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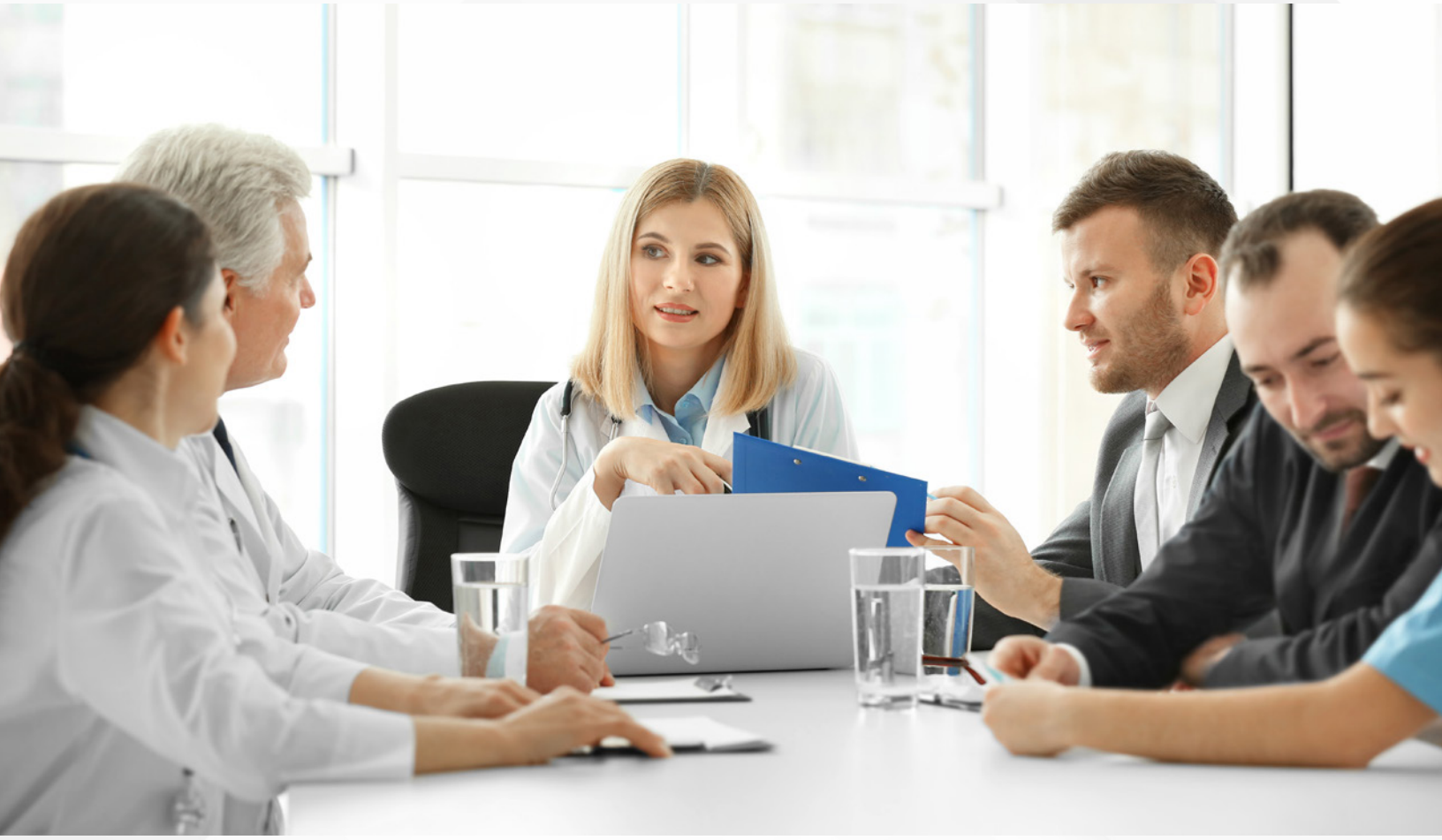

Segment Insights

2024 KLAS Emerging Solutions Top 20

October 2024

2024 KLAS Emerging Solutions Top 20

New technologies and companies continue to be developed to enhance healthcare, flooding provider organizations with options for technology and services. Amid all the development, vendor partners with significant potential to benefit organizations may be missed. Based on the opinions of 49 industry thought leaders, KLAS' annual Emerging Solutions Top 20 report seeks to help healthcare organizations identify the new technologies best positioned to impact the Quadruple Aim of Healthcare. This includes (1) ranking emerging solutions by their potential to disrupt the healthcare market and (2) providing insights from participating healthcare leaders into what innovation themes organizations should be aware of as they seek to provide optimal patient care.

Report Methodology

The feedback included in this report is primarily **perception** based. Rankings are based on provider thought leaders' ratings (on a 1–9 scale) of the emerging solutions' potential to impact each arm of the Quadruple Aim. For this year's report, 49 healthcare thought leaders, many with C-level/executive experience, shared their opinions on 24 measured emerging solutions after reading about customer experiences in KLAS Spotlight or First Look reports. Respondents read 8–10 reports each and are split into three groups based on whether they have a clinical, financial, or operational background. For a full list of participants, see page 6. Each solution or service eligible for this report was highlighted in a KLAS Spotlight or First Look report between June 21, 2023, and June 5, 2024, and received an overall score from customers of at least 85 out of 100.

2024 KLAS Emerging Solutions Top 20

The companies ranked below are those that received the top 5 scores in relation to each arm of the Quadruple Aim: to improve outcomes, reduce the cost of care, improve the patient experience, and improve the clinician experience. Those ranked for each aim combine to make up the 2024 Emerging Solutions Top 20. In addition to being featured in this report, the top 20 emerging companies were recognized at the 2024 HLTH Conference in Las Vegas.

All comments below are from provider thought leaders who shared their perceptions of the solutions after reading the KLAS emerging solutions reports. While some thought leaders had direct experience with the solution, most have not.

Click on any report title to access the full report.

Top 5—Improve Outcomes

1 REDIVUS HEALTH

Redivus Health Code Blue 2023: Providing Clinical GPS during Lifesaving Cardiac Arrest Resuscitation Procedures

"During extremely stressful times, using Code Blue should be a no-brainer, as it equips code/care teams with a virtual checklist and scribe. During a code, there are so many moving parts, and this solution running in the background helps keep the team on task, maintain best practices, and free team members to act rather than spending critical time figuring out what is next on the list. The solution eases documentation burden and improves accuracy, and that is such a benefit. Additionally, the play-by-play feature empowers the quality team to conduct purposeful, effective debriefs with the team in real time."

2 care.ai Now part of Stryker

care.ai Smart Patient Rooms 2023: Providing an AI-Powered Smart Care Facility Platform

"care.ai's solution has the potential to be the most groundbreaking product I have brought into the health system. Our first use case for it is virtual nursing, but we soon hope to benefit from the AI opportunities with computer vision. care.ai's pricing model includes all of their AI models with the base price, so there is no nickel-and-diming for each new model. The solution will help ease nursing burden by spreading certain tasks to virtual nurses. In addition, AI models for fall prevention, handwashing detection, and more will reduce costs and improve care quality."

3 navina

Navina 2023: Driving Outcomes through an AI-Powered Workflow Solution

"Navina's product helps to collate data from disparate sources and present it to clinicians with recommended actions to improve population health. Many care gaps are measured in payer contracts, so this solution can help not only improve patient care but also increase financial income."

4 ABRIDGE

Abridge 2024: Utilizing Ambient Speech Generative AI to Decrease Documentation Time and Physician Burnout

"In general, ambient listening is actively transforming the practice of medicine; it is one of the first technologies that removes administrative burden and improves care at the same time. Abridge has taken the time to build ground-truth verification into the solution, which will help drive adoption. The company is physician led, which is reassuring to hospitals and academic medical centers. The ambient listening market is new and extremely competitive, so Abridge needs to continue expanding to more specialties and moving beyond just virtual scribing to include capabilities for CDI, ordering, etc."

5 PROSCIA

Proscia Concentriq 2024: Digital Pathology Software Aimed at Overcoming Diagnostic Challenges & Improving Lab Efficiency

"Proscia Concentriq is the modern solution for labs that want to transform digitally. Computational diagnostics allows for quicker pathology diagnoses. One very valuable benefit of the solution is its open architecture, which allows customers to develop their own AI solutions or use the ones developed by Proscia. The customer is not locked in to the vendor's thought process. Customer feedback reflects the need to improve the API and AI algorithms for better performance."

Top 5—Reduce Cost of Care

1 Verity SOLUTIONS

Verity Solutions Verisave 2023: Automated, Real-Time Drug Purchasing Optimization

"Verisave enables provider organizations to have an advantage on drug costs over their competitors. Drug prices are a growing problem for smaller organizations that don't have an advantage in the market. The ability to switch to cheaper alternative drugs in real time is a valuable benefit."

2 BUDDI AI

BUDDI AI's Coding.AI 2023: Enhancing Revenue Cycle Performance through AI-Driven, Autonomous Coding

"BUDDI AI's Coding.AI product significantly boosts operational efficiency for healthcare provider and payer organizations by automating the coding process, which leads to reduced operational costs and improved billing accuracy. The automation is particularly beneficial in light of current healthcare staffing shortages, as organizations can have a reliable solution that minimizes the need for extensive manual coding. Additionally, the solution's adaptability meets specific regulatory and coding requirements of different provider and payer organizations, ensuring compliance and minimizing the risk of billing errors."

3 SIMPLE FRACTAL

Simple Fractal 2024: Custom and Turnkey Digital Workforce Bot Solutions for Manual Process Automation

"Simple Fractal effectively tackles healthcare organizations' key issues. It alleviates the burden of manual processes on staff, preventing burnout and improving job satisfaction. The solution streamlines operations with bots that perform routine tasks efficiently, reducing costs and compliance risks by ensuring regulatory adherence."

4 nym

Nym Medical Coding Engine 2023: Automating the Medical Coding Process Through Clinical Language Understanding Technology

"A great use case for automation and AI is the translation of provider notes in the EHR into medical charge codes. Benefits include reduced time spent on errors in the charge-code processing as well as improved revenue cycle turnaround times. 25% of interviewed companies using Nym's solution saw outcomes within the first six months, and the remaining 75% saw outcomes within a year. Organizations will need a robust auditing process during implementation to ensure the timely identification and resolution of coding errors."

5 SPARKCHANGE

SparkChange SparkActions 2023: Optimizing Revenue Cycle Operations through Automation

"Revenue cycle automation is a key opportunity for all healthcare organizations and is necessary to reduce healthcare costs. SparkChange appears to focus on this area, and the solution offers deep integration with Oracle Health. Automation across the RCM environment ensures the solution will be beneficial for all organizations. The solution received universally positive feedback among interviewed customers."

Top 5—Improve Patient Experience

1 vital

Vital ERAdvisor 2024: Keeping ER Patients More Informed and Engaged

"This solution could be a game-changer. Wait times and patient throughput are top of mind for all emergency departments, and the ability to communicate where the patient is in the process will improve patient satisfaction. There is some risk of frustration if the patient doesn't move along as quickly as they expect, but the solution brings an interesting concept by telling patients where they are now."

2 Simple Interact FRONT OFFICE AUTOMATION

Simple Interact Front Office Automation 2024: Improving the Front Office Experience for Both Patients and Providers

"Front office automation solutions, such as Simple Interact's solution, are becoming increasingly popular among healthcare organizations for streamlining operations and enhancing patient/member experiences. Simple Interact's solution automates routine tasks, such as appointment scheduling, patient registration, and insurance card capture. That frees up administrative staff to focus on more complex tasks, thereby improving overall operational efficiency."

3 ABRIDGE

Abridge 2024: Utilizing Ambient Speech Generative AI to Decrease Documentation Time and Physician Burnout

"The immediate availability of visit notes is beneficial for care teams as well as patients. In patient portals, it is helpful for patients' families to be able to review notes in a timely manner post-visits, especially if they are not present for the appointments. With the solution, the care team can also be better informed on discussions that are often not communicated through other formats, ensuring all care providers are on the same page about care plans."

4 Mytonomy

Mytonomy Cloud for Healthcare 2024: Providing Modern Healthcare Education through a Cloud-Based Platform

"Most healthcare organizations are sorely lacking patient and family education that is truly consumable. It is one thing to provide information on a diagnosis or procedure, but it can be much more challenging and time consuming to truly explain information in a way that makes sense to a patient with little to no healthcare literacy. The solution provides a great benefit to any organization and their population by providing many topics that are easily digestible, readily available, and adaptable to current standards. This product breaks through communication barriers by helping patients who might be too embarrassed to acknowledge they don't understand what a healthcare provider is saying."

5 Lightbeam Health Solutions

CareSignal by Lightbeam Health Solutions 2023: Pursuing Better Healthcare Outcomes with Accessible Remote Patient Monitoring

"The solution can benefit providers and patients by offering remote patient monitoring through easy-to-use text messaging features. Providers can better participate in value-based care and manage at-risk patients by providing remote patient monitoring through highly available devices. Additionally, providers can benefit from the improved management of patients, and patients can benefit from the increased monitoring of their health. This solution engages the patient in their care management, helping to keep them out of the ED or from being readmitted to the hospital."

Top 5—Improve Clinician Experience

1 ABRIDGE

Abridge 2024: Utilizing Ambient Speech Generative AI to Decrease Documentation Time and Physician Burnout

"This solution can bring benefits such as reduced documentation time, improved focus on patients, improved note quality and accuracy, decreased provider burnout and stress levels, and increased number of patients seen per day. Additionally, the solution provides multilingual capabilities for diverse patient populations."

2 REDIVUS HEALTH

Redivus Health Code Blue 2023: Providing Clinical GPS during Lifesaving Cardiac Arrest Resuscitation Procedures

"Clinical tools designed by clinicians are always good ideas. Code Blue addresses one of the most stressful clinical activities, and it seems it has had the impact of reducing the moral stress and management of these events. In today's litigious society, it would be tremendously helpful to have a tool that guides clinicians when making quick decisions in a high-stress environment. While the customer base is small, the reviews are very promising, and respondents say a majority of the needed functionality to make an impact on managing code blues is already developed."

3 Suki™

Suki Assistant 2024: Improving Clinician Well-Being and Efficiencies through Ambient Speech AI Technology

"Suki Assistant's value proposition is that it reduces administrative burden on clinicians through its voice-enabled AI functionality. The solution automates clinical documentation and improves the quality and speed of note-taking, helping to address clinician burnout and documentation errors, which enhances overall efficiency and care delivery."

4 navina

Navina 2023: Driving Outcomes through an AI-Powered Workflow Solution

"The benefits of Navina for value-based care are huge. With the improvements in interoperability, EHRs have more data than can be digested. This solution uses AI and OCR technology to scan data and present it in a manner that can be easily used to care for patients. From summarization to identifying care gaps to identifying diagnoses that could have been missed, this solution can solve the problems of provider burnout, missing critical information, and identifying gaps in care."

5 regard

Regard 2023: Supporting Clinicians with an EHR-Embedded AI Co-Pilot

"This product should bring the benefit of improved decision support, as it looks at a wide field of data and suggests potential diagnoses instead of just providing documentation. The solution would solve the problem of data overload and missed diagnoses, ultimately reducing physician burnout and improving patient outcomes. I am impressed by the overwhelmingly positive feedback. One theme throughout the feedback is that Regard needs to add more suggested diagnoses."

All Eligible Solutions

Below are all 24 solutions and services that were eligible for an Emerging Solutions Top 20 award. Each was highlighted in a KLAS Spotlight or First Look report between June 21, 2023, and June 5, 2024, and received an overall score from customers of at least 85 out of 100.

The 24 emerging solutions reviewed in this report are only a sample of the emerging companies KLAS is measuring. Companies that qualify for emerging insights reports are those that have never previously been measured by KLAS and that have growing healthcare customer bases, among other considerations. If you know of another emerging HIT vendor or services firm that KLAS should research, please let us know here.

Click on any vendor name to access their full report.

Abridge
Alpha Nodus Gravity AI
BUDDI AI's Coding.AI
care.ai Smart Patient Rooms
CareSignal by Lightbeam Health Solutions
Collette Health (MedSitter)
Edgility Platform
LogicStream Health Shortage Navigator
Mytonomy Cloud for Healthcare
Navina
Nym Medical Coding Engine
PayZen
Proscia Concentriq
Redivus Health Code Blue
Regard
Simple Fractal
Simple Interact Front Office Automation
SmarterDx
Solv. Health
SparkChange SparkActions
Suki Assistant
Time Study
Verity Solutions Verisave
Vital ERAdvisor

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We are grateful for the thoughtful review and engagement from our healthcare thought leader team.

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Director, Innovation
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VHS (Virginia Health Services, Inc)

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CIO
Fisher-Titus Health

Technology Innovation Themes

Many of the participating thought leaders who gave ratings for the Top 20 report also shared their thoughts on an HIT subject where they have expertise and passion. Participants' full comments on themes in technology innovation—including interoperability, AI, and staffing—are shared below.

Kali Arduini Ihde
Director, Innovation
Northwestern Medicine

AI—specifically, generative AI (GenAI)—has become a valuable tool for improving efficiency and reducing administrative burden across clinical and administrative teams. We have had immense success with our ambient documentation partner, Nuance DAX, in reducing documentation burden on physicians by 30%. This time has allowed physicians to build a better work-life balance, see more patients, and open up access. Additionally, we are excited about how GenAI can assist in automating outreach phone calls to patients through AI assistants, such as Hippocratic AI and Qventus. While we are in the early stages of exploring these solutions, we hope that taking the task away from nurses will greatly improve their nursing experience and assist with staffing challenges.

AI has also become a key component of our revenue cycle as we have leaned into leveraging AI for coding automation and documentation revenue. We are still wary of diving too deeply into AI without the proper controls but feel like we have the right vetting processes and governance to explore AI safely. We are focusing first on augmenting our clinical teams so that we can free up our brilliant doctors and nurses to then take better care of patients. In the future, we look forward to more diagnostic and patient-facing solutions, but we want to start with AI solutions that we can vet and ensure are safe before we implement additional use cases. In general, we are excited about embracing AI, but we hold a healthy amount of skepticism and rigor to ensure we are staying at the forefront of these solutions' capabilities while still putting safety and privacy first.

Adam Artel, DPT
Director of Digital Portfolio
Emplify Health

ChatGPT has caused a huge increase in the number of companies jumping into AI. Though AI existed before, ChatGPT made AI seem easy enough for anyone to use. As AI becomes more popular, the market is going to first inflate and then consolidate. It is risky to choose vendors in this space because they may not last or get acquired. The use of the tools may then change, data may get altered, and effectiveness can sway. No one wants to see what happened to Olive happen again.

All of that said, the governance, selection, and control over these tools is vital for an organization to maintain. It can become difficult to manage and maintain many tools with different code and RPA capabilities. We will indirectly be hiring more IT members to assist with AI use. A key to success will be first identifying the areas that will bring the most value instead of having isolated vendors sprinkled throughout the health system. Organizations will achieve greater success by understanding the balance of building an overarching plan and agreed-upon use cases before pulling the trigger on purchasing more vendors' solutions.

There also needs to be a large effort to train individuals through every level of the organization on the use of the AI tools. The concept of AI is great, but the way AI gets integrated to solve specific problems while maintaining HIPAA and proprietary confidentiality is important. The security access that we are giving to AI companies is unparalleled. We are entering an age where automation literacy needs to be performed (through change management or mandatory trainings), starting with the C-suite down.

Sheila Augustine, MHA
Director of Health Information Management & Revenue Integrity
Nebraska Medicine

AI is a word that is being utilized in healthcare for many things all at once. While healthcare organizations need to delve into the concept of AI, it should not be implemented quickly. There are many pieces of revenue cycle that can benefit from AI. Healthcare systems have to take time and realize the biggest bang for their buck. We have to take the opportunity to review manual processes and where it makes sense to automate them. Performing an analysis with a solution or vendor can provide recommendations on the easiest areas to implement AI. Leaders in healthcare must identify the repetitive processes that staff do daily.

There are many companies that offer AI; however, not all companies will have the particular expertise needed for the areas an organization wants to automate. The implementation of AI should be slow to allow organizations to verify the outcomes. Did the solution

work as intended? Can the solution get smarter over time utilizing more data? AI has the ability to recognize savings for organizations, and in an industry that is feeling staffing pressure, AI will continue to grow.

Marc Bingham, MD, FAAFP
Chief Clinical Informatics Officer
Spartanburg Regional Healthcare System

AI is becoming an integral part of our healthcare system, revolutionizing various aspects of patient care and operational efficiency. As a CCIO, I have been involved with eight AI-based products, primarily focusing on image recognition and the processing of large volumes of data.

Our current AI applications are particularly effective as visual recognition or speech recognition tools, enhancing our diagnostic capabilities, streamlining image analysis processes, and making clinical care more efficient. These tools have significantly improved the speed and accuracy of the interpretation of medical images (e.g., x-rays, MRIs, CT scans), allowing our teams to make more-informed decisions quickly. The large-scale data processing capabilities of our AI systems have been instrumental in identifying patterns and trends that might otherwise go unnoticed, enabling us to optimize resource allocation, predict patient needs, and improve overall healthcare delivery.

Recently, we established an AI governance structure within our healthcare system, which has been crucial in ensuring the responsible and ethical use of this technology. This structure has been integrated into our general IT governance processes, providing a framework for evaluating new AI implementations and monitoring existing ones. I have also been part of an increasing educational effort for clinicians in our system around the appropriate and ethical use of AI.

While the benefits of AI in healthcare are substantial, users should remain cautious. It is essential to understand that AI systems are tools to augment human expertise, not replace it. Healthcare professionals must maintain a critical eye and not over-rely on AI-generated insights. We are monitoring closely for bias that can be built into our models to ensure equitable outputs. There is a need for the continuous monitoring of AI systems to ensure they remain accurate and unbiased, especially as they process more diverse patient data over time. Data privacy and security are paramount concerns. As we handle sensitive patient information, we must ensure that our AI systems adhere to data protection standards and comply with all relevant regulations.

Looking forward, the integration of AI with multiple healthcare software tools presents exciting opportunities. We are seeing significant benefits in areas such as clinical decision support, predictive analytics for patient outcomes, and personalized treatment planning. However, to fully realize these benefits, further development is needed. Key areas for additional development include:

1. Improving AI interpretability to help healthcare providers understand the reasoning behind AI-generated recommendations
2. Enhancing interoperability between AI systems and existing healthcare IT infrastructure
3. Developing more robust validation methods for AI algorithms in clinical settings
4. Creating standardized protocols for AI implementation and evaluation in healthcare
5. Advancing AI capabilities in NLP to improve interaction with electronic health records and clinical notes

As we continue to leverage and expand our use of AI technologies, our focus remains on improving patient outcomes, enhancing operational efficiency, and maintaining the highest standards of care and data protection. The ongoing work in this space is promising, and with careful governance and continuous development, AI has the potential to significantly transform healthcare delivery.

Monae Byrne
Experienced Senior Virtual Care Professional

Interoperability is commonplace for any health system and is a top consideration when evaluating existing HIT needs. Some of the most practical ways our organization has approached HIT challenges is to persistently analyze efficacy in product features, functionality, and ROI to determine what produces the greatest operational impact. The most important strategic measures to consider with any solution involve the user experience. Does the product support our patients? Does it enable improved mechanisms for support and practice evolution for our providers? Does it support our mission and value in the community?

Additionally, we strive to closely monitor the implementation experience by first identifying a pilot site to launch the product, generating tools for assessment, and allowing for sufficient change management. If the product is complex, we prefer to work collaboratively with a product team or vendor who can provide effective support and training. Typically, a tried-and-tested workflow is designed in partnership with a vendor and reviewed from clinical, administrative, and operational perspectives to identify gaps and garner partner feedback. All

considerations from feedback should be included in the final product design and deployment. Once a pilot is launched, ongoing feedback loops and honest communication with key stakeholders allow for optimal outcomes. For example, if an organization expects a particular functionality, all stakeholders should set realistic expectations on its release and usability. As with all things related to technology, being adaptable is key.

David Chestek, D.O.
CMIO
University of Illinois Health

The promise of interoperability has been realized—sort of. When I began practicing medicine, very few hospitals connected with each other to share patient data, and standalone HIEs were rising and falling at a bewildering pace. Now, all major EHR vendors have an interoperability solution; most have it enabled, and a lot of data flows through the connections. Patient care has improved, and my patients and I see the benefit multiple times a day in clinical practice. Unfortunately, despite all this progress, we have hit a plateau in recent years. We cannot end this important work with the current state of interoperability.

Many small EHR vendors that support smaller private practice groups or FQHCs don't have interoperability features at all or don't have them enabled by default. As a result, we still have critical blind spots to our patients. Vendors should be required to have these features enabled by default and work with existing clients to quickly and easily turn them on with no additional fees.

When the data does arrive, it is often incomplete. To comply with current standards on data exchange, we have to send data. That does not mean we have to send it in a way that other systems can receive it. We recently discovered that one of our closest trading partners on a different EHR was sending us "Hospital Discharge Summary" documents, and our vendor was only looking for "Discharge Summary" documents. Each is a different document type, so the data wasn't flowing. Vendors must talk to each other and agree on standards so that individual hospital systems don't carry the burden of data exchange.

When complete data does arrive, it is often hard to find. I wish I didn't need to teach my colleagues the "special trick" to find outside data. We should display external and internal data together in the same place in the EHR with small tags to show where the data originated rather than keeping them separated. This workflow exists currently when we ingest data from an external hospital on the same EHR vendor, but it should be just as seamless between different vendors.

It is unfair and unreasonable to expect patients to carry the burden of explaining their complex medical history, previous procedures, lab values, and imaging results when they come to us sick and needing help. We have this problem technologically solved, but we need human beings to get together and decide whether we will make it work all the time and for everyone.

Charles E. Christian, LFCHIME, LFHIMSS, CHCIO, CDH-E
VP of Technology & CTO
Franciscan Health

Thoughts on Interoperability

About five years ago, I was asked to join a large Midwest healthcare system as their VP of Technology & CTO—a role that I would describe as both a blessing and a challenge. It is a blessing that I am back on the provider side of healthcare and I can very much relate to the organization's mission; it is a challenge due mostly to the complexity of managing the technology for a multihospital system that encompasses almost every aspect of care. More recently, with the COVID-19 pandemic, challenges came at a furious pace.

The Clear Need for Patient Records That Can Easily Be Exchanged/Shared

I have a passion for patient record interoperability, an area that I have worked in and around for the past 20 years. The tools, technology, and willingness to exchange patient data/information have greatly improved in many areas and lagged behind in others. With the most recent rules and regulations coming out of Washington, DC, it is apparent that there is a definitive focus on patient record-sharing. I don't completely agree with some of the approaches that the legislators and regulators have established. Their intentions are noble, but their desire to be the lowest common denominator is setting a low threshold of what organizations are required to do; thus, there continues to be more and more regulations on how data/information should be shared. I am more of a "tell me what you want to do" than "tell me how to do it" kind of guy.

I had the pleasure of being on a call some time ago with healthcare providers in the US, several locations in Europe, and other parts of the globe. The conversation was around the challenges of a remote workforce and quickly standing up an infrastructure that allows providers

to virtually care for their patients. Interestingly, one provider mentioned that their hospital uses one EMR while the physician practices use another EMR, resulting in difficulty determining whether the patient has been tested for COVID-19 in one location or another. I am not sure why that caught me by surprise, as that is just like the very issues that healthcare has been dealing with for decades and one of the primary reasons that the industry is being herded toward interoperability.

However, interoperability takes many forms. There are those that believe they can share a C-CDA record and be done; others are looking for more than just basic information exchange and would like to see interoperability at the semantic level. Unfortunately, due to the manner in which our patient record solutions were organically built, retrofitting them to utilize a common vocabulary may be a taller order than we know. On the same call as mentioned above, one of the physicians stated that although they had a robust HIE, not all of the facilities that were sharing data were using the same LOINC code for COVID-19 testing, making it difficult at best to accurately track and communicate testing between care locations. I grinned as I thought that interoperability is not just about the technology—there are any number of barriers in getting interoperability right.

Patient Identity and Privacy

Another component of interoperability is the requirement to ensure that we are exchanging/sharing data about the correct person. As many know, I am an advocate of a unique patient identifier. I am aware that some will and do disagree with that approach for a variety of reasons.

My name is really not that common, but I have been misidentified on more than one occasion. Several years ago, my wife received an email from a friend in Florida offering their condolences related to my passing. Like Mark Twain, the rumors of my death had been greatly exaggerated. On further review, we learned that she had seen what was thought to be my obituary; however, we learned it was another Charles E. Christian that lived about 45 miles north of us. It was also interesting that he was a senior and his son and grandson also had the same name. So within a 45-mile radius, there were four people with the same name but different birth dates and ages.

There are many other examples I could share, but we can agree that problems with ensuring the correct patient is really a patient safety issue and not only an identity issue. Just as much harm can occur when patient records are combined inappropriately as when they are not combined at all. I am reminded that most of the automated solutions that we have in place today grew out of patient billing systems and were never really meant to share information outside of the implementing organization.

This brings me to patient privacy. From the very beginning of HIPAA, sharing PHI inappropriately has been an issue. Early on, we worried about sending faxes to the wrong fax machine—now we can inappropriately share information at a much higher rate of efficiency.

As part of the current push for interoperability, there is a desire to allow the patient to be the keeper or broker of their health information. I don't disagree that any patient should have access to their health information from any source; however, I am of the mind that wants to allow patients to direct trusted third parties (e.g., HIEs) to aggregate and securely share health information appropriately with members of the necessary care teams.

Some may call me a little parental, but it concerns me that we are providing the tools for patients to share data with whomever they choose without them fully understanding the consequences of their actions. How many of us actually read each and every end-user license agreement, privacy statement, or data-use agreement we encounter? And how many of these agreements have we read about in the industry news that have been openly and knowingly broken with little to no ramifications? Once the patient releases their information, HIPAA no longer applies, and it is up to the FTC and other federal agencies to police the use and misuse of that information. Early in the rush and haste to offer virtual visits to patients, providers learned that the Zoom platform was sharing session information with Facebook, even if the patient didn't have a Facebook account, without notification to the patient that the information was being shared. Luckily, someone found the issue and Zoom was forced to change their code. I don't call my concerns paranoia—I consider them a certainty.

Marc S. Cohen
CFO
University of Rochester Medical Faculty Group

As an overall comment on AI and Chat GPT, the solution is in the introductory stage of its product life cycle. If we were selling a new fancy computer, we would expect lower sales, potential issues with the product, higher costs per customer, and minimal competitors. AI has moved toward the end of the stage with each new version in hundreds (if not thousands) of different ways. Each solution built on the AI tool starts a new introductory stage to integrating the AI tool. So we need to be wary and know it is special.

Our organization is looking at solutions from vendors, looking to build our own solutions, and also waiting for stabilization by letting others buy in the introductory stage. We are looking for AI solutions throughout the organization, including ambient listening, coding solutions, patient management, quality data reporting, prior authorization, and other clinical and revenue cycle management tools. These solutions are to add to ones we have been using for a while in areas like imaging and some basic RPA (the parent of AI?). Our choices will depend on comfort with the solution, ROI, and our resource availability.

The solutions we have seen are being built where there is a financial opportunity. The ability to replace people with an AI is the primary driver. The ability to enhance solutions in areas where there are not enough people comes second, and then finally the altruistic solutions that help patients and systems be more efficient come along for the ride. This is okay by me, as I am a financially prudent accountant. Organizations need to be wary. Jump in if you want. Don't wait too long. Make sure to dress warm, and be prepared for failure.

Scott Eshowsky, MD
CMIO
Beacon Health System

We have been using an ambient listening solution for provider documentation for over two years. While this has been a good experience for us, the use has come with its share of challenges. We began using an early version of ambient listening technology, which included a human quality check prior to sending notes for provider review and completion. This increased the cost and turnaround time of note delivery. While we had a significant number of providers opt out of using the technology, those who continued to use it developed high rates of satisfaction and adoption. The solution has improved documentation time and overall satisfaction with the practice of medicine. Providers feel their notes are more complete and are willing to take the time to edit/correct notes prior to signing.

We are planning to implement a newer version of ambient listening that removes the human element and simplifies the onboarding process. In turn, there will be less personalization, which could be somewhat of a dissatisfier for those who have grown accustomed to communication with the human quality check resources from the vendor. This is a tradeoff we need to make, as the cost of the earlier technology is unsustainable for our system. As the technology continues to advance, our expectation is that the vendors (and industry as a whole) will place great effort and value on the validation of these tools—to increase clinical accuracy, reduce of disparities and bias, and place more focus on the continual improvement and training of the algorithms.

Claire Floyd, MSN, RN-BC
Informatics Nurse Specialist
LifeBridge Health

I miss the simplicity of pen and paper, where documentation felt complete and final in one space. Today, clinicians face numerous challenges with current EHR systems, such as data foraging and technostress, which can significantly impact efficiency and job satisfaction. The constant accessibility, ongoing technology changes, expectation that technology will make us faster and smarter, fear of falling behind, and pressure for immediate competence—all these factors weigh heavily on clinicians, who also manage patient loads and support staff.

Often, clinicians and patients are provided with new hardware or software with an overlooked assumption of inherent technological competency. This results in tools becoming tasks, which can lead to a negative perception of technology in healthcare.

To move quality care forward, HIT must be focused on those who do the work. While healthcare prioritizes meeting patients where they are, the same consideration should be extended to staff and clinicians. Documentation, whether through ambient listening or manual entry, should not be a compliance burden but should enable practice and accurately capture the patient's story, turning a clinical task into a clinical tool. As we integrate advanced AI into healthcare, we must uphold the principle that just because we can doesn't mean we should. For progress, it is essential to maintain robust data governance while accommodating rapid technological changes, ensuring competency in hardware use, and enabling robust interfaces.

Jim Hall
Director, Digital and Technology Services
Mountain Park Health Center

Our organization is no different than many other healthcare organizations when it comes to interoperability challenges. The biggest obstacle we face is the lack of standardization around the formatting of health data (HL7, DICOM, FHIR, CDA, etc.). There is a lot of promise around HL7 FHIR, and we are adopting more systems that utilize or support that standard combination. Along with lack of data standards, another obstacle we face is the balance between data quality and security and the associated cost and complexity. Maintaining

health data to ensure accuracy, usability, and reliability is an ongoing investment, requiring governance and underlying technical solutions. We have done a lot of work establishing our formal data governance policies that serve as a foundation for the decisions we make and how we use data. We strive to keep these policies current and to ensure our workflows and systems support these standards. We aren't perfect, but we are learning and getting better at it.

Chris Hamilton
IT Director, Revenue Cycle
Covenant Health

While we have some AI embedded in the vendor tools we use today, we are still on the discovery path of how we want to use AI and where it can best be used. We tend to be very cautious with new technology we bring into the organization, as we believe our due diligence will result in success. There are many opportunities to take advantage of AI offerings in the industry, but all are fairly new endeavors. It will be interesting to see how AI/automation will progress, going forward. More experience, education, knowledge, and growth spread throughout the industry over time will assist in making society more relaxed and comfortable with AI. Technology is moving so quickly today. It just takes time to adjust.

John Lee, MD
Emergency Physician & Informaticist
Endeavor Health

We often hear about how new technology is expected to change healthcare, but we have a problem with innovation. More specifically, we have a problem with the type of innovation we are fostering. Clayton Christensen refers to two types of innovation. Most health technology innovations would be classified as "sustaining innovation," meaning they basically maintain the current system. To truly transform healthcare, we need "disruptive innovation," which depends on completely changing how we operate.

For instance, healthcare providers often focus on remote patient monitoring (RPM) solutions that generate revenue through CPT codes. These solutions depend on a threshold volume of readings without any dependency on outcomes. This approach can result in many unnecessary readings for patients who do not need constant monitoring. Instead, these technologies should be targeted at patients with specific clinical conditions, where RPM data can actively prevent deterioration.

Retail clinics and telemedicine offer convenient solutions for minor issues, such as prescribing antibiotics for a UTI or examining a simple rash. However, the true potential lies in frequent, proactive patient engagements that prevent more serious problems. For example, regular touchpoints for wound care post-surgery or for recently discharged patients with medication changes or comorbidities can prompt adjustments in care that prevent downstream complications.

The key advantage of modern technology is its ability to facilitate low-friction, high-frequency touchpoints with patients that were previously not available. A $50 telemedicine encounter for an antibiotic is nice, but it pales in comparison to the costs of a preventable long-term hospitalization, which can easily result in tens or hundreds of thousands of dollars.

As another example, consider the hype around bots that streamline prior authorizations. While this usage seems to make sense, insurers are also employing bots and AI to make these processes more complex and detailed. We end up with a situation where provider bots fight with payer bots.

Rather than engaging in this digital arms race, we could repurpose the data points used in prior authorizations into quality metrics. These metrics could be displayed in population health dashboards and integrated into elegant decision support tools, ultimately enhancing care quality rather than impeding care.

Ultimately, we need to stop reinforcing the status quo and instead focus on the fundamental reasons why we looked to technology in the first place—the current system is not effective. Building a faster road to nowhere won't help us. Instead, we should build new roads that lead to the Quadruple Aim.

Khurram Mir, MS CHCIO
Director, Innovation and UCI Health Ventures
UCI Health

Generative AI is transforming industries and driving productivity, efficiency, and innovation. In healthcare, the deployment of AI presents both opportunities and challenges. In a $4 trillion industry, healthcare organizations must reduce waste, alleviate clinician cognitive load, enhance clinical documentation, and optimize care coordination and supply chain management to support thriving enterprises. Yet healthcare is highly regulated, requiring human involvement where clinicians' intuition cannot be substituted.

We are witnessing early deployments of generative AI in tasks such as ambient charting, intelligent staff scheduling, improved clinical documentation, and smart rooms equipped with ambient assistance for fall prevention, hand hygiene, and improved OR utilization. The goal is not to replace staff but to free them to focus on more meaningful tasks by reducing the time spent on mundane ones. Additional areas where generative AI is leveraged include revenue cycle to streamline claims and improve outcomes, along with supply chain to predict needs and eliminate bottlenecks.

Changes won't happen overnight. Progress depends on an organization's ability to make the decision to start, be intentional, prioritize which area they need to focus on, partner with the right vendor(s) and team(s), execute on pilots, and scale as appropriate. In most cases, layering AI onto existing processes may not be enough. Organizations may need to redesign entire workflows to ensure AI effectively complements both legacy systems and other AI technologies.

AI also brings challenges, including the risk of perpetuating inherent biases from the data on which models are trained. These biases can lead to unfair or discriminatory outcomes. To minimize this risk, it is crucial to build models using diverse, representative data and focus on developing fairer algorithms and data sets.

Finally, education and training are essential to preparing the current and future workforce for the changes AI will bring. Socialization of AI as a partner will improve engagement and adoption and ultimately allow for a more successful transition. Organizations must strike a balance between automation and augmentation, fostering a culture of continuous learning and adaptability as we transform our collective environments.

Patrick Neece, CHCIO, CDH-E
VP, CIO
Lake Regional Health System

The reality of how AI is being presented and the terminology used is a stretch. If a solution is not capable of learning like a human learns, then it is not artificial intelligence. It may be a sophisticated program that provides a valuable service, but the solution is making decisions within the boundaries of the information it has been provided or programmed. This causes confusion and raises concerns with the incorrect terminology. ChatGPT is close to true AI, and it may be the solution furthest along, as it interacts in real time to questions and conversations with humanlike responses.

A solution that automates coding based on programming is not AI—though it is a sophisticated program with significant value. Applying predefined rules to analyze the data and make a decision based on predefined logic is not AI. If the solution were capable of reaching out to a physician and producing a query of its own and interpreting the response, that might be an evolution past programming and automation.

Jenifer Orlow
VP, Digital Excellence
Emory Healthcare

We are using AI for digital pathology and radiology second reads. We are using LLM and AI to complete cancer registries and to search our documentation and training to help providers when asked questions. The trend is working with niche vendors who develop a model to detect X or guide through Y. The problem with this is that humans need to validate the outcomes for their organization, especially as the AI learns. There may be cases where AI recommends something or alerts without human validation. We need to be wary of those situations, especially. AI does not have a gut instinct and experiences, something that can be good or bad.

The niche vendors will be able to give to the smaller health systems and practices what academic medical centers will try to develop themselves. We will see over time which avenue will be more accurate for an organization, as we are just at the start of the innovation. Tying RPA with AI may be the key for more labor-intensive tasks. Many of the emerging technologies are going to do that. Not only will we calculate or discover a data trend using AI but then we will also prompt an action or automation. We have to be wary of ensuring that we have validated the AI discovery and trending when there is no human intervention involved with the AI process.

Donna M. Roach, MS
CIO
University of Utah Health

AI in Healthcare: AI has the potential to transform healthcare by improving patient outcomes, reducing costs, and enhancing the overall quality of care.

Creating AI Use Cases: Use-case development is the starting point in finding AI's value. For example, AI can be used to generate clinical notes, respond to patient queries, produce patient information, and summarize information within a patient's record.

AI Benefits: AI can streamline billing and coding, speed up diagnosis and treatment, and enhance the clinical focus on in person patient care.

AI Guidelines: It is important to safeguard privacy and data security, mitigate misinformation, confront bias in AI output, and uphold copyright and academic integrity when using AI.

Robert Rodgers
VP, Revenue Cycle Management
Arches Medical

It is important for stakeholders to understand the underlying AI tech in their products. There is a broad spectrum of tools that are labeled as AI. We need to be able to appropriately price the service and level-set on the performance expected from all AI solutions. Revenue cycle is a data-rich environment, which allows for predictive modeling. The challenge is that the payer guidelines are continually challenging. When the goalposts move, it is hard to adjust the model. This is where AI becomes valuable. Retraining models makes for true AI.

The patient experience spans from scheduling to understanding their bills and collections. Engaging the patient with AI is vital to ensuring they are seen by the appropriate specialty and adhere to the prescribed care plan. Revenue cycle is a supporting process to ensure high-quality care delivery. The mid–revenue cycle products are focused on taking clinical documentation into medical codes. Autonomous coding thrives in this space—I see partners like Fathom and Phare Health excelling as they take a tech-first approach to solving the RCM problem. Large language models and deep learning are AI tools applicable in this pillar of revenue cycle that can improve revenue.

The back office of revenue cycle is mostly focused on denials and payer/patient collections. The value of AI is identifying patterns in payer responses and taking the necessary countermeasures to ensure appropriate payment. A ChatGPT-type solution would be valuable in helping A/R staff identify how to manage open A/R if the solution is trained on the recent 835/837 data. Patient engagement can be improved by leveraging AI to better collect on patient balances.

At Arches Medical, we are working to integrate technologies that improve clinical outcomes, drive sustainable economics, and improve the PCP experience. This includes (1) applications of AI to identify care gaps and better manage chronic conditions and (2) applications of ambient dictation technology to reduce the administrative burden and enhance the patient experience. Our RCM strategy aligns with our clinical goals in delivering an exceptional patient experience while improving reimbursement.

Katie Swenson, DMSc, MBA, PA-C
Executive Clinical Director, Surgical Specialties—Digestive Health Clinical Program
Intermountain Health

Our ability to communicate, exchange data, and use the information that has been shared is crucial for improving patient care, reducing errors, and enhancing efficiency. However, several significant performance and opportunity gaps remain in achieving full interoperability. Multiple platforms exist and are used by a diverse cohort of healthcare providers. This lack of standardized formatting and universal access complicates data sharing across systems and leads to increased waste and cost in the form of additive clinical decision-making burden, redundant labs and imaging, and prolonged time to treat. Ensuring privacy and security of patient data during exchange is paramount, though this then precipitates strong reservations about sharing data broadly.

Navigating regulatory challenges, such as compliance with HIPAA, can be complex, particularly when attempting to share data across borders or with healthcare adjacent partners. However, other domains with high sensitivities to security and privacy have effectively found ways to navigate this issue and continue to operate optimally with robust governance and cybersecurity measures in place. This suggests a hesitancy within the healthcare community to adopt new technologies due to widespread skepticism and lack of trust rather than true barriers in capability. That being said, technical barriers do remain a real challenge in some ways. For example, legacy systems may not support modern interoperability standards, requiring significant upgrades or replacements that are costly and time-consuming. In light of these physical impediments, cultural resistance and willingness to accept the status quo will likely continue to be the greatest

challenge in adoption, particularly as integration and enablement of new capability require disrupting and evolving well-established workstreams. Lastly, as it relates directly to harnessing the power of the data science pipeline and SaaS, organizations must continue to explore the value of exploiting current resources in an operationally constrained environment to capture short-term cost savings/avoidance while embracing the tolerance for failure required to drive an innovative long-term digital enablement strategy.

Intermountain Health is a leader in healthcare innovation and was recently ranked the number one best performing large health system in the nation according to Fortune magazine and PINC AI's "2024 Top 15 Health Systems." In addition, Intermountain is a proud supporter of the Trusted Exchange Framework and Common Agreement (TEFCA), the federal effort to create a common governance and policy set around nationwide interoperability. Intermountain has adopted a multipronged approach to overcoming some of the aforementioned obstacles. The organization has embraced standardized data formats, such as HL7 and FHIR, which facilitate easier data exchange between systems. After merging with SCL Health in 2022, Intermountain has moved toward consolidating EHR platforms to allow for seamless data sharing across its network of hospitals and clinics. In reinforcing delivery of patient-centered care, Intermountain has prioritized principles in interoperability to provide a more holistic view of patient health, improve outcomes by scaling best practice, and reducing redundant testing. Finally, the dominant strategy to modernizing care delivery and advancing best practice within a traditional framework is the earnest adoption of emerging tech stemming from collaborative partnerships while continuing to champion internal innovation in focused areas.

Considerations for crushing your digital health strategy:

- **Start with standards:** Healthcare professionals should adopt and adhere to established interoperability standards (like HL7 and FHIR) to facilitate smoother data exchanges that withstand business-critical analytics and enhance outcomes.
- **Invest in modern IT infrastructure:** Upgrading legacy systems to support interoperability is crucial; this investment, though significant, pays off by overdelivering in improved care and operational efficiencies.
- **Emphasize security:** Not only is implementing robust security measures to protect patient data a minimum expectation, but it will also pay dividends in building brand loyalty and trust throughout the broader healthcare community that will accelerate users' willingness to adopt.
- **Eradicate upstream bias:** Healthcare leaders and partners must reinforce unrelenting vigilance when it comes to stamping out algorithmic bias applied to training data sets, cohort definitions, confounding processes, and relative cost of Type I and Type II errors on individuals and society. Particularly when scaling for impact, bias (unconscious or otherwise) must be identified and corrected through cross-sectional segmentation studies, A/B testing, and/or multivariate analyses to prevent unintended outcomes of digital amplification such as loss of opportunity, economic loss, and social stigmatization.
- **Foster a culture of collaboration:** AActively seek out and engage early adopters within the healthcare provider workforce in sharing clinical expertise to co-create interoperability solutions. Encourage consistent collaboration between clinical teams and IT, administrators, and third-party partners to develop clinical digi-tech best practices.

Opportunities for future developments include advanced analytics and AI, improved data governance, national and international frameworks, and continuous training and education. Leveraging AI and advanced analytics can further enhance interoperability by providing actionable insights from integrated data across systems. Strategically enabling AI, predictive models, and LLMs to augment the healthcare workforce will enrich human connection and improve clinical outcomes. Establishing clear data governance policies will be essential in managing data quality and ensuring compliance with privacy regulations. The development of more comprehensive national and international frameworks for interoperability will help streamline cross-regional exchanges and, in particular, provide opportunity for improvement in population health efforts. Lastly, ongoing training for healthcare providers on new systems and processes will help reduce resistance to change and, over time, evolve the culture of healthcare in such a way as to remain relevant and competitive in the age of digital transformation.

Vincent Vitali, CHCIO
CIO
Borland Groover Clinic PA

We have dabbled in AI tools and ChatGPT use in our specialty physician practice. We have adopted the GI Genius I tool from Medtronic in our ambulatory surgery center procedure rooms to augment our physicians' capabilities to detect lesions, polyps, or other potential issues. We have found that the tool has improved ADR scores, especially later in the day when physicians may feel fatigued. Our ROI has not been anywhere near to what the vendor sold the ROI as, but the quality of the work is more important, and we are seeing a small increase in pathology revenue. We have used ChatGPT interactively for administrative functions, like job descriptions and business plans. We also use it for benchmarking. We have begun to explore using LLMs for other areas. One we are piloting is having an AI bot "read" incoming fax documents and process them according to type. We are starting with referral documents where the bot extracts the necessary data and creates the chart and/or referral in our EMR. This will eliminate many hours of manual work.

Mark Weisman
CIO, CMIO
TidalHealth

AI Governance for Health Systems

As AI became more commonplace in applications, our leadership team discussed whether any special care is needed when adopting them. At first, our leadership said that AI is ubiquitous and decisions around adopting models should be incorporated into our standard governance process. We quickly realized how wrong we were and how important it is to have focused experts looking at these solutions and providing proper governance.

The average physician and administrator is not well versed in AI, and most lack an understanding of how these models are created, what makes a good model, and what risks exist based on how they were trained. At our health system, we asked for volunteers from a group of leaders to take an executive-level educational program about AI in healthcare, hoping to find two or three people who could devote six hours a week to the course. The demand blew away our expectations, and we received twelve volunteers in 24 hours, causing us to close the application process early. There clearly is desire for physician leaders to learn more about AI technology and participate in the governance process.

We are at the beginning of our AI governance journey, and we are now taking the step of cataloging all the models that already exist in the system. These tools appear to have sneaked into every department in some fashion and function without much oversight. Our plan is to determine which of these models need to be monitored for model drift, bias, and efficacy with what the vendor advertised it can do. So far, we have found some models that were purchased but never used because the providers did not trust them or the data was not presented in the right place in the workflow. The basic principles of informatics can be utilized to improve adoption, and we learned there is no such thing as simply plugging in the AI and walking away with a victory. AI tools require an intense focus on change management.

The most common AI use cases appear to be in radiology, with computer vision assisting the radiologist. We have examples in breast imaging, stroke, and modeling for abdominal aortic aneurysms. We are now seeing some interest in LLM capabilities to summarize the chart about events that happened over the last 24 hours. We are exploring an AI fall-prevention tool that can monitor patient movement using computer vision and alert staff if a patient is getting out of bed unassisted. We piloted ambient AI in our ambulatory clinics, and it was so successful that we are now expanding it across the ambulatory campuses.

Overall, we are early in our adoption of AI models, but with proper governance in place, we are more confident about our chances for successful adoption and making a difference at the bedside.

J.D. Whitlock
CIO
Dayton Children's

The hot topic with interoperability this year is the controversy among Epic, Particle Health, and Integritort—it has been written about in-depth by Health API Guy and others. The reason it is so important is if the industry is going to truly establish the trust necessary to enable optimized interoperability, then all players must play by the rules. If they do not (which appears to be the case with Integritort), then we will go backward—not forward—with interoperability, and patients will lose. My organization is signing on to TEFCA via Epic and putting in the effort to obtain and maintain interoperability compliance—even when, like in the case of "all EHI," the amount of effort involved far outweighs the practical benefit to patients. My advice is squarely aimed at government regulators and TEFCA administrators: it is their job to make sure the "T" in TEFCA (Trusted) is taken seriously, effectively monitored, and effectively enforced. If they fail to do this, both the industry and patients will suffer in both large and small ways over time as interoperability either stalls progress or moves backward.

Report Information

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Note

Performance scores may change significantly when additional organizations are interviewed, especially when the existing sample size is limited, as in an emerging market with a small number of live clients.

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