



MOST WIRED: NATIONAL TRENDS 2018

INTRODUCTION

Historically, the annual Most Wired research has focused on measuring adoption of healthcare information technology to highlight those organizations with the broadest, deepest IT infrastructure. With the ever-growing need to improve healthcare, the research now adds a new emphasis on measuring the key areas that can help advance the industry as well as gathering information about organizations' technology strategies (which include not just technology adoption but also the refinement of processes and the development of people). With this new focus, this research and future Most Wired research can help identify gaps in healthcare organizations' technology adoption and strategies and highlight areas in which the industry has the opportunity to make progress. The key areas that emerged from this year's research are as follows:



Before provider organizations can achieve outcomes with their strategies for population health management, value-based care, patient engagement, and telehealth, they must first ensure that foundational pieces such as integration, interoperability, security, and disaster recovery are in place. This report will first look at current adoption and key opportunities for improvement with these key foundational pieces and then focus on the more transformational areas.

INTEGRATION AND INTEROPERABILITY

As healthcare adopts and leverages new technologies, it is becoming increasingly complex to maintain an ecosystem in which data can be reliably shared. Poor communication between disparate systems can be one of the greatest impediments to clinicians being able to access the information necessary to provide effective patient care. Communication technologies, like remote access capabilities and emergency alerting, can improve the speed at which critical data is delivered to caregivers.

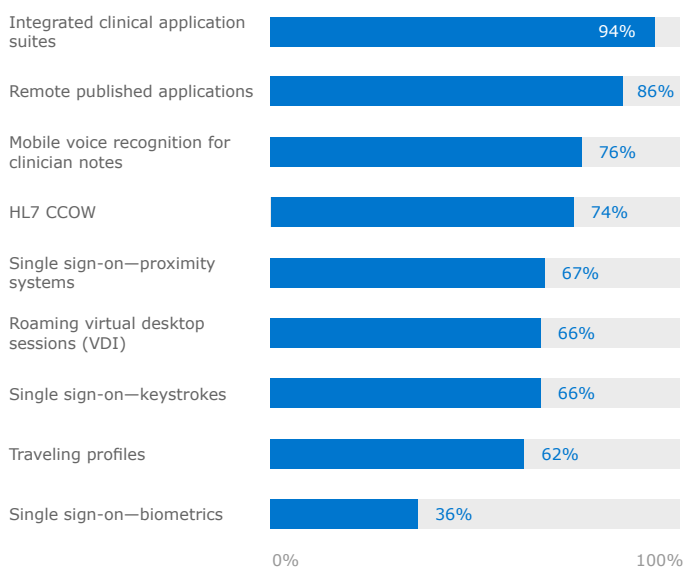
Beyond improving patient care, interoperability can also help provider organizations achieve outcomes like increased operational and workflow efficiencies. By investing in robust infrastructures that can support and facilitate communication in the complex healthcare environment, organizations can make better data-driven decisions and achieve greater outcomes.

The end goal of healthcare technology is to improve care delivery, and effective integration can help streamline workflows, allowing clinicians to focus on what they do best. To this end, most organizations that participated in this research have adopted integrated clinical application suites and remote published applications. Single sign-on biometrics are still emerging—36% of participating organizations report using this type of integration.



Technologies Adopted to Integrate Clinical Applications at the Desktop

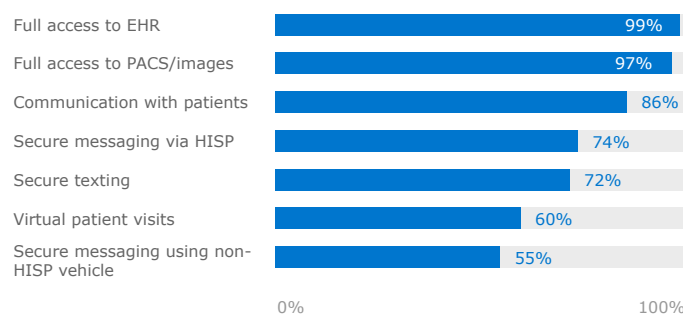
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Nearly all participating organizations report that at least 95% of their clinicians regularly access clinical information electronically. This includes medical history, nurse notes, order sets, care plans, diagnostic study results, operative reports, medication reconciliation, discharge instructions, care plans, and clinical summaries. Similarly, almost all physicians can electronically access their organization's EHR, CPOE, clinical guidelines, medical image reviews, and evidence references while in the hospital or clinic. However, only about half of physicians can access these same resources via mobile applications. Adoption of secure messaging also lags behind other remote-access functions; both represent opportunities for the industry to advance the current communication infrastructure.

Functions Clinicians Can Access Remotely (from Outside Hospital Network)

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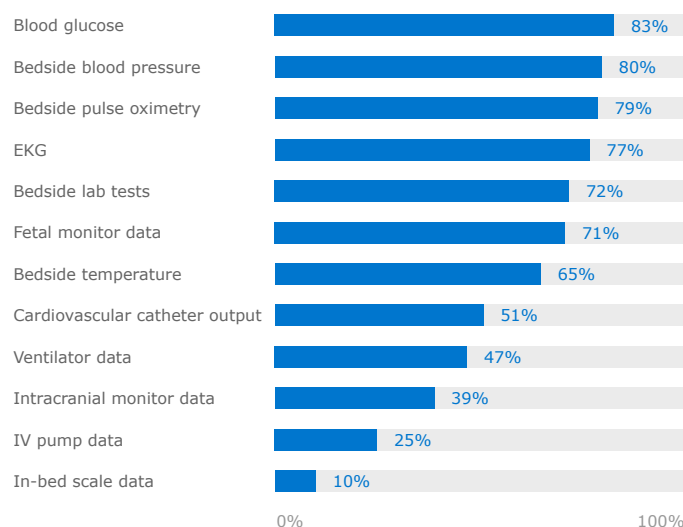


Integrating patient-monitoring equipment with an organization's EHR can save clinicians time as well as improve patient safety (by ensuring data is accurate). For over 75% of participating organizations, patient-monitoring data is sent directly to the EHR, including blood glucose, bedside blood pressure, bedside pulse oximetry, and EKG data.

There are still significant gaps in the integration between EHRs and patient-monitoring equipment—only 25% of participating organizations send data from their IV pumps directly to their EHR, and only 10% send data directly from in-bed scales. Furthermore, when tracking hospital-acquired infections, 59% integrate this data with their EHR, 33% store the data electronically, and 8% use manual processes.

Information Sent Directly from Patient-Monitoring Equipment to the EHR

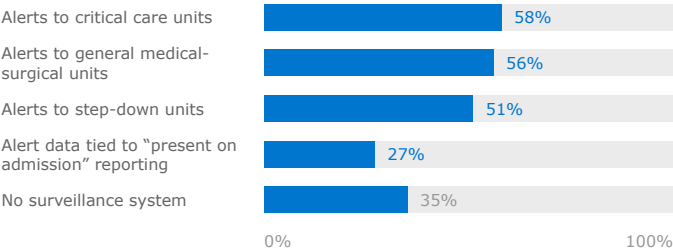
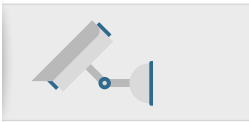
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While clinical surveillance can be a powerful tool to help clinicians quickly identify critical patient conditions, such as sepsis, 35% of organization do not have an electronic surveillance system in place. Having a surveillance solution integrated with an EHR can provide further benefits, since bidirectional communication between these systems results in real-time data and alerts that can be sent more quickly than with batched data. Among organizations who have their surveillance system integrated with their EHR, most send alerts to critical care units (58%), medical-surgical units (56%), and step-down units (51%).

Types of Clinical Alerts Sent from a Surveillance System Integrated with an EHR

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Meaningful use certification has helped facilitate CCD exchange. 94% of participating organizations can consume data in some form from a CCD, and 97% can contribute to a CCD. Most of the organizations who report that their EHR can consume discrete data are receiving the data from external hospitals and physician practices.

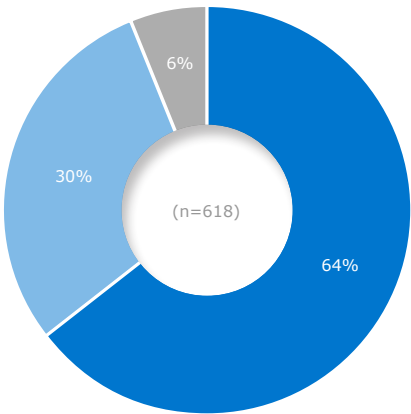
Outside Entities from Which EHR Can Consume Discrete Data

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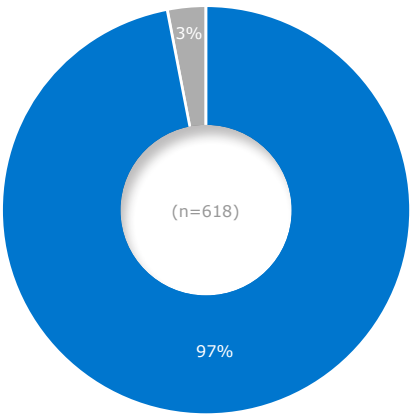
Incorporation of CCDs and CCRs from Physician-Office EHRs

- Incorporated into EHR as discrete data elements
- Incorporated into EHR as text-blob or PDF
- None



Contribution of CCDs to Physician-Office EHR or Other Post-Acute Care EHR

- Organizations contributing
- Organizations not contributing



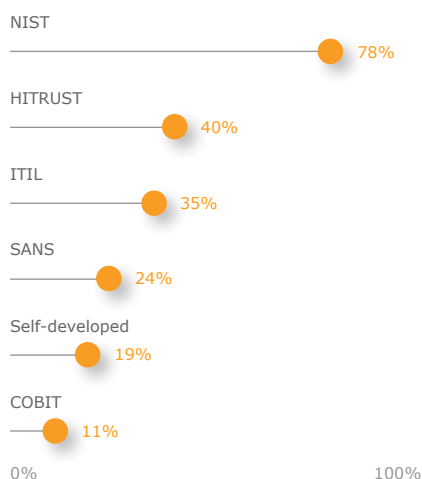
SECURITY AND DISASTER RECOVERY

Due to a growing number of internal and external security threats, it has become increasingly more difficult for healthcare organizations to protect their sensitive information, including patients' personal health information. To defend themselves from these growing threats, healthcare organizations have purchased technology to safeguard their systems, hired security consultants to provide advisory and technical services, and created internal programs to instill best practices.

However, security is still developing in healthcare, and few organizations have a comprehensive program in place. When it comes to adopting a security framework, organizations are shifting from self-developed security information frameworks to more commonplace ones, like NIST and HITRUST. Other core components of a comprehensive security program include dedicating a senior security leader, increasing security budgets, establishing governance and oversight committees, and meeting regularly to report gaps in security and progress toward closing them.

Adoption of Security Frameworks

(n=618)



Building Blocks of Security



Adoption of Core Components of a Comprehensive Security Program

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Having a dedicated chief information security officer (CISO) and regularly reporting security updates to an executive committee are some of the first steps to mitigating cybersecurity vulnerabilities. However, for most organizations, establishing these security foundations is still a work in progress. Only 29% of organizations report having a comprehensive security program in place (which in this research is defined as having all the elements outlined in the chart above).

Among those organizations that do not have a comprehensive security program, 31% are either not meeting with their executive committee or are meeting less than once a year to give security updates. Without a dedicated committee, it may be difficult for organizations to standardize security procedures and protocols. Governance and oversight committees can be easy, low-cost, process-oriented opportunities for healthcare organizations to focus resources on bolstering their security measures.

The maturity of an organization’s security program often impacts the breadth and depth of the organization’s security capabilities and protocols. Healthcare organizations with a comprehensive security program are more likely to support critical security measures, such as data-loss prevention (12% higher adoption), bring-your-own-device management (13% higher adoption), database monitoring (13% higher adoption), provisioning systems (14% higher adoption), log management (16% higher adoption), and adaptive/risk-based authentication for network access (16% higher adoption).

User authentication and the safeguarding of sensitive information are at the core of any well-secured healthcare organization, and while all or nearly all participating organizations use firewalls, properly dispose of devices containing PHI, and secure mobile devices with passwords, other fundamental authentication and safeguarding procedures are lacking—10% of organizations lack mobile device management, 12% lack unique user identifications or physical device locks, 14% lack encryptions for removeable storage devices, and 18% lack encryptions for backups.

By sharing cybersecurity best practices and knowledge with each other, healthcare organizations can collectively bolster the industry’s defenses against threats. Nearly all organizations in this research participate with at least one information-sharing and analysis organization. While most organizations participate informally—by sharing information within a professional society or HIT user group—less than one-third participate with formal groups such as the Cyber Information Sharing and Collaboration Program (CISCP), the National Cybersecurity & Communication Integration Center (NCCIC), or the Health Cybersecurity & Communication Integration Center (HCCIC).

Adoption of Security Measures—Organizations with Comprehensive Security Program vs. Those Without

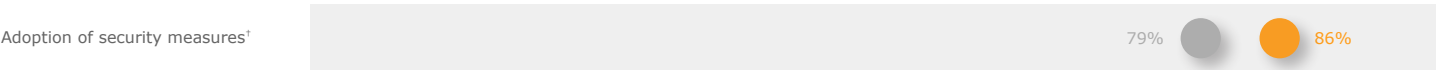
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- Has comprehensive security program (n=182)
- Does not have comprehensive security program (n=436)

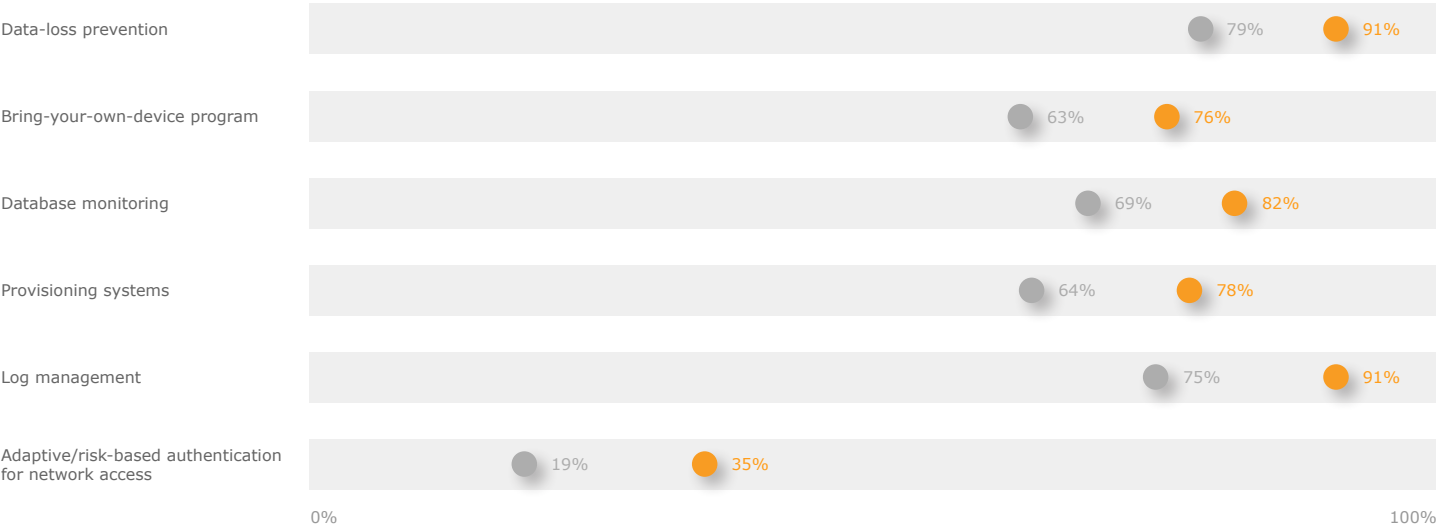


† Security measures include access control, adaptive risk-based authentication for network access, automatic logoff, bring-your-own-device management, database monitoring, data-loss prevention, encryption for laptops/backups/wireless LANs/enterprise network and removable storage devices/server databases, firewalls, identity management, intrusion detection and prevention systems, log management, mobile device management and data wiping, multi-factor authentication, network access controls, PKI or digital signature systems, privacy audit systems, provisioning systems, remote data wiping, security incident event management, single sign-on, strong password requirements, and unique user identification.

Overall Adoption



Security Measures with Greatest Difference in Adoption

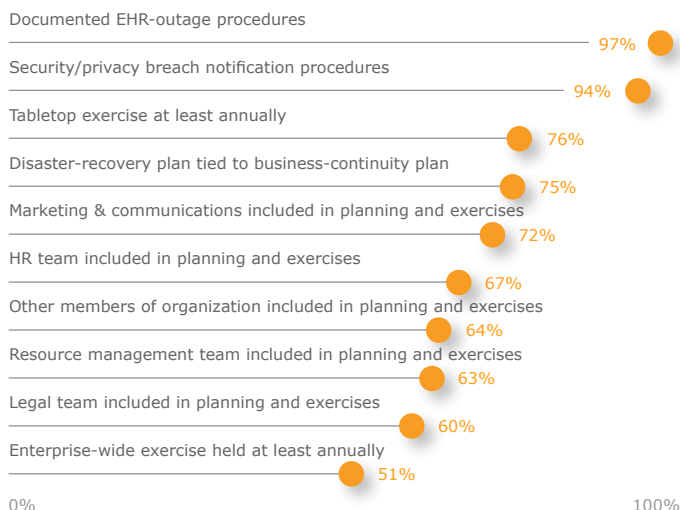


As healthcare becomes increasingly digital, it has become ever-more important for organizations to be able to quickly recover from disasters. Most seem prepared—68% estimate that if a disaster caused complete loss of their primary data center, they could restore operations within 24 hours for their clinical, financial, supply chain management, and human resources and staffing systems. Additionally, organizations were asked about their adoption of 10 components critical to an incident response plan. 26% of organizations have all 10, 43% have 7–9, and 31% have fewer than 7. Nearly all organizations have some kind of data repository to back up data, with off-site backups being used most frequently and data as a service seeing the least adoption.



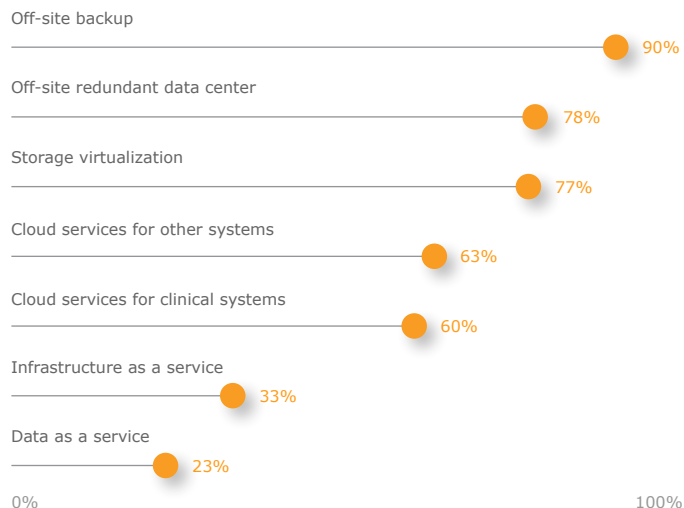
Adoption of the Critical Components of a Comprehensive Incident Response Plan

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Backup Systems and Data-Repository Models in Use

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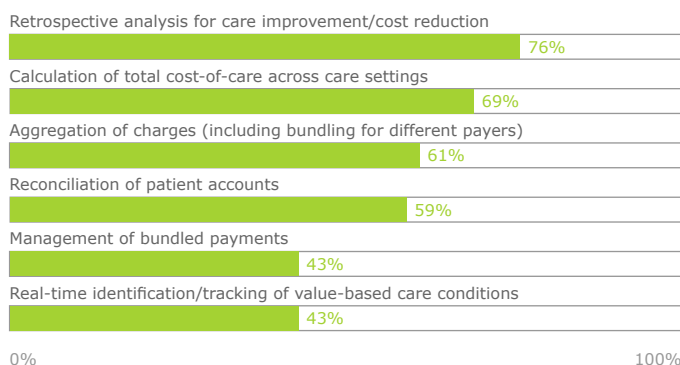
POPULATION HEALTH MANAGEMENT AND VALUE-BASED CARE

Most healthcare organizations understand the benefits of transitioning to value-based care; in fact over the past four or five years, tremendous energy has been focused on purchasing technology to help aggregate and stratify data, manage care, provide administrative and financial reporting, and engage patients. Still, adoption of technology to help with value-based care has been slow in both the clinical and the financial arenas, though more progress has been made on the clinical side. As organizations have explored what is possible with population health management, many have learned that there is more work to be done to truly achieve value-based care.



Adoption of Revenue Cycle and Contract-Management Capabilities

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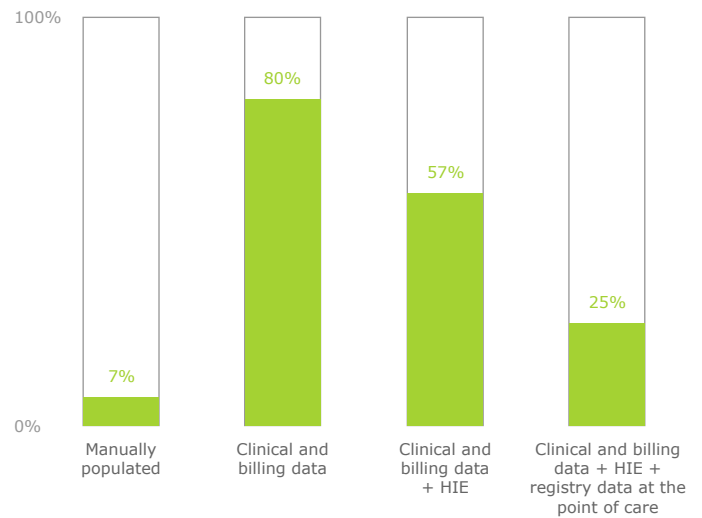


Population health management technology promises to give organizations the tools needed to transition to value-based care. These technologies can support cultural changes and provide transparency into the payer market, giving provider organizations the confidence to take on additional risk. Some organizations have made headway by consistently reporting savings and increases in revenue. Despite this, the adoption of financial technology to support advanced value-based care is lacking, and risk-based contracts are still relatively rare. Financial risk is not being shared widely, as payer and provider organizations are still working toward reimbursements that will support a value-based care model.

Data aggregation is the first step toward effectively leveraging population health management technology, and while the industry has made progress, there is still room to improve data aggregation across the continuum of care. 57% of healthcare organizations are using clinical and billing data as well as an HIE to identify gaps in care. However, only one-quarter of organizations are using these tools *and* have the ability to access registry data at the point of care. These organizations have access to more data and are more likely to have deeper adoption of advanced population health management capabilities. Key capabilities that the industry has the opportunity to increase adoption of include integrating clinical and claims data, tracking quality of care across networks, aggregating data to create a community health record, using analytics to measure value-based care, and synchronizing clinical and financial risk measures.

Source of Electronic Disease Registry Data Used to Identify/Manage Gaps in Care

(n=618)



How does breadth of data aggregation impact an organization's adoption of population health capabilities?

	<div> <div></div> 80%+ </div> <div> <div></div> 70%–79% </div> <div> <div></div> <70% </div>	Clinical and billing data + HIE + registry data at the point of care (n=154)	Clinical and billing data + HIE (n=143)	Clinical and billing data (n=199)
Identify and target patients for outreach				
Stratify patients according to risk				
Interface EHR data with population health tools				
Empower care management workflow with data-driven intelligence				
Identify gaps in care				
Identify and tag own patient groups and develop internal registries				
Integrate clinical/claims data so it is accessible, searchable, and reportable across care community				
Compare network/physician quality to evidence-based standards				
Aggregate patient data to create community health record				
Value-based care analytics (must combine quality and financial data)				
Synchronize clinical and financial risk measures for clinical, operational, and compliance requirements				

Care-management practices for areas outside of the inpatient setting are still maturing, especially for home management of chronic diseases. Most provider organizations' population health strategies target diseases like COPD, congestive heart failure, diabetes, heart disease, and hypertension; few are tracking behavioral health, sickle cell anemia, or end-stage renal disease. Additionally, few organizations currently allow patients at home to do things like manually submit self-test results or report their medication management compliance via email. There is still work to be done in developing capabilities in these areas, though progress has been made with things like EHR integration and real-time care management.



At-Home Chronic Disease Management Services Offered to Patients

(n=618)

	Self-test results entered manually online	Self-test results submitted via internet-enabled monitoring device	Medication management compliance using secure email	Real-time care management	Integrated with EHR
<div>● 25%+</div> <div>● 10%–24%</div> <div>● <10%</div>					
Asthma	●	●	●	●	●
Behavioral health	●	●	●	●	●
Cancer	●	●	●	●	●
Chronic obstructive pulmonary disease	●	●	●	●	●
Congestive heart failure	●	●	●	●	●
Diabetes	●	●	●	●	●
Heart disease	●	●	●	●	●
Hypertension	●	●	●	●	●
Obesity	●	●	●	●	●
Sickle cell anemia	●	●	●	●	●
End-stage renal disease	●	●	●	●	●
Other (not specified)	●	●	●	●	●

PATIENT ENGAGEMENT AND TELEHEALTH

One of the next frontiers for healthcare organizations will be transitioning from turning on a patient portal to truly activating and motivating patients to engage in their own care. Many organizations are taking on the challenge of patient engagement by building a technology infrastructure to make it easy for patients to engage. Healthcare organizations continue to develop and provide patient engagement capabilities that span from entertainment options in the inpatient setting to mobile applications that patients can access on their phones from any location.

Offering these capabilities is critical to successfully engaging patients, but it only solves half of a challenging puzzle. The second part of the solution is encouraging patients to engage in their own care. Patients must actually use these technologies in order for meaningful outcomes to be achieved, such as reducing healthcare costs and increasing patient satisfaction. This section highlights which capabilities healthcare organizations have adopted for communicating with and educating patients, including advanced technologies like telehealth.

Within the hospital setting, adoption of patient engagement capabilities is shallow. Less than one-third of organizations support patient and family functions for ordering meals based on dietary restrictions, planning for discharge processes, controlling environments, reporting non-clinical problems like room temperature, and performing traditional whiteboard tasks. Roughly one-third support patient engagement-related staff functions for initiating patient pathways, and one-quarter have adopted real-time engagement.

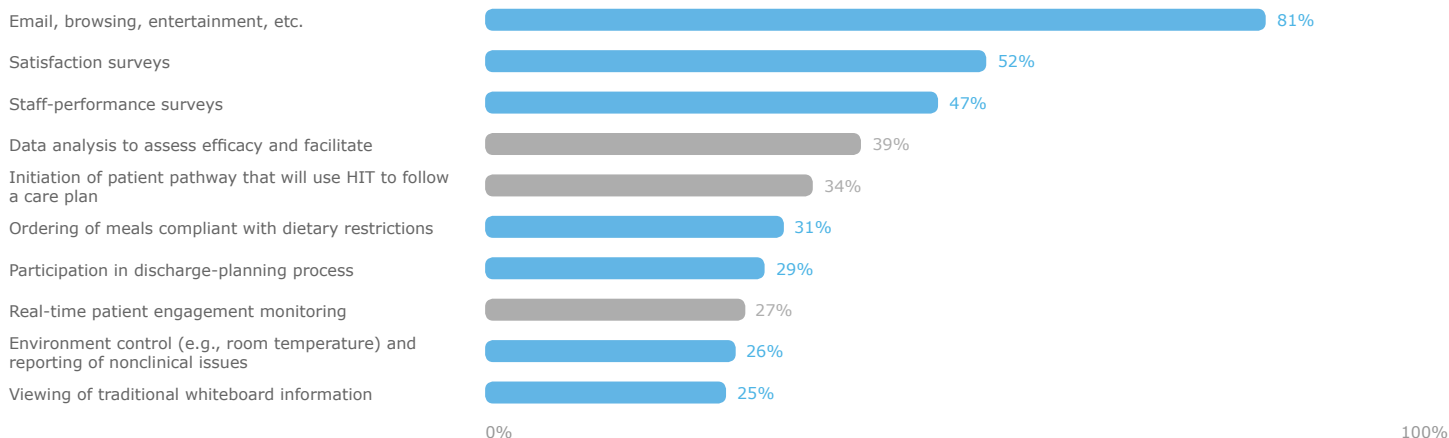


Patient Engagement Capabilities Offered in Inpatient Setting (Not Including Pilot Programs)

(n=618)

■ Patient/family capabilities

■ Staff capabilities

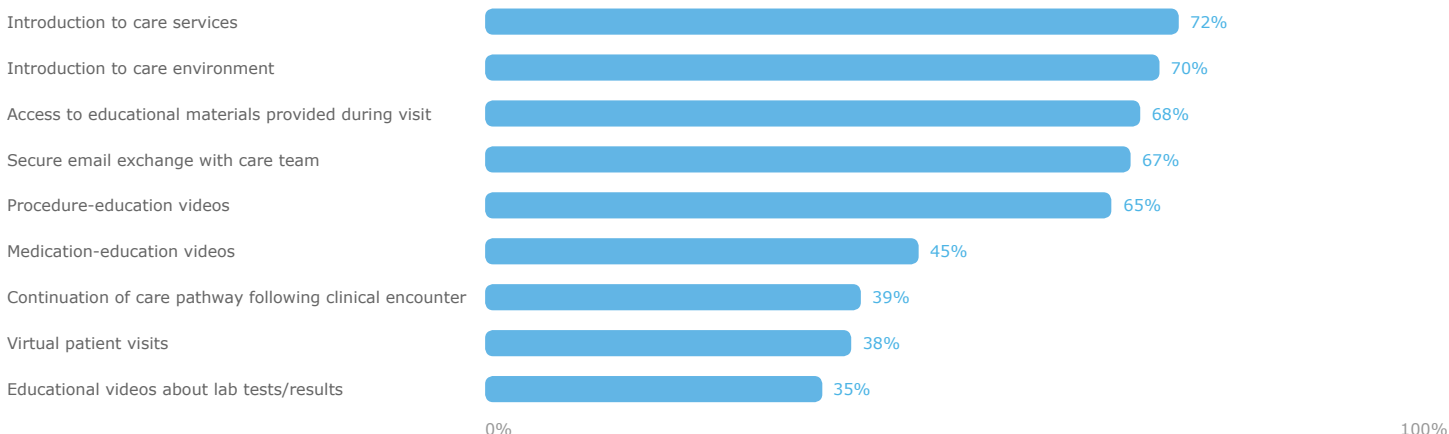


Outside the walls of the hospital, technology is being leveraged most often to introduce patients and their families to the care environment, to the care services, and to other education materials prior to inpatient visits. Virtual care is gaining traction, with over one-third of participating organizations offering virtual visits in a nonclinical setting. While this may seem low compared to adoption of other capabilities, it is actually high given that virtual care is still developing and few patients have participated in it. The progress of virtual care may indicate that the industry is approaching around-the-clock connectivity as telehealth enables clinicians to provide more direct, more easily accessed care to their patients.



Patient Engagement Capabilities Offered in Nonclinical Setting (Not Including Pilot Programs)

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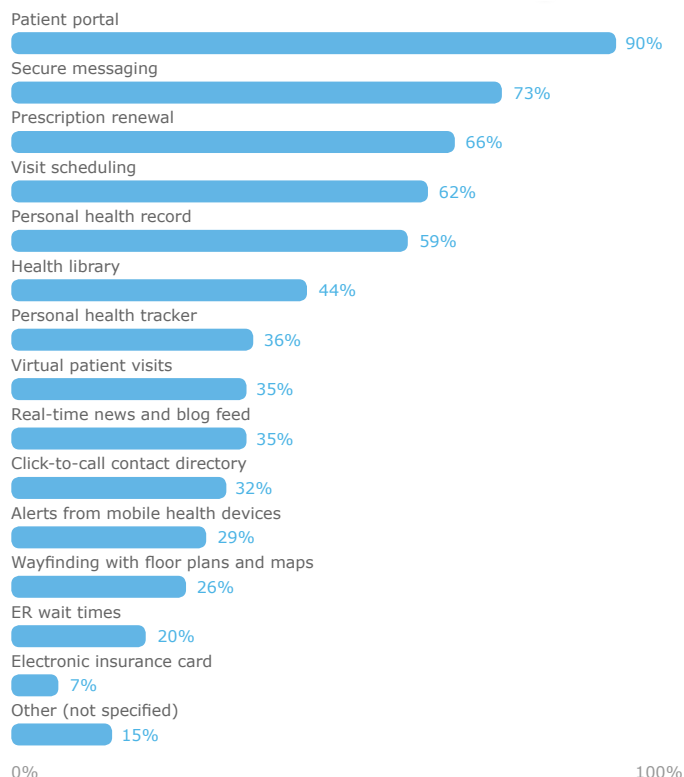
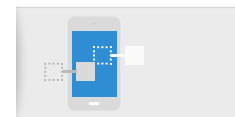


There are obstacles the industry needs to tackle in order to truly engage their communities. For example, price transparency is still emerging—only 27% of participating organizations provide the public with cost calculations for common procedures. By sharing price transparency data more freely, the industry can help empower communities to take healthcare into their own hands and make better, more informed decisions. Additionally, some organizations provide mobile applications, placing functionality and access directly in patients' hands. Patient portals and secure messaging are the two functionalities most commonly available for patients to access via mobile applications; wayfinding, ER wait times, and electronic insurance cards are the least commonly available.

Meaningful use has helped drive the development of more robust patient portal capabilities, but getting patients to actually use patient portals has remained a puzzle. In response, provider organizations are offering a myriad of capabilities to make it easier for patients to use portals to do things like renew prescriptions, pay bills, and schedule appointments. More than half of participating organizations have adopted nearly all of the clinical-communication and convenience capabilities asked about in this study. The only patient portal capabilities supported by less than 50% of participating organizations are secure messaging for billing staff, preregistration for services, and asynchronous provider visits for a defined list of problems. When it comes to advanced portal functionalities, 55% of organizations report that their patients have the ability to create personal health records (PHRs) via the organizations' patient portals or websites.

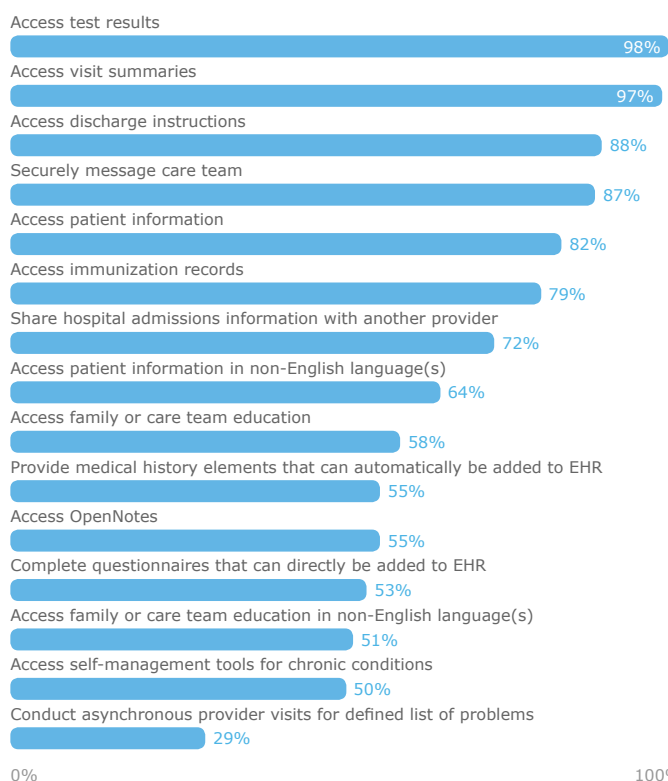
Mobile Capabilities Offered to Patients

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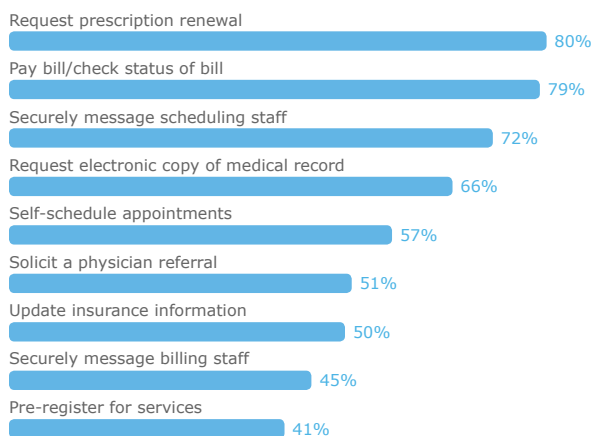
Clinical Communication Abilities Offered through Patient Portal (Not Including Pilot Programs)

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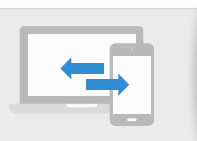


Convenience Capabilities Offered through Patient Portal

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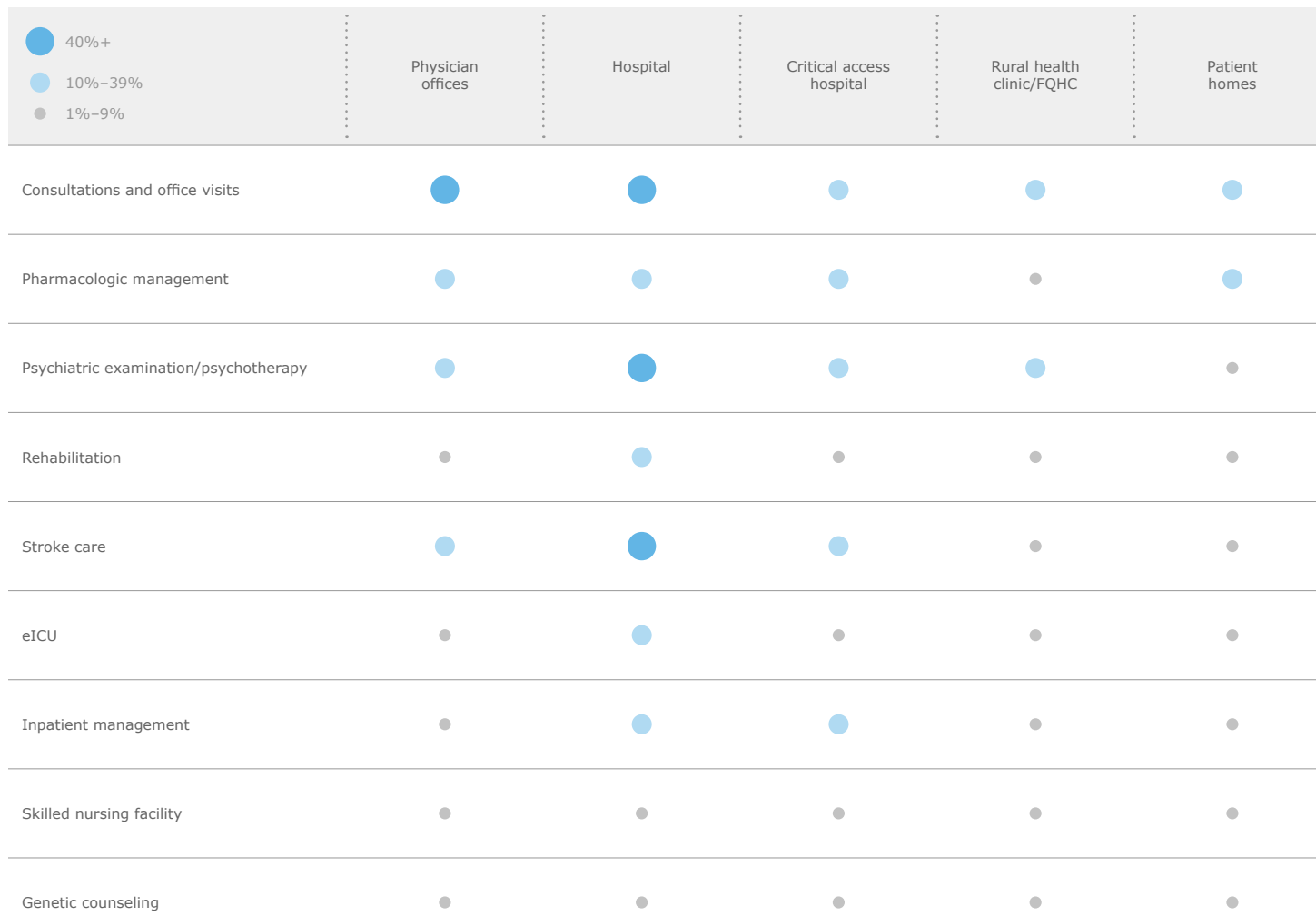


Although barriers like reimbursement limitations and evolving regulations currently prevent healthcare organizations from harnessing the full potential of telehealth services, 89% of participating organizations offer some form of telehealth services. Most of these organizations are still early in their telehealth journey; few offer focused telehealth services such as eICU, rehabilitation, genetic counseling, or skilled nursing services. Additionally, outside of the hospital or physician office, access to telehealth services is limited. By continuing to expand access to telehealth services, as well as the types of services offered, provider organizations can reap the full benefits of telehealth technologies and enable their patients to do the same.



Telehealth Services Offered—By Location

(n=618)



OTHER NOTABLE FINDINGS



Clinician Education

As organizations continue to adopt new technologies, there is a greater necessity for them to offer effective training to help clinicians become proficient with the technology. Nearly all participating organizations provide privacy, information security, EHR, and CPOE training to physicians, nurses, and other clinicians. Data-analytics training for clinicians occurs less frequently, at about 63% of participating organizations. While most trainings measured in this study are offered to physicians at about the same rate as they are offered to nurses, there is a large discrepancy between the two groups when it comes to training for voice recognition software. 86% of participating organizations offer this training to physicians, while only 35% offer it to nurses.



Imaging

54% of participating organizations report that they have deployed an enterprise imaging strategy to leverage a vendor-neutral archive, allowing their clinicians to access a variety of diagnostic images using a unified interface. Radiology and cardiology images are accessed most frequently, while fewer than one-third of participating organizations give access to dermatology, endoscopy, bronchoscopy, ophthalmology, and pathology images. 43% of organizations have adopted imaging decision support for radiology orders.



Opioid Management

Just over 50% of participating organizations use ePrescribing for controlled substances, and 48% have their ePrescribing module connected to a prescription drug monitoring program (PDMP). The most frequently leveraged opioid-reduction strategies are using non-narcotics in order sets (70%) and limiting the number of pills given per prescription (63%). Electronic education programs for patients are being used least, with only 30% of organizations doing so.



RFID/RTLS

RFID/RTLS technology is being used in some capacity by 71% of participating organizations. 12% have integrated their bed-tracking systems with RFID/RTLS technology to automate patient movement. These same organizations have deeper adoption of auto-ID technology for tracking or identifying surgical and medical supplies, moveable equipment, bulk medications, and human milk.