Staying Ahead of the Curve

Digital Medication Decision Support Solutions Should Evolve at the Speed of HIT

Wolters Kluwer

The healthcare ecosystem is characterized by both relentless innovation and an almost overwhelming amount of data and information. In a clinical setting, care teams and healthcare information technology (HIT) partners rely upon systems, tools, and protocols to organize and analyze patient data; apply new research and product findings and information; and execute a treatment plan that both improves patient safety and care, and helps them work more efficiently.

Ensuring clinical care teams have the right information at the right time and the best decision support solutions to deliver high-quality care is an important responsibility shouldered by healthcare technology leaders. As more dimensions of healthcare rely on digital solutions or platforms technology teams are critical partners in delivering high-quality care because they influence HIT (healthcare information technology) investment decisions and implementation strategies. In addition, technology leaders also need to consider how the technology environment they create affects operating efficiencies, even as patient expectations and healthcare costs escalate.

The COVID-19 pandemic forced many healthcare systems and organizations across the globe to assess their IT infrastructure, systems, and processes to determine if they can meet their clinical and operating goals. Similarly, some regulators are requiring the digital transformation of healthcare services to accelerate. Combined, these forces mean that technology teams need evaluate whether they have an appropriate digital foundation — one that ensures resiliency for tomorrow, and for the long term.

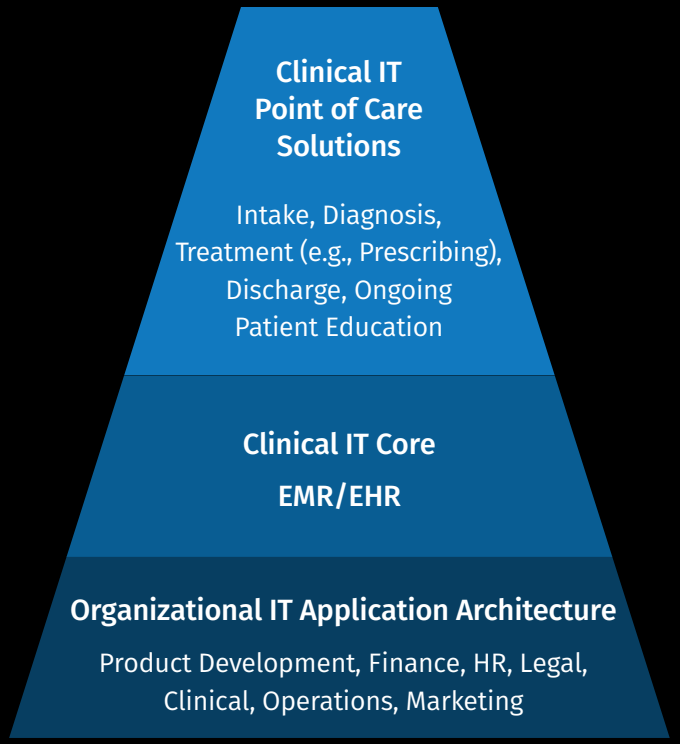


Figure A
Healthcare IT Architecture

How strong is your digital foundation?

Putting in place the building blocks for a strong yet flexible and extensible digital foundation is a complex undertaking. Decisions must reflect each organization's current and aspirational digital maturity, budget realities, patient and clinician expectations, as well as evolving national or regional standards for both HIT and standards of care. The asynchronous implementation of electronic health records (EHRs) across the globe illustrates how these factors affect the speed and breadth of digital transformation at many healthcare systems and organizations.

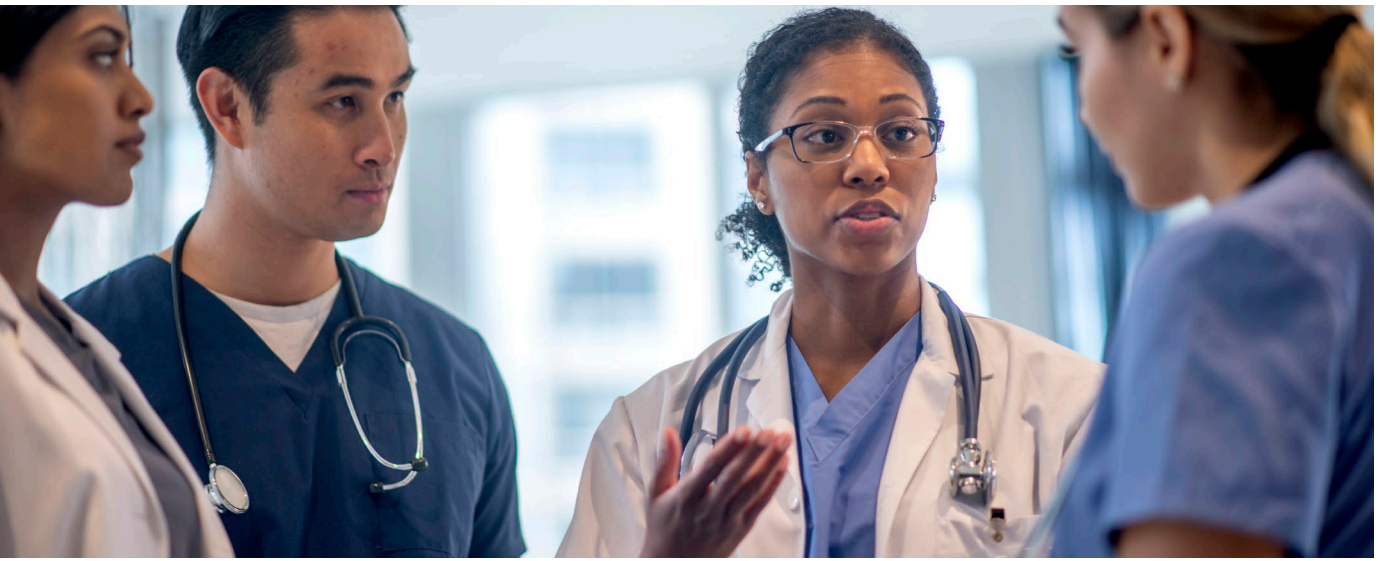
Stakeholders across the healthcare environment recognize that information is at the heart of safe clinical decisions, effective treatment plans, and positive patient and clinician experiences. All of these depend upon access to both the right patient information in EHRs and Clinical Decision Support tools that provide extensive, clinically relevant, and timely information. For this reason, some countries mandate adoption of EHRs, and recommend that healthcare organizations expand the data captured in them to include, for example, genomic and comorbidity information. A recent HIMSS report[1] underscored the importance of the interoperability of EHRs and external, information-rich decision support tools: "Clinicians can better inform care and decision making, patients can become more active participants in their care plans and Health IT developers and implementers can leverage evidence to create and adopt systems that support clinical processes and improve care delivery."

Accordingly, implementation of EHRs remains central to many healthcare systems' digital transformations. Standardizing relevant patient data in portable, digital form would generate tremendous value in terms of speed of patient care and unity of information. Yet that vision has yet to be realized. Currently, more than 40 organizations[1] are developing interoperability standards worldwide, and there is no consensus on what data an EHR should contain beyond the foundational level.

In addition to grappling with EHR initiatives, healthcare technology leaders must also weigh the benefits and costs of integrating digital decision support tools into the solution 'stack.' Ideally, those tools work seamlessly with EHRs, generate clear improvements in care quality metrics such as readmission rates, enhance clinician workflow efficiency and satisfaction, and improve formulary management and workforce productivity. Tech leaders can support these goals by selecting Clinical Decision Support solutions that maximize their return on investment in EHRs and equip clinical teams with the right resources to make better, more informed decisions.

To make this task easier, technology leaders can use three core criteria to assess and prioritize investments that move their organizations along the digital maturity curve. Investments should:

1. **Enable the organization to advance or meet HIT accreditation to increase patient and clinician confidence.**
2. **Align caregivers by providing one trusted source of truth to inform and expedite clinical knowledge sharing and decision-making.**
3. **Support and strengthen the organization's digital foundation to meet current and future clinical, organizational, and operating goals.**



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Wolters Kluwer Clinical Decision Support solutions are designed to meet these requirements. They are complementary and woven into the care workflow, providing clinical teams with the right information and the right time to support better decisions and deliver quality patient care. Whether an organization is starting its digital transformation by adding core capabilities, or integrating advanced, precision-centered solutions, best-in-class decision support tools can play a key role in strengthening the digital foundation and maximizing the impact of other IT investments.

Requirement 1:

Achieving and Maintaining HIT Accreditation

When choosing or making a referral to a healthcare organization, primary physicians and patients rely upon an organization's reputation for operational excellence and quality care as reflected in both anecdotes and current accreditations. Gaining endorsements by regulatory authorities as well as a history of achieving higher levels of certification by neutral organizations such as HIMSS can increase prospective patient confidence, boost utilization, attract stellar clinical and support staff, and in some areas secure additional funding by governmental and private entities. In short, accreditation indicates an institution is investing in systems that safeguard and enhance patient safety and clinical care.

Technology investments contribute to accreditation

Technology leaders at healthcare organizations play a key role in securing and maintaining useful certifications and accreditations, which vary in scope. Some, such as high-level HIMSS accreditation, are fairly broad and reflect an organization's core IT systems relative maturity and capability. Accreditation authorities will evaluate an organization's data and information security protocols and history, whether closed-loop management of medical operations is achieved, and the appropriate investment in and implementation of Clinical Decision Support systems and solutions. Other accreditation efforts are more discreet, such as confirming that an e-prescribing application that is updated to meet industry standards for communication security, medication selection and dispensing options.

Acquiring advanced accreditation can serve as a proxy for whether a healthcare organization is keeping its foundational HIT capabilities strong. For example, in achieving Stage 7 of HIMSS EMRAM certification, one clinical leader observed that it reflected positively on the hospital's ability to improve the flow of information and cut staff workload, which reduced human error and improved quality of care.

Requirements Inquiries—Accreditation

Pursuing additional or higher-level accreditations can enhance both the quality of patient care delivered and organization operating efficiency, yet it can be time-consuming and expensive. To assess whether the investment is worthwhile, technology leaders should consider:

1. What specific clinical or operating deficit would additional accreditation address? How is it affecting patients or the organization?
2. What does success look like when accreditation is achieved? What tangible, quantifiable metrics will be improved for patients, workforce, or operations?
3. Will the additional accreditation resolve the issue, or is resolution dependent upon other changes as well?
4. What is the typical timeline and work effort (and cost) to achieve the proposed accreditation?

IT leaders can contribute by helping assess and build certification-ready HIT capabilities that meet or exceed industry standards for safety and accuracy. In addition to synthesizing and clearly documenting patient outcome data for accreditation committees, IT leaders often provide usage metrics for EHRs and enhanced systems such as decision support solutions as part of the accreditation application. These metrics demonstrate to assessors both whether an organization is investing in building a strong, sustainable digital foundation, and — more importantly — whether those investments translate into improved patient care, deeper organizational capabilities and knowledge, and more efficient operations.

Accreditation as a path to improving care quality

Healthcare organizations often use accreditation initiatives to close critical internal operating gaps or to better connect with external partners, such as pharmacies. The journey of China Medical University Hospital (CMUH) in Taiwan to move from HIMSS Stage 6 to Stage 7 certification for its Electronic Medical Record Adoption Model (EMRAM) is illustrative.[2] Dr. Pai Peiying, the hospital's director of general internal medicine responsible for projects such as structuring of hospital medical records and system optimization, identified drug management as an opportunity. Specifically, CMUH needed a drug data solution that generated more actionable alerts for clinicians to consider in optimizing prescriptions.

As with most local hospitals, CMUH has limited IT staff and pharmacists to deploy to this effort. Accordingly, Dr. Pai's team agreed that implementing a third-party drug management solution medication decision support solution (Medi-Span® Clinical APIs and expert services) with proven EMR/EHR interoperability and advanced alert capabilities was the most efficient way of improving this aspect of operations. Not only did the solution integrate the latest drug information, it generated in-line alerts informing clinicians of potential medication errors for specific cases. Alerts can also be customized and managed so that particular alerts notify only certain sub-groups within the health system for whom they are relevant, such as members of the same practice specialty. After an assessment and implementation pilot that spanned two years, CMUH became the second medical center in Taiwan and the first in central Taiwan to achieve Stage 7 of HIMSS EMRAM certification.

While a need for better medication management motivated CMUH's initiative, Dr. Pai recognized that the accreditation process had broader implications. "HIMSS's focus is actually on how the hospital can improve the flow of information and cut staff workload to reduce human error, improve the quality of care and patient safety," he observed. With this broader context in mind, integrating a trusted data-rich medication management solution met a specific need of patients and clinicians, while also signaling CMUH's commitment to optimizing its IT environment.

Requirement 2:

Aligning Caregivers Across the Continuum with Coordinated, Evidence-based Solutions

IT leaders know the financial impact and operating complications of choosing too many disjointed solutions, or, conversely, too few or incomplete applications. Application or solution proliferation can add cost and require extra effort to customize and maintain. In a healthcare organization, too few or duplicative information resources or decision support solutions increase the risk that the best information is not used to inform clinical decisions, with negative impacts on patient care and safety.

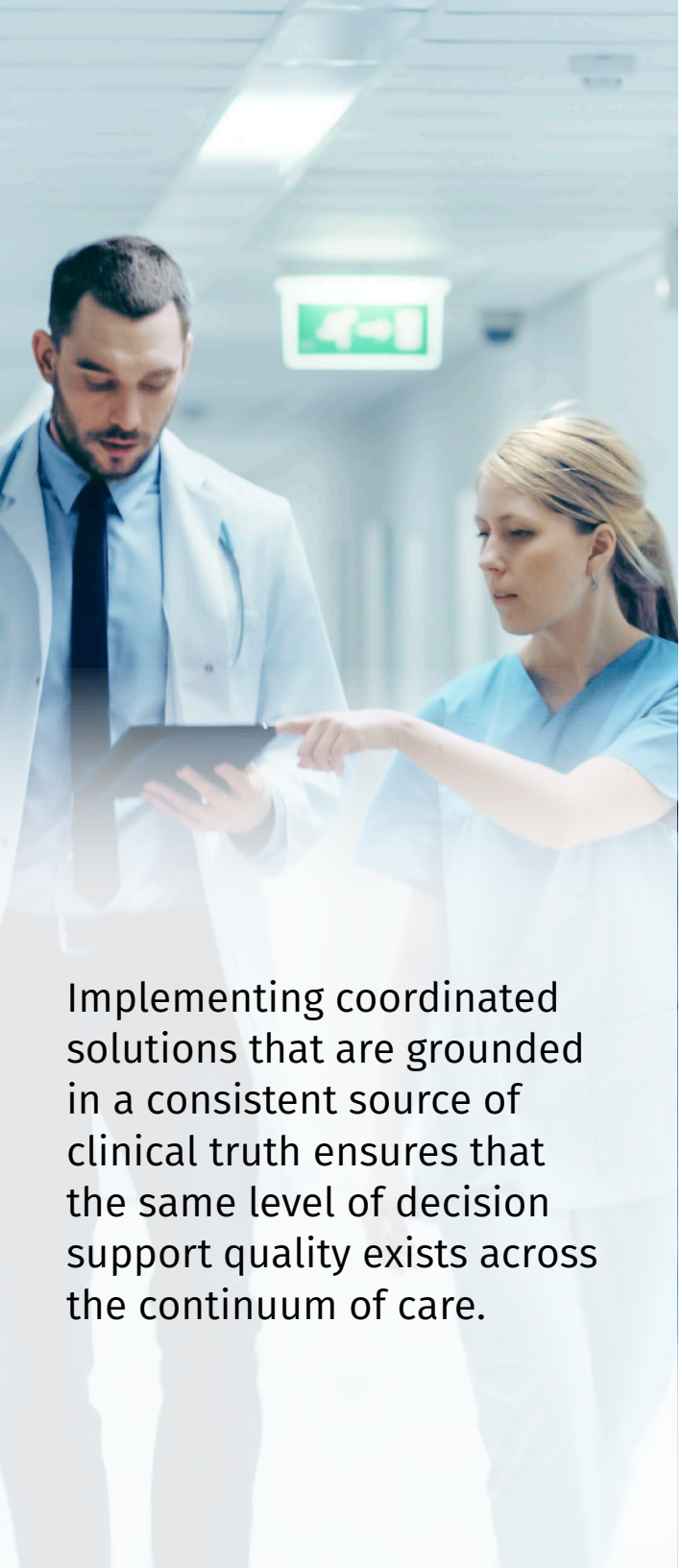
Trusted content with no gaps or duplications

Healthcare organizations benefit most from a set of solutions that provide world-class content that each team member (clinician, nurse, pharmacist) can use as needed, and that complement but not duplicate each other. Targeted resources should exist for each point of care, from intake to discharge, and in aggregate cover the entire continuum leaving no gaps.

Wolters Kluwer designed its decision support solutions with each team member's distinct information needs and the patient continuum of care in mind, as shown in Figure A on page 2. Complementary solutions provide trusted content across the complete care path, which has several benefits:

- Using the same information resources aligns and grounds care team members around one consistent source of clinical truth, building a shared body of clinical knowledge.
- Expediting speed to decision helps save team member time. Consulting multiple sources adds to work effort as different 'answers' are considered, leading to delayed decisions or decision paralysis.
- Integrating several solutions from different vendors can be costly, and invariably lead to interfaces of different quality.

Providing one version of the truth to all care team members allows clinicians to focus on providing quality care, rather than synthesizing mountains of data from various sources.



Implementing coordinated solutions that are grounded in a consistent source of clinical truth ensures that the same level of decision support quality exists across the continuum of care.

Coordinated solutions that support evidence-based medicine initiatives

Regardless of tenure, talent or intention, no clinician can synthesize all the new data and evidence generated about disease states or potential treatments. This reality is at the core of many evidence-based medicine (EBM) initiatives which aim to provide clinical team members with current, trusted expert guidance and evidence-based content throughout the patient journey to support decisions. For many organizations, the adoption of EHRs and EBM protocols go hand-in-hand: applying the latest, evidence-based information to clinically relevant patient data allows for more precise, personalized care. Decision support tools providing vetted, EBM-based content also clarifies which factors affected decision-making and limits use of incomplete or quasi-relevant data.

Technology leaders can partner with clinicians to ensure they have the resources to meet EBM goals. The best evidence-based resources and research include meta-analyses or results from randomized trials of high methodological quality, as well as randomized trials with methodological limitations, observational studies and unsystematic clinical observations informed by expert consensus or opinions. Not all decision support solutions provide this breadth of information. Some are data aggregators that stop short of helping clinicians draw reliable inferences. Others are poorly organized or too difficult to navigate with EHRs, undercutting clinical team efficiency and satisfaction.

Studies indicate clinicians will consult external resources and evolve their practices and recommendations as long as the resources provided are easily accessible and integrated with their workflow, logically organized, and provide actionable advice grounded in the best available, comprehensive evidence. For example, a comparison study conducted at Tokyo Joto Hospital[3] found that physicians who used UpToDate had far fewer diagnostic errors (2%) than the 24% reflected in a control group who did not consult the solution.

Information Resources Can Optimize Collaboration and Team Alignment

Healthcare organizations can choose from several decision support solutions but not all provide extensive, evidence-based content required of clinical team members to facilitate collaboration and support confident decision-making. Technology leaders can optimize and streamline the solution set by influencing the solution selection. Questions to explore include:

1. What are the root causes of misaligned decisions or information gaps, and can they be addressed with different decision support solutions?
2. Which solutions providers/vendors provide end-to-end solutions and customer support?
3. Have some solutions and solution suites demonstrated greater impact on improving care quality, workflow, and clinical satisfaction?
4. Are there significant content differences among solutions? Which provide both the latest information about diagnostic practices and medications, as well as contextual content useful to clinicians?
5. What cost and operating benefits can be gained from implementing a single, unified suite vs. point solutions? What downsides might exist?

Healthcare technology leaders can simplify complex application environments and improve clinical collaboration by implementing coordinated, evidence-based information resource solutions. Solutions from a single vendor are inherently more stable than heterogenous solutions requiring heavy integration, and minimize the potential entry points for hackers. Choosing coordinated decision support solutions that work seamlessly with each other across the continuum of care ensures that no gaps exist in information, while avoiding the costs and possible contradictions that duplicative or overlapping solutions present.

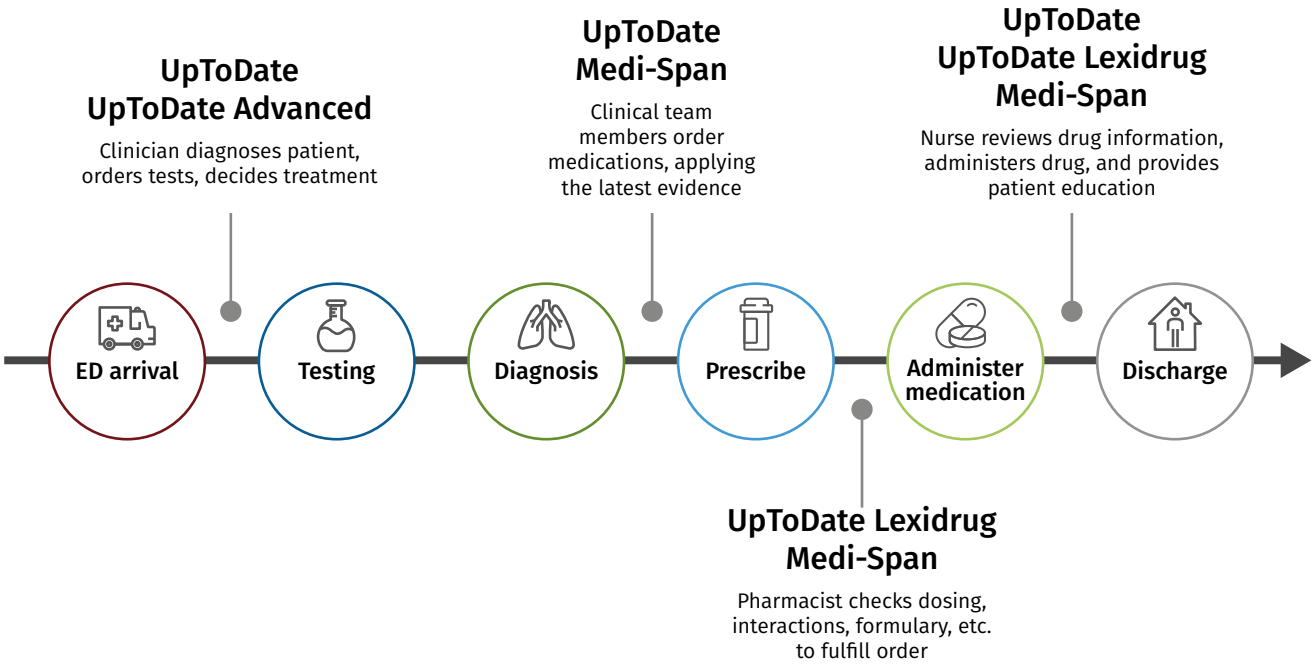
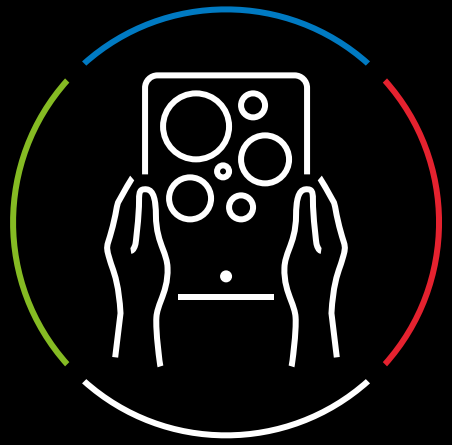


Figure B

Unified solutions align team members and decisions at all points across the continuum of care

Requirement 3:

Evolving the IT Foundation to Meet Current and Future Clinical, Organizational, and Operating Goals



The technology landscape in most healthcare organizations is complex. Beyond Clinical Decision Support solutions, the finance organization, marketing, and talent management groups all have preferred point solutions for their specialty. The technology organization is in the best position to conduct a holistic assessment of how these varied solutions and platforms work together, identifying strengths and weaknesses in IT infrastructure, applications, and platforms.

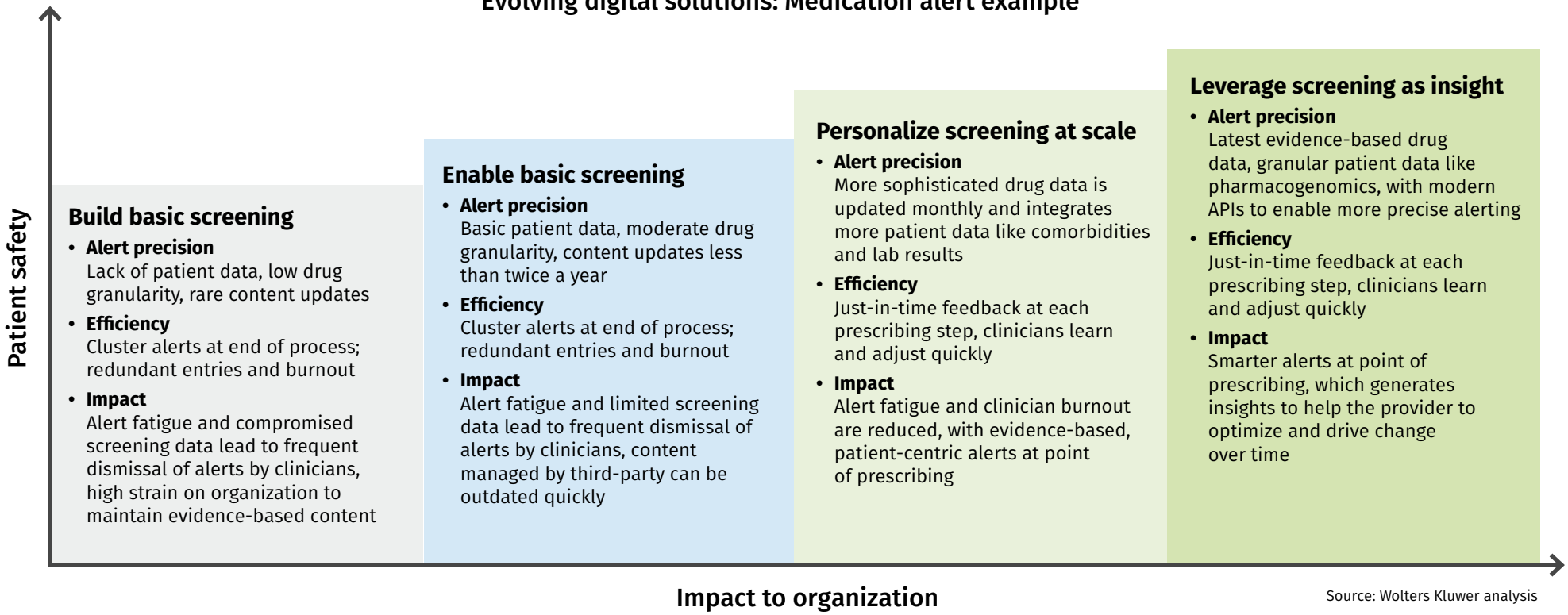
In addition to supporting the current environment, technology leaders must define a path for the future. Building a strong, flexible digital foundation is not easy, given the increase in digitalization across healthcare. The current focus on adoption and interoperability of EHRs and decision support solutions is just the beginning. Technology teams must also:

- Evaluate the state of their mobile capabilities, including natural language processing (NLP);
- Assess user experience with intuitive and semi-automated workflows and improve them at critical points of care; and
- Determine whether, how and where to deploy advanced analytics, artificial intelligence, and machine learning to improve clinical precision and operating efficiency while maintaining compliance with patient and data privacy standards.

Prioritizing and investing in the right areas at the right time are pieces of a complicated puzzle. Not all digital capabilities and solutions can evolve at the same pace, given budget constraints and an organization's capacity for change. Some have more impact than others on the organization's ability to deliver quality care. Part of the answer is to determine where capabilities that are core to the organization's care mission are on the technology maturity curve, and where they need to be in the mid to long term. Figure C on page 12 shows the maturity curve of a drug screening decision support tool — a critical component of maintaining clinical excellence and patient safety.

Figure C

Evolving digital solutions: Medication alert example



Source: Wolters Kluwer analysis

Partnering with the right solution provider can help healthcare organizations achieve technological stability while embracing innovation. Many providers welcome collaboration and can quickly expand your digital capabilities and sustain technology performance with automated updates.

Investing in IT Infrastructure for Resiliency and Sustainability

Healthcare organizations need a dynamic plan to build and sustain the digital foundation required for clinical and operational excellence. Before choosing a decision support solution, consider the following questions:

1. Have you evaluated and prioritized your systems and solutions according to organizational importance?
2. Do you know how well your Clinical Decision Support solutions work together? Are there gaps and overlaps?
3. How secure and resilient are your infrastructure, both in terms of preventing hacking and ransomware, but also rebounding in the event of a catastrophe?
4. Have you identified critical solutions providers and collaborators to evolve the maturity of critical solutions and applications? Could you explain what criteria were used to select them to other executives in your organization?
5. How many people in your organization understand your strategic technology roadmap and could execute it if required?

For most organizations, the ability to conduct effective medication screening and send timely, actionable alerts to clinical team members about medication errors or interactions would be a top-tier priority. Medication screening has significant impact on both the quality of care and operating efficiency. Organization leaders, with input from technology leaders, can determine how and when they invest in integrating a screening solution, and what functionality is needed.

The same approach could be applied to other technology components and solutions to develop an investment roadmap that yields a resilient, sustainable digital foundation. Partnering with the right solutions providers can help; many providers, including Wolters Kluwer, welcome collaboration and can quickly expand an organization's digital capabilities with point solutions, and keep them current with automated updates.

Advanced data and information technologies continue to transform how whole sectors operate, as well as reset expectations about quality, speed and personalized service. Healthcare systems and organizations are being buffeted by these challenges, and are investing in solutions and platforms to meet these elevated expectations as well as regulatory requirements. The choices and investments made by technology leaders in healthcare organizations have a direct impact on care quality, patient and clinician satisfaction, as well as cost and operating efficiency. Consequently, defining and executing a digital transformation roadmap and strengthening the digital foundation with best-in-class, trusted solutions have never been more important.

[1]HIMSS. Interoperability in Healthcare. https://www.himss.org/resources/interoperability-healthcare
[2]https://www.wolterskluwer.com/en/expert-insights/cmuh-medi-span-clinical-proves-an-important-aid-for-achieving-himss-certification
[3]https://govinsider.asia/health/wolters-kluwer-campaign-how-this-japan-hospital-cut-diagnostic-errors/

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