefits, and more use cases are emerging to help hospitals apply AI to improve interoperability in new ways. Emerging AI-supported workflows can help patients access care faster while decoupling the staffing/administrative effort requirement from increases in patient volume and data. That not only makes operations scalable but also makes process improvements sustainable.

However, technology alone is not enough. To realize these outcomes responsibly, organizations need AI specific policies, processes and governance structures — often requiring new skills or expertise. They also need to support the workforce in learning these novel approaches or better yet involve them in designing the changes. Hospitals can take multiple paths toward successful AI adoption, and those options will continue to grow as programs mature, new use cases emerge and organizations gain experience. ●

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