HEALTHCARE'S
MOST WIRED:
NATIONAL
TRENDS 2019

Introduction

Historically, the intent of the CHIME HealthCare's Most Wired report has been to provide the industry with a clear picture of healthcare IT adoption and strategy. Building on this focus, the 2019 report not only measures high-interest areas of IT, but also incorporates year-over-year trends as well as insights regarding the impact these technologies have on patient, clinician, operational, and financial outcomes.

This year's research answers several key questions, including (but not limited to) the following:

1. How much progress has the industry made with population health management, including with the adoption of key technologies, like telehealth?
2. How much risk are hospitals taking on as they shift to value-based care?
3. How have security programs evolved amid ever-increasing security threats?
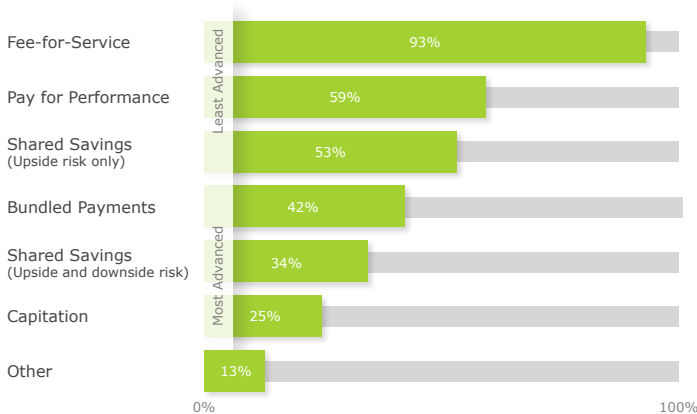
Alternative Payment Models Account for 25% of Revenue

Although legislative pressure to transition to value-based care began several years ago, movement to alternative payment models and changes to healthcare reimbursement have been slow.

Most organizations use a mix of payment models. 93% of participating organizations still use fee-for-service in some way; most of the remaining 7% rely on other revenue streams, like government payments or donations. Fee-for-service is unlikely to be eliminated entirely, but value-based payment models will likely continue to expand to comprise more of organizations' revenue streams. Even organizations that have started using more advanced payment models (e.g., capitation or shared savings with upside and downside risk) tend to continue using more foundational value-based models (e.g., pay-for-performance or shared savings with upside risk only). Currently, at an industry level, only 26% of all revenue comes from value-based payment models.

Percentage of Organizations Participating in the Following Payment Models
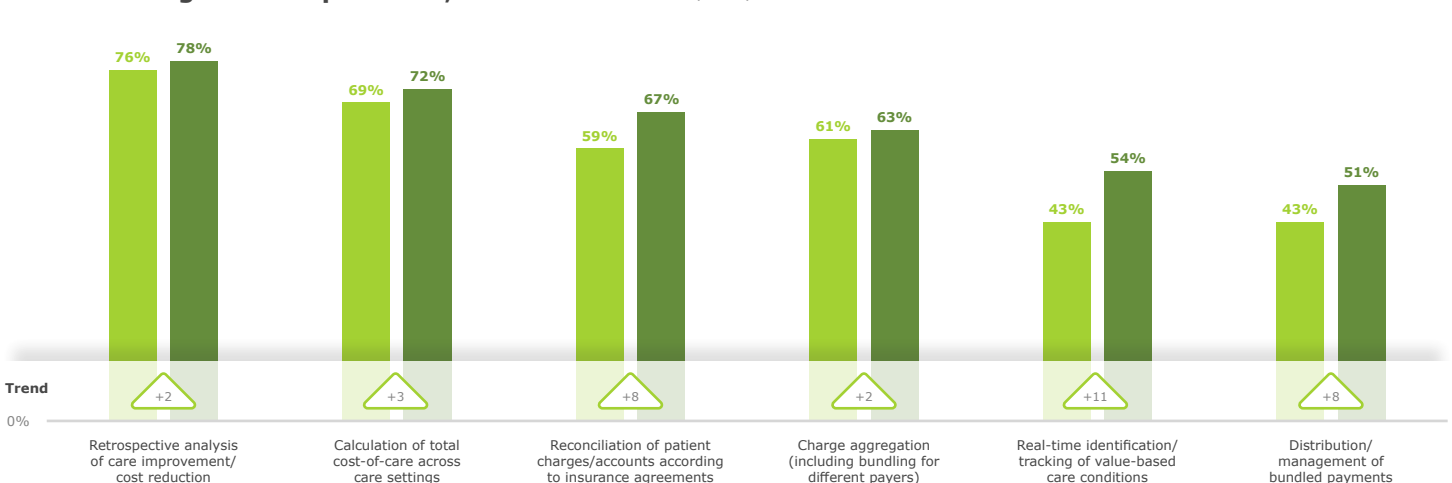(n=459)

Least Advanced		
Fee-for-Service	93%	
Pay for Performance	59%	
Shared Savings (Upside risk only)	53%	

Most Advanced		
Bundled Payments	42%	
Shared Savings (Upside and downside risk)	34%	
Capitation	25%	

| Other | 13% | |

0% — 100%

Average Percentage of Total Revenue

Capitation 3%
Bundled Payments 5%
Shared Savings (Upside and downside risk) 4%
Shared Savings (Upside risk only) 7%
Pay for Performance 7%
Fee-for-Service 74%
(n=459)
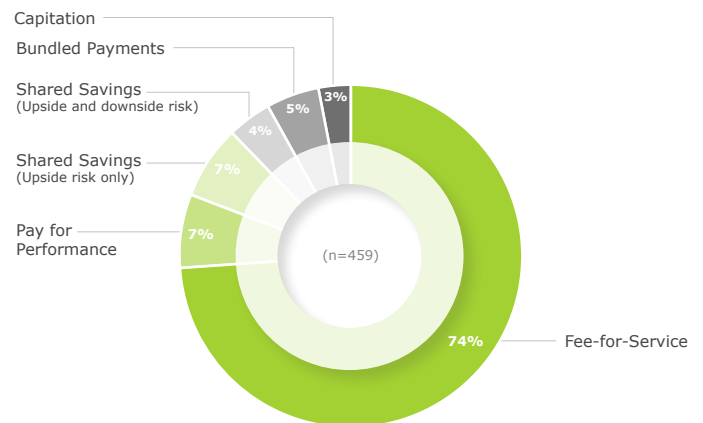
To accelerate the transition to value-based care, healthcare organizations need the appropriate financial tools. From 2018 to 2019, some of the largest increases in adoption of revenue cycle and contract management capabilities were for more advanced capabilities, like real-time identification and tracking of value-based care conditions (up 11 percentage points) and distribution and management of bundled payments (up 8 points). For most other capabilities, the increase in adoption was substantially less. While improvements have been made, adoption is still insufficient to drive significant market changes.

Adoption of Revenue Cycle and Contract Management Capabilities, ■ 2018 vs. ■ 2019 (n=496)

Capability	2018	2019	Trend
Retrospective analysis of care improvement/ cost reduction	76%	78%	+2
Calculation of total cost-of-care across care settings	69%	72%	+3
Reconciliation of patient charges/accounts according to insurance agreements	59%	67%	+8
Charge aggregation (including bundling for different payers)	61%	63%	+2
Real-time identification/ tracking of value-based care conditions	43%	54%	+11
Distribution/ management of bundled payments	43%	51%	+8

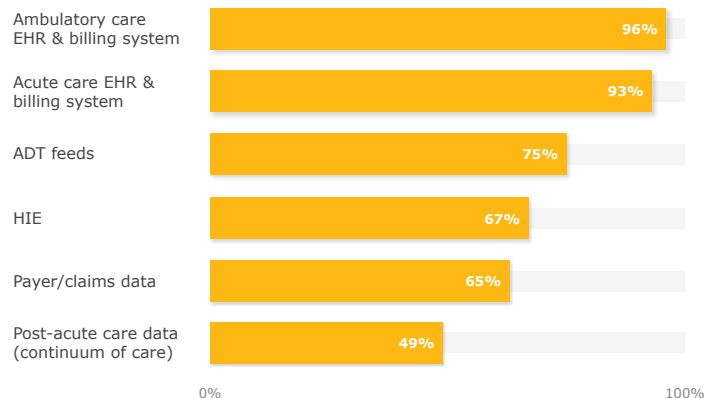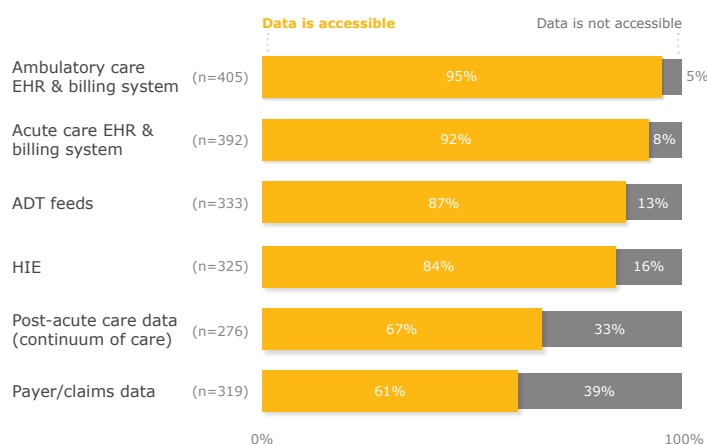## Disease Registries Foundational to Population Health

Segmenting patients into actionable groups is a core function of population health tools. Disease registries provide pre-defined parameters for such segmentation, and 83% of responding organizations report having an electronic disease registry. However, in order to segment patients accurately, organizations need their disease registry to be fed quality data from a wide variety of sources. While nearly all respondents have connected internal data sources (e.g., ambulatory and acute care EHRs) to their disease registry (96% and 93%, respectively), fewer respondents report pulling in data from external sources, such as HIEs, payer systems, or post–acute care systems. It is critical for clinicians to not only have needed data within the disease registry but also be able to access it at the point of care to help guide patient treatment.

Data Sources That Contribute to Disease Registry
(n=412)

Data Source	Percentage
Ambulatory care EHR & billing system	96%
Acute care EHR & billing system	93%
ADT feeds	75%
HIE	67%
Payer/claims data	65%
Post-acute care data (continuum of care)	49%

0% — 100%

Disease-Registry Data Accessible at Point of Care

Data is accessible / Data is not accessible

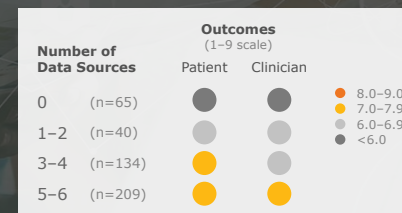| Data Source	Data is accessible	Data is not accessible
Ambulatory care EHR & billing system (n=405)	95%	5%
Acute care EHR & billing system (n=392)	92%	8%
ADT feeds (n=333)	87%	13%
HIE (n=325)	84%	16%
Post-acute care data (continuum of care) (n=276)	67%	33%
Payer/claims data (n=319)	61%	39%

0% — 100%

Note: Not all respondents who indicated they have a disease registry answered questions about whether data is accessible at the point of care; only those who answered are represented here.

As organizations expand the number of data sources contributing to their disease registry, they report a positive effect on patient and clinician outcomes.

Impact of Population Health Technologies on Patient and Clinician Outcomes
By number of data sources contributing to disease registry

Number of Data Sources	Outcomes (1–9 scale)	
	Patient	Clinician
0 (n=65)	●	●
1–2 (n=40)	●	●
3–4 (n=134)	●	●
5–6 (n=209)	●	●

- ● 8.0–9.0
- ● 7.0–7.9
- ● 6.0–6.9
- ● <6.0

Population Health Activities Steadily Growing

As provider organizations have developed a better understanding of what is needed to succeed with population health management, adoption of tools for population health activities has grown. In 2018, the average was 68%; it rose to 72% in 2019. More basic tools have the highest adoption; for example, on average, 81% of participating organizations have adopted various tools for care management. Adoption of more advanced tools is much lower; for example, 40% of participating organizations have adopted a full CRM solution and 46% have tailored advanced analytics.
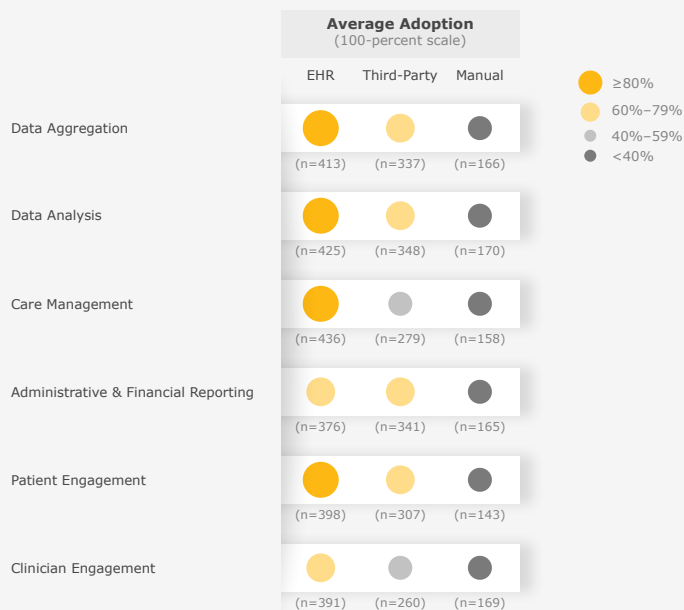
Activities Completed with Population Health Management Tools (n=496)

Data Aggregation

Reliable master patient index, including duplicate-record merging/deletion	80%
Compilation of longitudinal record that includes clinical, claims, and care management data	76%
Aggregation of other data sources (social determinants of health, genomics, imaging data, etc.)	62%

Data Analysis

Risk-based patient stratification	82%
Identification and tagging of patient groups to develop internal registries	79%
Tailored advanced predictive/prescriptive analytics (i.e., AI, machine learning)	46%

Care Management

Care-gap identification	87%
Chronic-disease management	84%
Care management workflow empowered with data-driven intelligence	71%

Administrative & Financial Reporting

Network-utilization tracking and network-optimization analysis	68%
Financial performance tracking under risk-based contracts	67%
Total cost-of-care analytics	64%

Patient Engagement

Targeting of patients for outreach	85%
Secure messaging between patients, care provider and care managers	80%
Full CRM that includes integrated patient portal, outreach, education, and satisfaction	40%

Clinician Engagement

Prioritized guidance on patient care gaps and statuses	88%
Quality measures and analytics at the physician level (including MIPS, MACRA, etc.)	69%
Tracking of clinician usage of population health tools and activities	65%

0%   100%

With no one-stop shop for population health management, the typical provider organization uses a mix of solution types (EHR, third-party, and manual) for their population health efforts. For most organizations, the EHR is a natural starting point, and over 80% of organizations report using their EHR for various population health activities. Expanding on the functionality of their EHR, 63% use third-party solutions. Even with the availability of advanced EHR and third-party tools, a majority of organizations also continue to use manual tools for some aspects of their population health strategy.

Organizations that use both EHR and third-party tools but no manual tools for population health report a stronger impact from their population health technology on patient, clinician, operational, and financial outcomes.

Types of Technologies in Use for Population Health Management Activities

Average Adoption (100-percent scale)

	EHR	Third-Party	Manual
Data Aggregation	●≥80% (n=413)	●60%–79% (n=337)	●40%–59% (n=166)
Data Analysis	●≥80% (n=425)	●60%–79% (n=348)	●40%–59% (n=170)
Care Management	●≥80% (n=436)	●40%–59% (n=279)	●40%–59% (n=158)
Administrative & Financial Reporting	●60%–79% (n=376)	●60%–79% (n=341)	●40%–59% (n=165)
Patient Engagement	●≥80% (n=398)	●60%–79% (n=307)	●40%–59% (n=143)
Clinician Engagement	●60%–79% (n=391)	●40%–59% (n=260)	●40%–59% (n=169)

Legend:
- ● ≥80%
- ● 60%–79%
- ● 40%–59%
- ● <40%

Patient Engagement

The main purpose of patient engagement technology is to help patients take control of their own care—a critical capability in light of the consumerization of healthcare. This type of patient involvement also helps advance Triple Aim outcomes. This section focuses on three areas of patient engagement: patient portals, price transparency solutions, and telehealth solutions. Many organizations offer this technology; however, the struggle lies in getting the adoption needed to actually drive patient and organization outcomes. For example, two-thirds of organizations with a telehealth solution report that less than 10% of patients have used it.

Patient Portal Adoption & Use on the Rise

Patient portals are often the first tools organizations deploy to help them engage patients in their own care. 98% of participating healthcare organizations offer a patient portal, though there is variation in which capabilities are included.

Because of meaningful use requirements, almost all portals include core clinical information, like test results and visit summaries. Other foundational, clinically relevant information and capabilities—e.g., discharge instructions and secure messaging—are also frequently included. Only about half of organizations offer eVisit functionality or self-management tools for chronic conditions, though adoption of the latter has increased 15 percentage points since 2018. Other areas with positive growth include appointment self-scheduling (by 15 points) and the ability to update insurance information (by 13 points).

Regardless of a facility's size or type, the impact of their patient engagement technology on outcomes (patient, clinician, operational, or financial) increases as more patients use the portal.

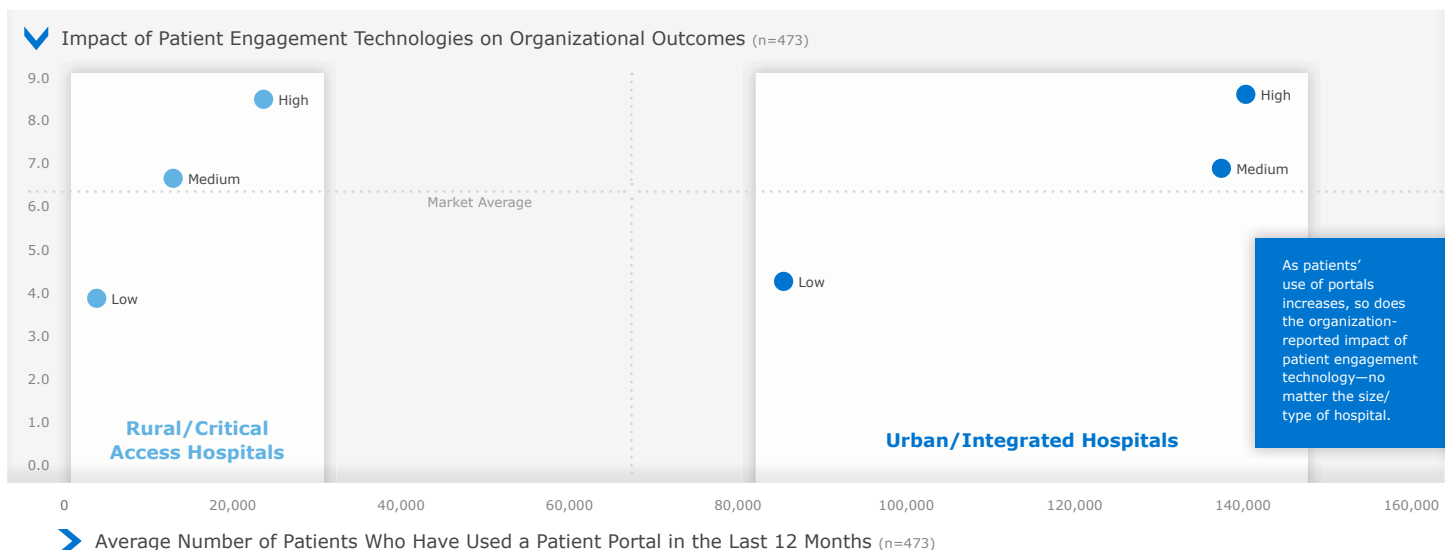### Clinical Communication Abilities Offered through Patient Portal
(Not including pilot programs) (n=496)

Trend (2018 vs. 2019)
— 0%
▲ +1%–5%
▲ +6%–10%
▲ +11% and up

Capability	%	Trend
Access test results	98%	—
Access visit summaries	98%	▲
Access discharge instructions	95%	▲
Securely message care team	91%	▲
Access patient information	88%	▲
Access immunization records	86%	▲
Access bill payment/status	82%	▲
Access prescription-renewal request tool	82%	▲
Share hospital admissions information with another provider	80%	▲
Access electronic copy of medical record	75%	▲
Access patient information in non-English language(s)	74%	▲
Access self-scheduling tools for appointments and reminders	72%	▲
Automatically add medical history elements to EHR	67%	▲
Access family or care team education	65%	▲
Complete questionnaires that can be added directly to EHR	65%	▲
Ability to update insurance information	63%	▲
Access OpenNotes	59%	▲
Access family or care team education in non-English language(s)	58%	▲
Access self-management tools for chronic conditions	55%	▲
Conduct asynchronous provider visits for defined list of problems	44%	▲

0% — 100%

Average Impact of Patient Engagement Technologies vs. Patient Portal Usage
Respondent ratings for the impact of their patient engagement technologies on patient, clinician, operational, and financial outcomes

▼ Impact of Patient Engagement Technologies on Organizational Outcomes (n=473)

Market Average

Rural/Critical Access Hospitals — High, Medium, Low

Urban/Integrated Hospitals — High, Medium, Low

As patients' use of portals increases, so does the organization-reported impact of patient engagement technology—no matter the size/type of hospital.

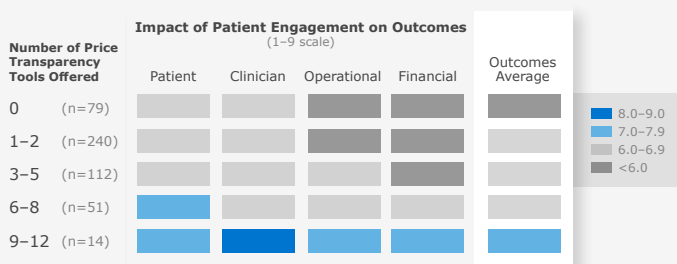▶ Average Number of Patients Who Have Used a Patient Portal in the Last 12 Months (n=473)

Price Transparency Still in Its Infancy

Amid efforts to reduce costs, price transparency tools have been of high interest in healthcare in recent years; energy was further heightened by the June 2019 presidential executive order mandating that hospitals publish prices for patients. Without effective price transparency tools, patients are limited in their ability to make meaningful price comparisons, impeding efforts to reduce the cost of healthcare.
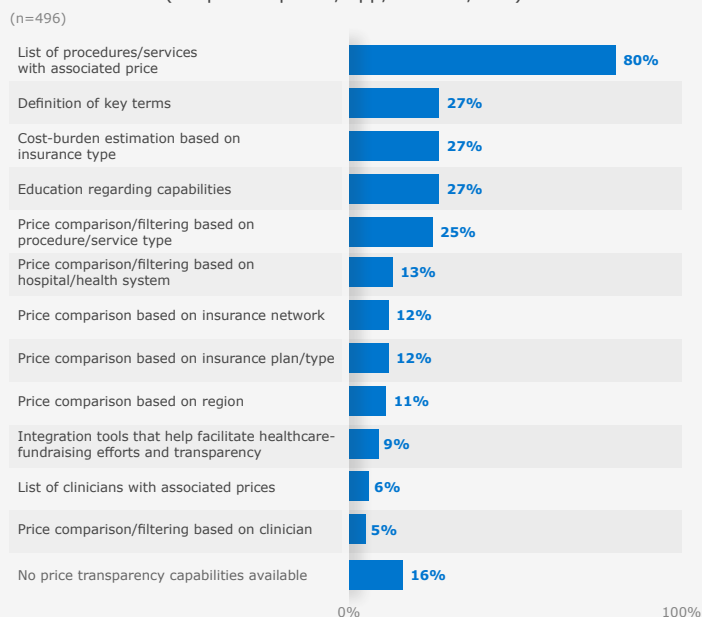
Although 80% of respondents provide price lists for their offered procedures and services, true price comparison is still a long way off. Only 36% of organizations offer three or more of the price transparency capabilities tracked by the Most Wired survey; 25% offer price filtering or comparison based on procedure or service. Even fewer offer filtering based on other criteria, like health system (13%), insurance plan or type (12%), insurance network (12%), region (11%), or specific clinician (5%). 16% of organizations offer no price transparency tools at all.

As more price transparency capabilities are offered, the impact of patient engagement technology on outcomes (patient, clinician, operational, or financial) increases; the greatest impact is on patient and clinician outcomes.

Impact of Patient Engagement Technologies
By number of price transparency tools offered

Impact of Patient Engagement on Outcomes (1–9 scale)

Number of Price Transparency Tools Offered	Patient	Clinician	Operational	Financial	Outcomes Average
0 (n=79)					
1–2 (n=240)					
3–5 (n=112)					
6–8 (n=51)					
9–12 (n=14)					

Legend:
- 8.0–9.0
- 7.0–7.9
- 6.0–6.9
- <6.0

Price Transparency Capabilities Provided to Patients (via patient portal, app, website, etc.)
(n=496)

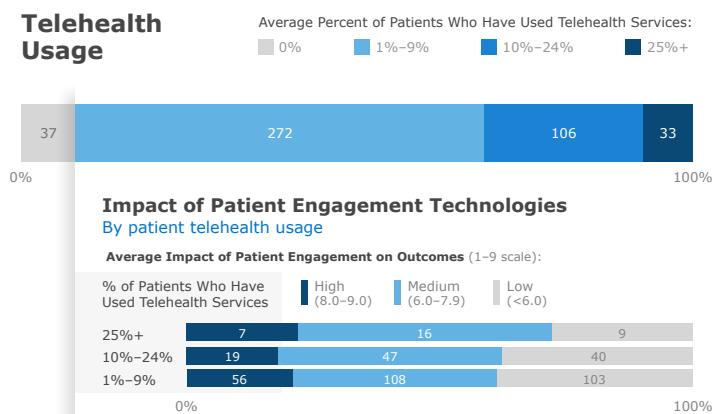| Capability	Percent
List of procedures/services with associated price	80%
Definition of key terms	27%
Cost-burden estimation based on insurance type	27%
Education regarding capabilities	27%
Price comparison/filtering based on procedure/service type	25%
Price comparison/filtering based on hospital/health system	13%
Price comparison based on insurance network	12%
Price comparison based on insurance plan/type	12%
Price comparison based on region	11%
Integration tools that help facilitate healthcare-fundraising efforts and transparency	9%
List of clinicians with associated prices	6%
Price comparison/filtering based on clinician	5%
No price transparency capabilities available	16%

Telehealth Deployment High, but Patient Use Low

Adoption of telehealth technology, which can improve access to healthcare and lower costs, continues to expand. 90% of organizations offer some virtual services in hospitals; about 85% do so in physician offices and patient homes. However, 24% of organizations offer no telehealth services in post–acute care facilities, like SNFs and long-term care facilities, where virtual care has the potential to reduce costly rehospitalization. Since 2018, adoption has increased most for standard activities—such as consultations and office visits in physician offices (up 11 percentage points) and patient homes (15 points)—as well as for inpatient management in hospitals (11 points).
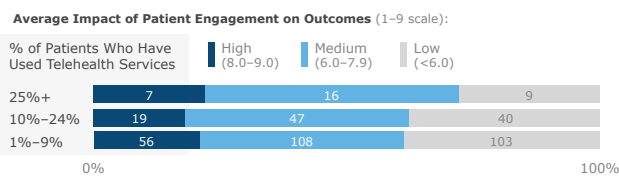
Telehealth Usage

Average Percent of Patients Who Have Used Telehealth Services:
- 0%
- 1%–9%
- 10%–24%
- 25%+

37	272	106	33

0% — 100%

Impact of Patient Engagement Technologies
By patient telehealth usage

Average Impact of Patient Engagement on Outcomes (1–9 scale):
- High (8.0–9.0)
- Medium (6.0–7.9)
- Low (<6.0)

% of Patients Who Have Used Telehealth Services	High	Medium	Low
25%+	7	16	9
10%–24%	19	47	40
1%–9%	56	108	103

0% — 100%

Note: Not all respondents who reported the average percentage of patients who have used telehealth services chose to answer questions related to impact.
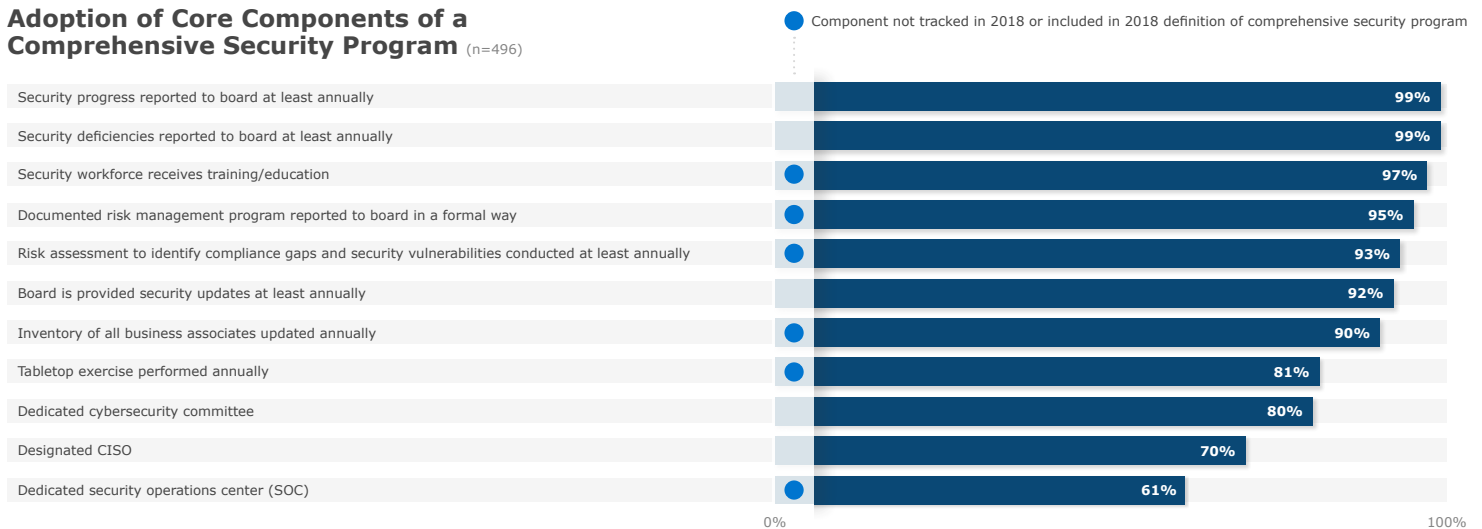
While organizations have expanded their telehealth offerings, patient adoption remains low. Two-thirds of organizations report less than 10% of patients have used their telehealth services. However, some organizations are making more headway—about one-quarter say 10%–24% of their patients have used their telehealth services.

The good news is that even small levels of telehealth use can have a significant impact on outcomes. As more organizations mature their telehealth offerings and patients increase their use of telehealth services, the impact of telehealth as a patient engagement tool may increase further.

Telehealth Services Offered—By Location (n=496)

Legend:
- >40%
- 20%–40%
- 10%–19%
- <10%

Service	Physician offices	Hospitals	Post–acute care facilities	Patient homes
Addiction treatment and consulting	<10%	<10%	<10%	<10%
Consultations and office visits	>40%	>40%	10%–19%	>40%
eICU	<10%	20%–40%	<10%	<10%
Genetic counseling	<10%	<10%	<10%	<10%
Inpatient management	<10%	20%–40%	<10%	<10%
Pharmacologic management	20%–40%	20%–40%	<10%	10%–19%
Psychiatric examination/psychotherapy	20%–40%	>40%	<10%	10%–19%
Rehabilitation	<10%	<10%	<10%	<10%
Stroke care	<10%	>40%	<10%	<10%
No telemedicine services available	<10%	<10%	20%–40%	<10%

Security

37% of Organizations Have Comprehensive Security Program

Despite increased industry focus on healthcare cybersecurity, many organizations still have room to improve their security programs. 73% of participating organizations report that since 2018 the number of security-related incidents they experience has either stayed the same or increased. To measure how prepared the industry is for such incidents, respondents were asked which security program components they have in place; only 30% indicated they have a comprehensive security program (i.e., adoption of all components). Large organizations seem to be better prepared: 45% of organizations with over 1,000 beds have a comprehensive security program compared to only 12% of organizations with less than 200 beds. Additionally, 35% of urban/integrated organizations have a comprehensive security program compared to only 7% of rural/critical access organizations.
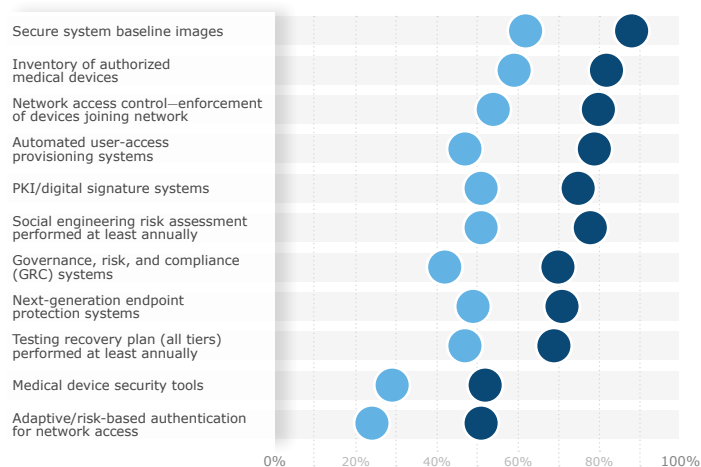
Adoption of Core Components of a Comprehensive Security Program (n=496)

● Component not tracked in 2018 or included in 2018 definition of comprehensive security program

Component	Adoption
Security progress reported to board at least annually	99%
Security deficiencies reported to board at least annually	99%
Security workforce receives training/education ●	97%
Documented risk management program reported to board in a formal way ●	95%
Risk assessment to identify compliance gaps and security vulnerabilities conducted at least annually ●	93%
Board is provided security updates at least annually	92%
Inventory of all business associates updated annually ●	90%
Tabletop exercise performed annually ●	81%
Dedicated cybersecurity committee	80%
Designated CISO	70%
Dedicated security operations center (SOC) ●	61%

0%   100%

Organizations that have a comprehensive program are much more likely to have security-related technologies and protocols in place (by about 25 percentage points on average). But regardless of how comprehensive their program is, all organizations have room for improvement. Half of organizations with a comprehensive program (and 70% of those with a non-comprehensive program) don't have measures in place for medical device security. Even more lack adaptive or risk-based authentication for network access.
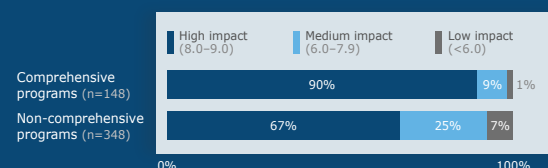
Adoption of Security Measures

● Organizations with a **comprehensive†** security program (n=148)
● Organizations with a **non-comprehensive** security program (n=348)

- Secure system baseline images
- Inventory of authorized medical devices
- Network access control—enforcement of devices joining network
- Automated user-access provisioning systems
- PKI/digital signature systems
- Social engineering risk assessment performed at least annually
- Governance, risk, and compliance (GRC) systems
- Next-generation endpoint protection systems
- Testing recovery plan (all tiers) performed at least annually
- Medical device security tools
- Adaptive/risk-based authentication for network access

0% 20% 40% 60% 80% 100%

† A comprehensive program entails adoption of all core components listed in the chart titled "Adoption of Core Components of a Comprehensive Security Program."

Organizations with a comprehensive security program and high adoption of the security measures in the chart to the left see more outcomes from their security technologies—90% of such organizations report their security technology has a high positive overall impact, compared to 67% of other organizations. This trend also holds for the individual security outcomes measured (securing PHI, protecting against internal threats, and protecting against external threats).

Impact of Security Technologies on Security-Related Outcomes
By maturity of security program

	High impact (8.0–9.0)	Medium impact (6.0–7.9)	Low impact (<6.0)
Comprehensive programs (n=148)	90%	9%	1%
Non-comprehensive programs (n=348)	67%	25%	7%

0%   100%

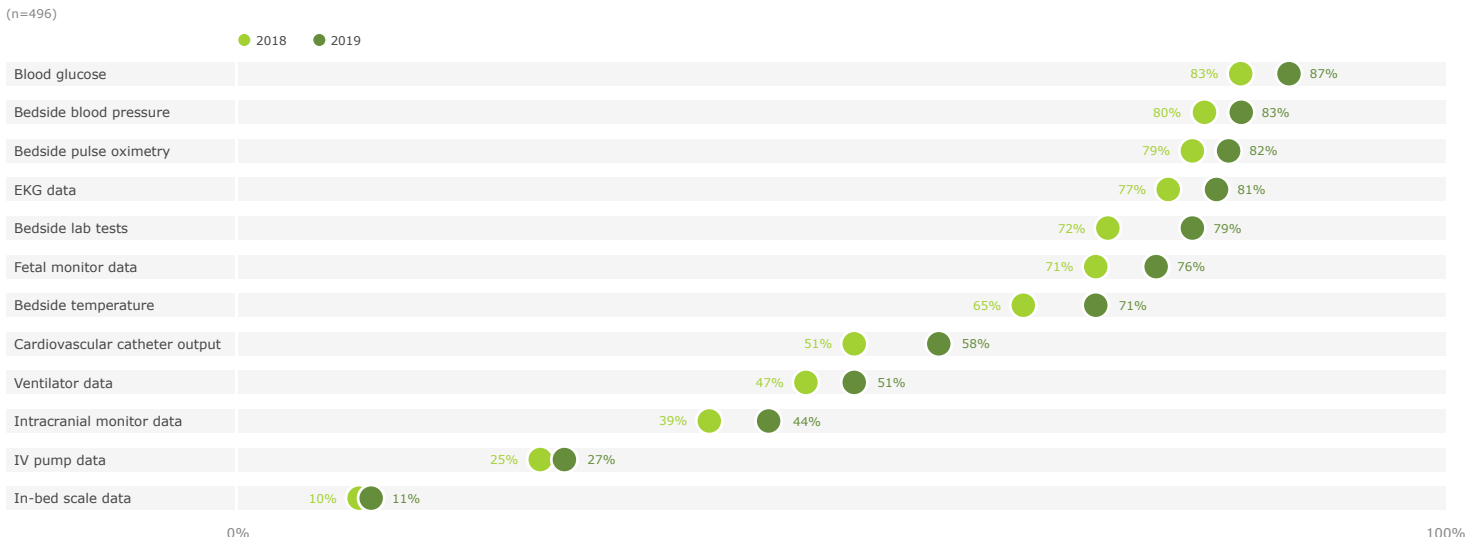## EHR Remote Access at 100%; Other Areas Lacking

In an increasingly digital, mobile world, it is more important than ever that clinicians have ready access to relevant patient information. Providing remote access to EHR and imaging data is the first step, which nearly all participating organizations have taken. The remote-access capabilities with the largest increases in adoption since 2018 are virtual patient visits and secure texting (up 11 percentage points each). More advanced capabilities are less likely to be offered remotely—less than 50% of organizations enable remote clinician access to alerts/notifications for chronic patients and to data from implants or RFID/RTLS solutions.

Data Integration Growing

Because the EHR is at the center of patient care and the clinician workflow, clinicians need the EHR to provide access to high-quality patient data from all relevant sources. On average, 99% of organizations have access to clinical documents (i.e., study results, discharge instructions, nurses' notes, operative reports) directly in their EHR. Organizations less often integrate data such as tracking of hospital-acquired infections (69%) and clinical summaries from outside organizations (81%). Collecting information from outside the health system is especially challenging—only 41% of organizations have at least 95% of summary-of-care records from referrals/care transitions input directly into the EHR.

Data/Functions Clinicians Can Access Remotely from Outside the Hospital Network (n=496)

● 2018 ● 2019

	2018	2019
Full EHR	99%	100%
Full PACS/imaging data	98%	98%
Patient communication	86%	92%
Secure texting	72%	83%
Secure messaging via HISP	73%	74%
Virtual patient visits	60%	71%
Secure messaging using non-HISP vehicle	55%	62%
Alerts/notifications for chronic patients†		49%
Data from connected implants or RFID/RTLS received on smart devices†		22%

0%   100%

† Not measured in 2018 survey

Especially when ingested directly into the EHR, data from patient-monitoring equipment can help reduce human error and keep clinicians up to date on a patient's condition. Organizations that integrate at least seven of the measured types of patient-monitoring data into their EHR report a 10% higher impact on outcomes. A majority of participating organizations have integrated at least one patient-monitoring data source; 5% have no such integration. For many data sources (i.e., ventilator data, intracranial monitor data, IV pump data), adoption of integration is still low.

Information Sent Directly from Patient-Monitoring Equipment to the EHR
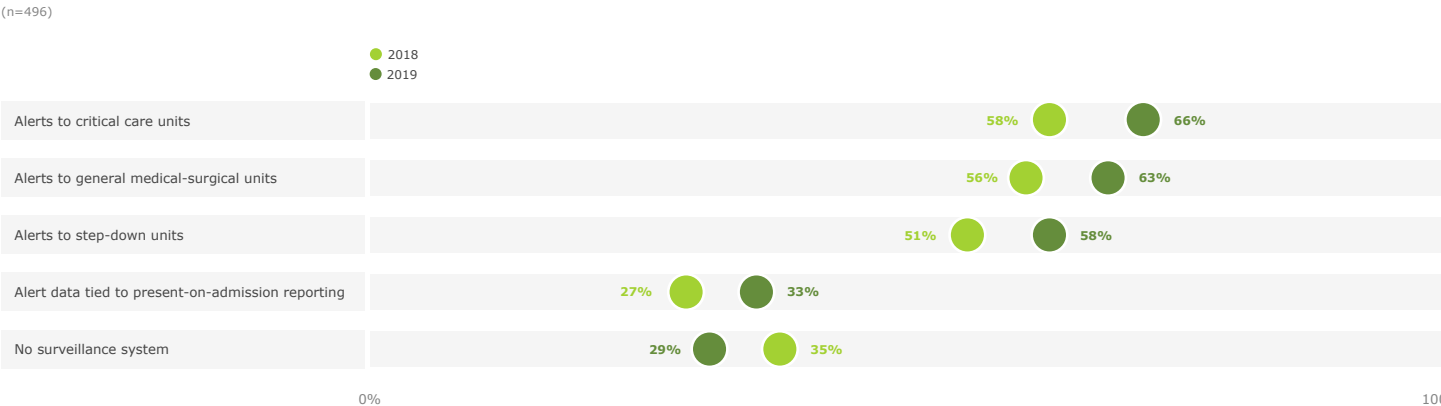(n=496)

● 2018 ● 2019

	2018	2019
Blood glucose	83%	87%
Bedside blood pressure	80%	83%
Bedside pulse oximetry	79%	82%
EKG data	77%	81%
Bedside lab tests	72%	79%
Fetal monitor data	71%	76%
Bedside temperature	65%	71%
Cardiovascular catheter output	51%	58%
Ventilator data	47%	51%
Intracranial monitor data	39%	44%
IV pump data	25%	27%
In-bed scale data	10%	11%

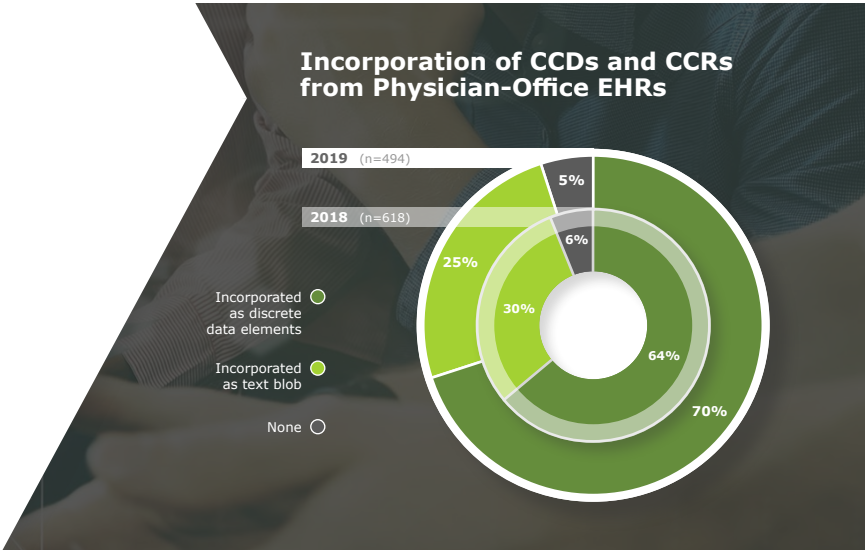0%   100%

Compared to last year, all data sources are being integrated at a higher rate. 6% more organizations report having a surveillance system, and EHR-integrated alerts from various units have increased across the board. 29% still lack a clinical surveillance system, a necessary tool for clinicians to be notified in real time about critical patient conditions, such as sepsis. Organizations that have a surveillance system integrated with their EHR most frequently send alerts to critical care units (66%) and medical-surgical units (63%).

Types of Clinical Alerts Sent from an EHR-Integrated Surveillance System
(n=496)

● 2018
● 2019

	2018	2019
Alerts to critical care units	58%	66%
Alerts to general medical-surgical units	56%	63%
Alerts to step-down units	51%	58%
Alert data tied to present-on-admission reporting	27%	33%
No surveillance system	29%	35%

0%   100%

Market Moving to Discrete Integration of External Data

As a whole, the healthcare industry is shifting away from consuming external data as text blobs and moving toward directly integrating data discretely into the EHR. Compared to 2018, more organizations (by 6 percentage points) can consume CCD data into their EHR as discrete data, and 98% of organizations contribute data to CCDs. The average percent of organizations that consume data from an outside entity (regardless of type) is 5 percentage points higher than in 2018. Consumption of data from outside hospitals and physician practices has risen (nearly 90% of organizations do so), though there is still significant room for improvement in data consumption from home health agencies (at 67%) and skilled nursing facilities (at 65%). Another area for improvement is payer data (currently pulled in by 70% of organizations), a critical data source for the advancement of value-based care.

Incorporation of CCDs and CCRs from Physician-Office EHRs

2019 (n=494)
2018 (n=618)

Incorporated as discrete data elements ●
Incorporated as text blob ●
None ○

5%
6%
25%
30%
64%
70%

Outside Entities from Which EHR Can Consume Discrete Data
(n=496)

● 2018
● 2019

	2018	2019
External hospital system	85%	89%
External physician practice	82%	88%
Health information exchange†		83%
External laboratory†		81%
Retail pharmacy	76%	81%
Government agency	70%	77%
Insurance company/payer†		70%
Home health agency	60%	67%
Skilled nursing/chronic care facility	60%	65%

0%   100%
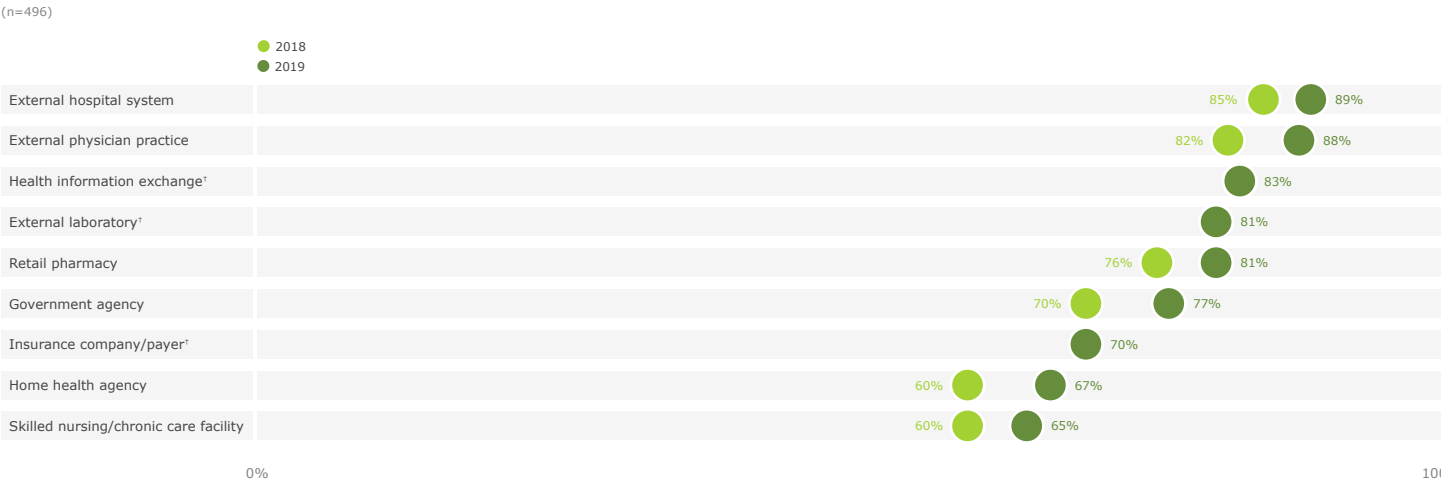
† Not measured in 2018 survey

Barriers Remain for Opioid Management

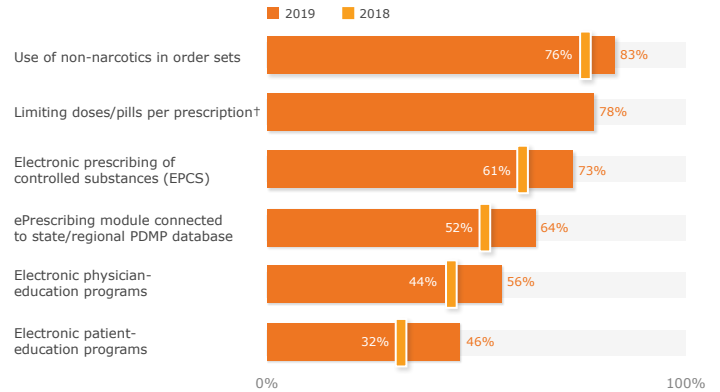Industry focus on the opioid epidemic has only grown since 2018. Electronic patient-education programs have seen the highest increase in adoption (by 14 percentage points); on average, adoption in all other areas has grown by 11 points.

However, significant barriers remain to implementing comprehensive opioid-reduction programs. For instance, although PDMP hyperlinks can be embedded into an EHR interface, some states' legislation prevents direct integration between the PDMP and EHR, making it both cumbersome and time-consuming for clinicians to screen for at-risk patients. Another factor is the difference in opinion as to what role clinicians should play in educating patients about opioid risks. Since less than half of respondents have electronic patient-education programs, the responsibility to educate patients often falls to already overwhelmed clinicians.

Information Technology Support for Opioid Use-Reduction Program
(n=496)

Legend: 2019 | 2018

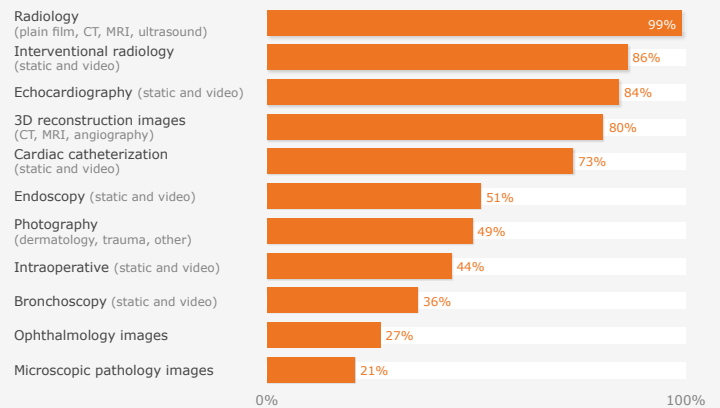| Category	2019	2018
Use of non-narcotics in order sets	76%	83%
Limiting doses/pills per prescription†	78%	
Electronic prescribing of controlled substances (EPCS)	61%	73%
ePrescribing module connected to state/regional PDMP database	52%	64%
Electronic physician-education programs	44%	56%
Electronic patient-education programs	32%	46%

0% — 100%

† Option not tracked in 2018 survey

Enterprise Imaging Strategies Vary

Having a combination of enterprise imaging tools enables healthcare organizations to facilitate centralized storage, image viewing, and image exchange within and outside the organization. Though the exact solutions included in an enterprise imaging strategy varies, nearly all organizations (99%) include at least a PACS. 39% of organizations also have a VNA, a universal viewer, and image exchange, though 15% of organizations have not expanded to these other imaging technologies. Radiology images are the most common content accessed via enterprise imaging (99% of organizations provide centralized access to these images). Enterprise access to some other types of diagnostic imaging is significantly less; for example, less than 30% of organizations provide access to microscopic pathology and ophthalmology imaging.

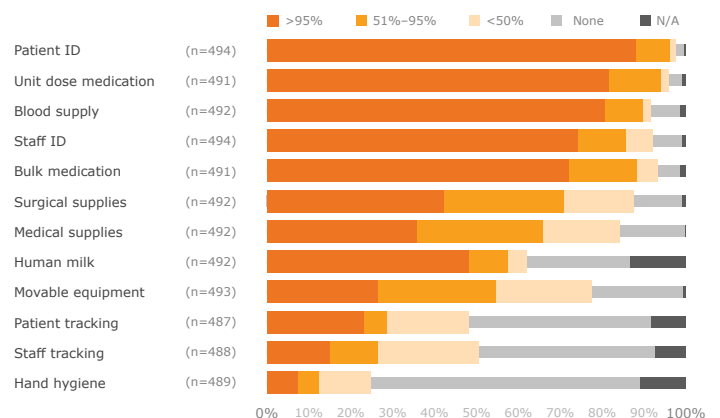### Diagnostic Images Accessed via Enterprise Imaging Strategy (n=496)

Category	Value
Radiology (plain film, CT, MRI, ultrasound)	99%
Interventional radiology (static and video)	86%
Echocardiography (static and video)	84%
3D reconstruction images (CT, MRI, angiography)	80%
Cardiac catheterization (static and video)	73%
Endoscopy (static and video)	51%
Photography (dermatology, trauma, other)	49%
Intraoperative (static and video)	44%
Bronchoscopy (static and video)	36%
Ophthalmology images	27%
Microscopic pathology images	21%

0% — 100%

Gaps in Patient, Staff & Asset Tracking

Patient, staff, and asset management are critical for organizations seeking to maintain and improve quality patient care and organizational sustainability. For inventory tracking and management, provider organizations leverage a variety of tools, including barcode scanning, RFID, and RTLS. 88% of respondents use barcode scanning to track medical, surgical, and blood supplies, and 73% use RFID or RTLS to monitor people and assets (i.e., staff and patient ID, movable equipment). Organizations are less likely to use auto-ID technology for tracking the location of staff/patients or for hand-hygiene compliance.

Estimated Percentage of Tracking/Identifying Done Using Auto-ID Technology (Barcode, RFID)

Legend: >95% | 51%–95% | <50% | None | N/A

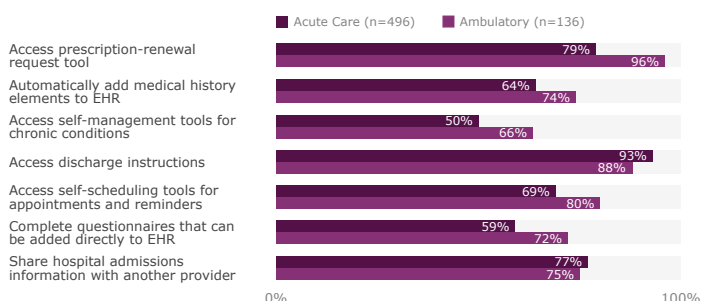| Category	
Patient ID	(n=494)
Unit dose medication	(n=491)
Blood supply	(n=492)
Staff ID	(n=494)
Bulk medication	(n=491)
Surgical supplies	(n=492)
Medical supplies	(n=492)
Human milk	(n=492)
Movable equipment	(n=493)
Patient tracking	(n=487)
Staff tracking	(n=488)
Hand hygiene	(n=489)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Ambulatory Findings

Almost all trends identified for acute care organizations in the previous sections also hold true in ambulatory settings. The greatest differences between the two care settings relate to patient-facing technology—**patient portals**, **telehealth**, and some aspects of **population health** (see below for detailed comparisons).

There are also some smaller **security** differences between acute and ambulatory care organizations. About 70% of both groups have a comprehensive security program, but those programs differ somewhat in composition—e.g., PKI/digital signatures are used more frequently in ambulatory settings (by 13 percentage points), and social engineering is used more frequently in acute care settings (by 12 points).

Clinical Communication Abilities Offered through Patient Portal
Across Ambulatory and Acute Care Settings

Acute Care (n=496) | Ambulatory (n=136)

	Acute Care	Ambulatory
Access prescription-renewal request tool	79%	96%
Automatically add medical history elements to EHR	64%	74%
Access self-management tools for chronic conditions	50%	66%
Access discharge instructions	93%	88%
Access self-scheduling tools for appointments and reminders	69%	80%
Complete questionnaires that can be added directly to EHR	59%	72%
Share hospital admissions information with another provider	77%	75%

0% — 100%

Patient Portals More Commonly Used

Because patients interact more regularly with ambulatory facilities than acute care facilities, ambulatory organizations tend to prioritize patient portal functionality differently than acute care facilities. They report higher adoption of portal functionalities overall (by an average of almost 6 percentage points) and outstrip acute care facilities most notably in adoption of prescription-renewal requests (by 17 percentage points) and self-management tools for chronic conditions (by 16 points). In a couple of areas more closely related to acute care, ambulatory organizations report less adoption.

Note: The chart to the left only includes clinical communication abilities with notable variation between acute care and ambulatory settings. For a complete list, see page 5.

Telehealth Deployment Higher

Compared to acute care facilities, ambulatory facilities report higher deployment of telehealth services across physician offices, post–acute care settings, and patient homes. In terms of types of services offered, ambulatory facilities are more likely than acute care facilities to offer psychiatric examinations and psychotherapy in physician offices (by 9 percentage points) and patient homes (by 8 points). However, actual patient use of telehealth is low in both settings, though slightly lower in ambulatory settings—on average, 6% of ambulatory patients have used telemedicine, compared to an average of 7.8% at acute care facilities.

Compared to acute care facilities, **ambulatory facilities are more likely (by 4 percentage points) to use telehealth.**

Compared to acute care facilities, ambulatory **facilities are more likely (by 9 percentage points) to have a full CRM suite (including integrated patient outreach, education, satisfaction, and portal tools) and to offer patients secure messaging with providers.**
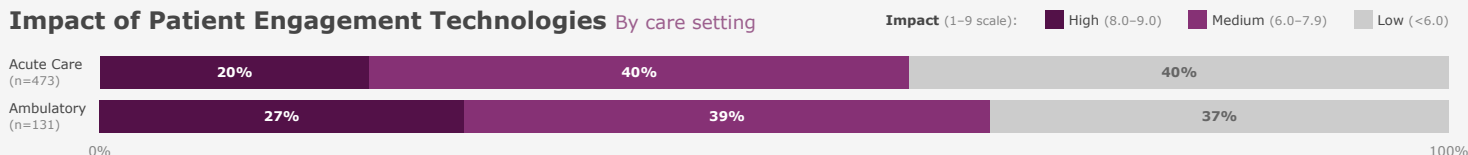
Population Health Use Further Along

Ambulatory facilities are slightly more likely (by 4 percentage points) than acute care organizations to have adopted any mix of population health technology (either EHR or third-party tools). However, ambulatory facilities are also 12 times more likely to be using manual processes for population health–related activities. The activities with the biggest differences in deployment rates are tied to patient engagement.

More Organizations See High Impact from Patient Engagement

A greater percentage of ambulatory facilities report that their patient engagement tools have a high impact on outcomes—most dramatically around clinician outcomes (higher by 8 percentage points) and financial outcomes (higher by 7 points).

Impact of Patient Engagement Technologies By care setting

Impact (1–9 scale): ■ High (8.0–9.0) ■ Medium (6.0–7.9) ▢ Low (<6.0)

	High	Medium	Low
Acute Care (n=473)	20%	40%	40%
Ambulatory (n=131)	27%	39%	37%

0% — 100%

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