FOR TOP U.S. HEALTH SYSTEMS 2018

DECEMBER 2017

CENTER FOR CONNECTED MEDICINE

Top of Mind
for Top U.S. Health Systems
2018

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The Academy
The Health Management Academy

The health information technology (IT) landscape is evolving rapidly as a growing number of digital solutions are introduced to address prominent challenges in health care, including managing and analyzing large volumes of data, improving health outcomes, lowering costs, increasing patient engagement, and securing vital digital systems. Health system leaders are tasked with making important choices about which technologies to pursue while balancing limited resources.

To provide insight into some of the top trends in health IT, the Center for Connected Medicine partnered with The Health Management Academy to survey C-suite health system executives on health IT priorities for 2018. The quantitative and qualitative surveys focused on five areas: Cybersecurity, Consumer-Facing Technology, Virtual Care, Artificial Intelligence, and Predictive Analytics.

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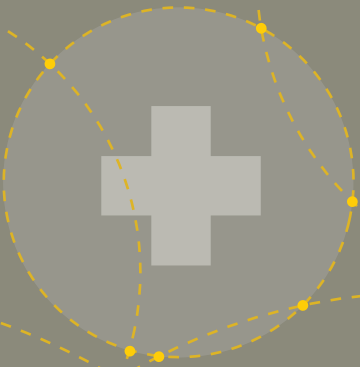
KEY FINDINGS

CYBERSECURITY

- 92% of respondents plan to increase spending on technology to boost cybersecurity in 2018.

- 44% have not opened a bitcoin wallet, or don't plan to in 2018, to be prepared to pay for a ransomware attack.

CONSUMER-FACING TECHNOLOGY

- 100% of respondents are planning to promote health and wellness apps to consumers in 2018.

- 17% expect mobile apps to be sources of valuable patient-generated data in 2018.

VIRTUAL CARE

- 39% of respondents receive reimbursement for virtual care; 45% for remote monitoring.

- Of those not receiving reimbursement, 71% to begin receiving reimbursement for virtual care in 2018.

ARTIFICIAL INTELLIGENCE

- 63% of respondents said implementation of A.I. solutions is a low or very low priority.

- 17% expect to add A.I. as a solution for handling medical costs/health plan.

PREDICTIVE ANALYTICS

- 57% of respondents are using or plan to begin using genomic testing to provide personalized medicine to patients.

- 46% will host clinical applications and data in the cloud in 2018.

METHODOLOGY

The quantitative survey, conducted July 28 through Sept. 10, 2017, targeted 35 of the largest health systems in the United States and generated a response rate of 69%. Respondents, whose titles were chief information officer, chief medical information officer or chief nursing information officer, represented health systems with average net patient revenue of $4.9 billion per year, and which own or operate a combined 357 hospitals that receive a total of 4.1 million patient admissions annually.

Following the quantitative survey, from September-November 2017, The Health Management Academy conducted qualitative interviews with 18 health system executives, whose titles were chief information officers (CIOs), chief financial officers (CFOs), and chief executive officers (CEOs). The interviews covered executives' awareness, perspective, and outlook on health IT trends for 2018, and how these topics fit into the overall strategy and priorities of their health systems.
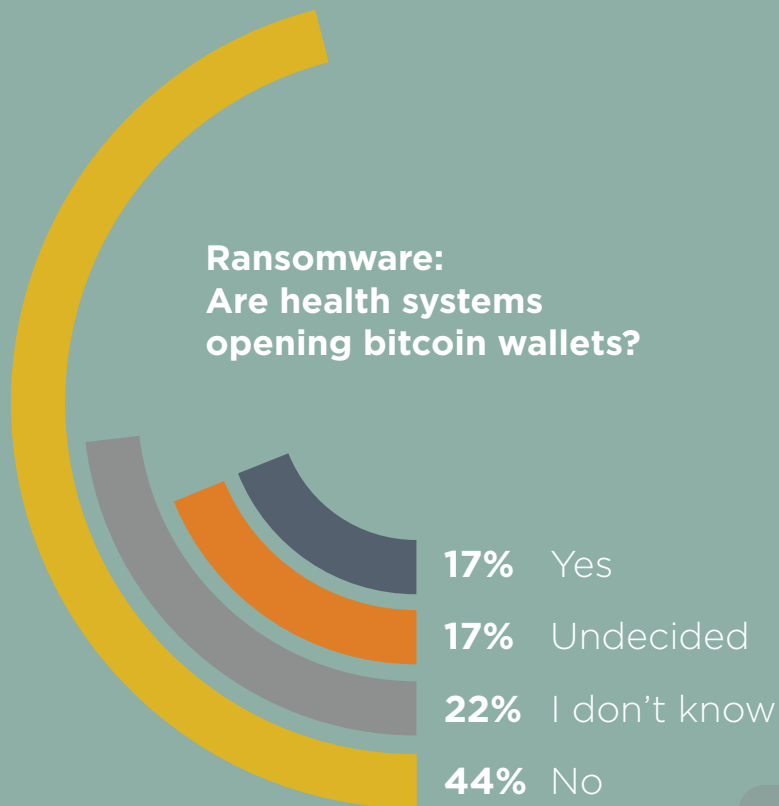
" (A challenge is) we have a culture of not expecting medical staff to follow recommendations on best practices, as a majority of our docs are not employed by the system. Also finding a balance between continuation of patient care via ease of access and protecting our data."

(CMIO)

Where will cybersecurity resources be added next year?

**Ransomware:
Are health systems
opening bitcoin wallets?**

17% Yes

17% Undecided

22% I don't know

44% No

92% **Nine in 10 respondents said they plan to boost resources for technology.**

42% **Less than half are increasing IT leadership dedicated to cybersecurity.**

67% **Two-thirds are adding cybersecurity staff.**

Cybersecurity is a top priority, demanding greater resources: almost all (92%) responding health systems are increasing cybersecurity resources in 2018.
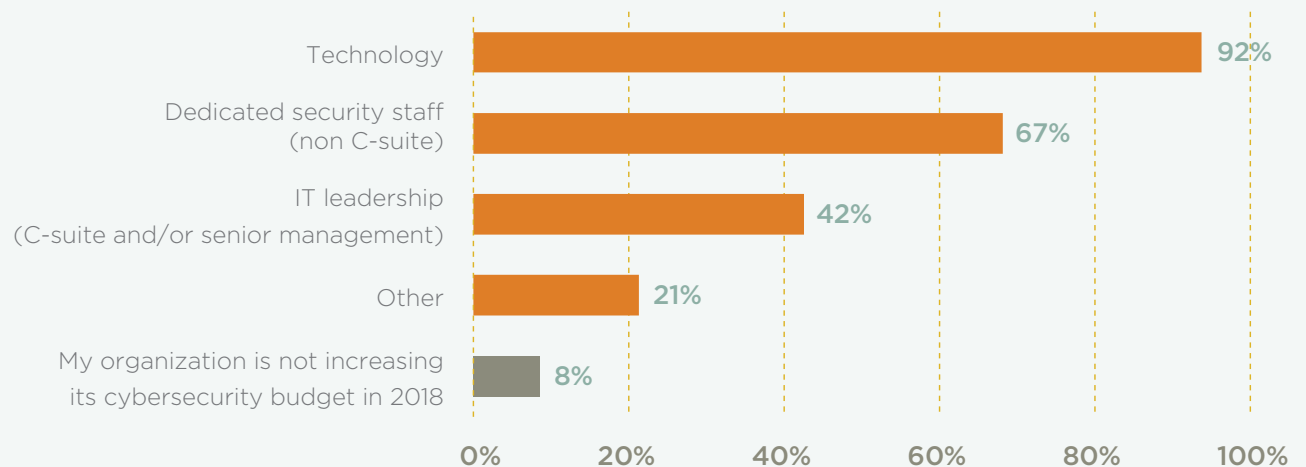
Health system executives expect to invest in technology areas that strengthen current capabilities in 2018, such as vulnerability scanning and detection.

Health system executives also plan to invest in technologies to help improve overall strategy and response, such as system and organization controls and security information and event management, and increasing security around medical devices. Other areas executives reported planning to focus cybersecurity resources include security services, outside monitoring services, and retaining consultants for cybersecurity assessment and attack/breach response.

> "We appointed a VP and focused his role strictly around cybersecurity. This was a big shift as we don't take VP positions lightly. We have also done a great deal of board and executive education – at the board retreat and board meetings – which has elevated the position."
>
> (CIO)

Where Health Systems are Increasing Cybersecurity Resources in 2018

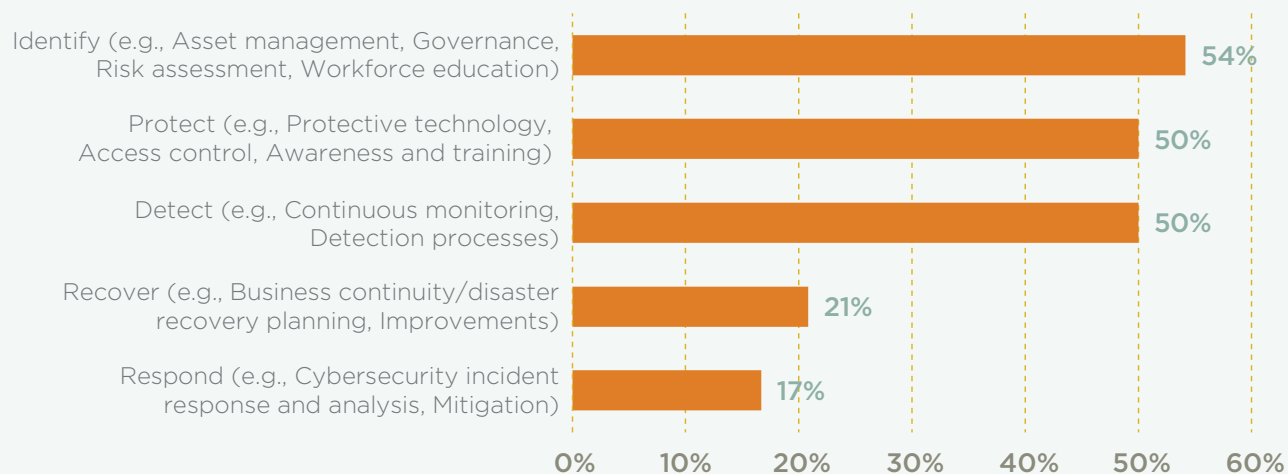| Category	Percentage
Technology	92%
Dedicated security staff (non C-suite)	67%
IT leadership (C-suite and/or senior management)	42%
Other	21%
My organization is not increasing its cybersecurity budget in 2018	8%

The push toward proactive: health systems are investing in identifying threats and protecting systems in 2018.

Health systems are employing several strategies for staying on top of emerging threats, including utilizing a layered approach to close vulnerabilities, assessments of the cyber environment, following industry best practices, staying current on vendor updates, and elevating the position of cybersecurity within the overall priorities of the health system executive leadership and board. Health system executives also utilize recommendations from the technical team and top IT executives, chief information security officers, to ensure the cybersecurity strategy is as robust as possible.

Additionally, health systems reported sharing best practices among health care industry organizations (e.g., National Health Information Sharing and Analysis Center) as well as looking to industries outside of health care (e.g., insurance, banking) to improve their cybersecurity strategies.

"**Most tools that I want to spend funds on are focused around being more proactive. We are good at reacting after the situation, but I want to be more proactive.**"
(CIO)

"**We rank fairly well against other health care providers, but we don't rank as well against banking, insurance. Those industries are leading in this space. We are focused on what is happening outside of health care.**"
(CIO)

Where Health System Will Focus Cybersecurity Spending in 2018

Category	Percentage
Identify (e.g., Asset management, Governance, Risk assessment, Workforce education)	54%
Protect (e.g., Protective technology, Access control, Awareness and training)	50%
Detect (e.g., Continuous monitoring, Detection processes)	50%
Recover (e.g., Business continuity/disaster recovery planning, Improvements)	21%
Respond (e.g., Cybersecurity incident response and analysis, Mitigation)	17%

Health systems have prepared cybersecurity defenses, and are hyper-aware that new, yet unknown threats pose a great challenge.

> "We are cautiously prepared. There's always more that we can do to continue to prepare. This is probably my number one focus. How do we learn about what the bad actors are doing? That's the challenge."
>
> (CIO)

> "Given the amount of infrastructure and thoughtfulness we have put in we would be able to respond as well as any organization. This is the great unknown. Every year the attacks get more vicious."
>
> (CIO)

Health systems note that although they may feel prepared to face a cyberattack, they do not know what the next threat will be, which breeds uncertainty. While health systems recognize that they are high profile targets, they feel confident in their defense strategies and note they must maintain constant vigilance and continue to work to improve. Health systems are utilizing audits and drills to test their current security and disaster recovery plans and identify potential weaknesses and areas for improvement.

While health systems are highly focused on improving cybersecurity, many challenges remain for health care leaders. Approximately one-third of executives reported lack of talent (38%) and immature IT solutions on the IT Security Maturity Model (33%) as top challenges. Health systems also commonly listed competing priorities, organizational culture, human behavior and employee awareness and education, medical devices, costs relating to cybersecurity operations (e.g., technology, personnel), and anticipating emerging threats as challenges to improving cybersecurity.

Academic health systems also note challenges around keeping networks secure while accommodating the information sharing that is common among medical schools and research faculty. Additionally, health system executives commonly reference cybersecurity challenges around network security, consolidating IT systems, and maintaining the security on the many disparate systems that make up the health system network.

## What will be the sources of valuable patient-generated data in 2018?

Mobile apps and wearables lagged patient portals and home monitoring equipment as sources expected to generate valuable patient data in 2018.

Mobile apps

Wearables

17%

21%

46%

88%

Patient portals

Home monitoring equipment

54%

Half of respondents are integrating patient-generated data into their electronic health record systems.

33%

Another third expect to begin integrating patient-generated data into their EHR next year.
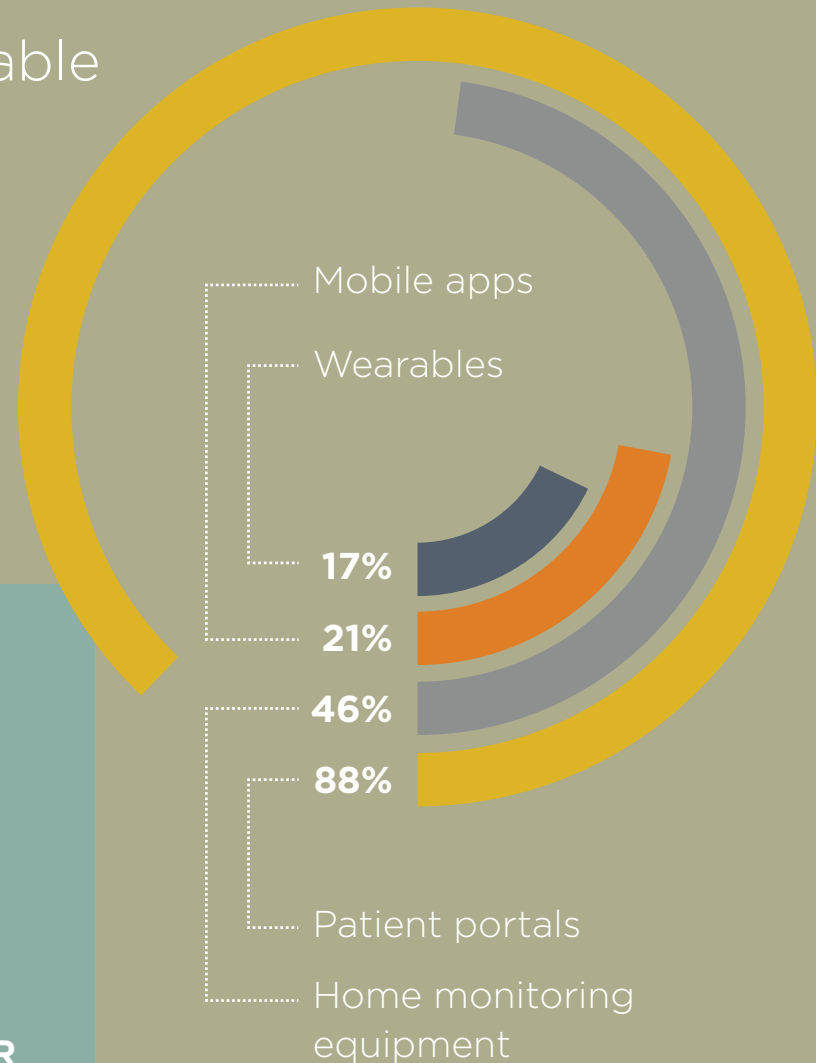
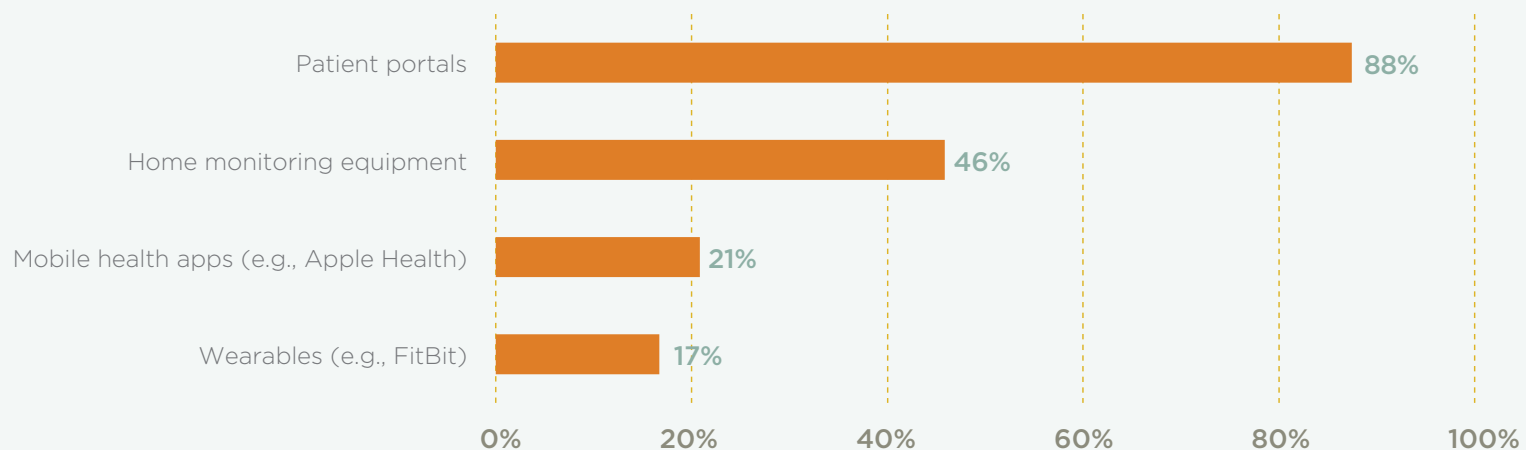# Health systems are recognizing the potential of patient-generated data.

> "The change [in care delivery and patient experience] has been gradual. However, I see the pace increasing in 2018."
>
> (CIO)

Over half (54%) of responding health systems integrate patient-generated data into the electronic health record (EHR), with 46% integrating structured, useful data and 8% integrating unstructured data. One-third (33%) of respondents reported although they do not currently have patient-generated data integrated into the EHR, they plan to in 2018.

While most (87%) health systems have, or plan to have in 2018, patient-generated data integrated into the EHR, some sources of data provide greater value for health systems than others. Health system executives reported patient portals (88%) and home monitoring equipment (46%) will provide the most value for their organizations in 2018.

Health systems are relatively early in their journey to incorporate and utilize patient-generated data and have not yet seen a significant impact on care delivery or patient experience. However, executives expect patient-generated data to eventually impact delivery of care by changing care models and improving patient experience.

Sources of Patient Generated Data that will Produce the Most Value for Health Systems in 2018

Source	Percentage
Patient portals	88%
Home monitoring equipment	46%
Mobile health apps (e.g., Apple Health)	21%
Wearables (e.g., FitBit)	17%

Patient-generated data will supplement data gathered from traditional medical settings over the long term.

> " I see [most health data being generated by the patient from personal devices] as a trend, however I believe 3-5 years is quicker than the adoption will happen. The primary reason is security and liability related."
>
> (CIO)

While not all health systems are currently collecting or utilizing patient-generated data, all recognize the potential and expect it to make up a significant portion of patients' health data in the future. Executives are split on whether a majority of data will be patient-generated, noting there are some services (e.g., lab results, radiology results etc.) that patients are unlikely to do at home. Some executives note that patient-generated data will by valuable, however it will supplement the data gathered in more traditional care settings. Executives also expressed uncertainly regarding a potential timeframe for a majority of health data to be patient generated, citing challenges around data quality control and validation, organizational readiness, as well as clinician acceptance and buy-in as potential barriers that may slow adoption.

Executives also noted the potential for patient-generated data to go beyond physiological data to include lifestyle, or social data (e.g., sleep habits, call/text frequency, social media streams, etc.). However, leaders noted this data is highly unstructured and they expect to be supportive of more traditional, structured data sources (e.g., blood pressure, heart rate, etc.).
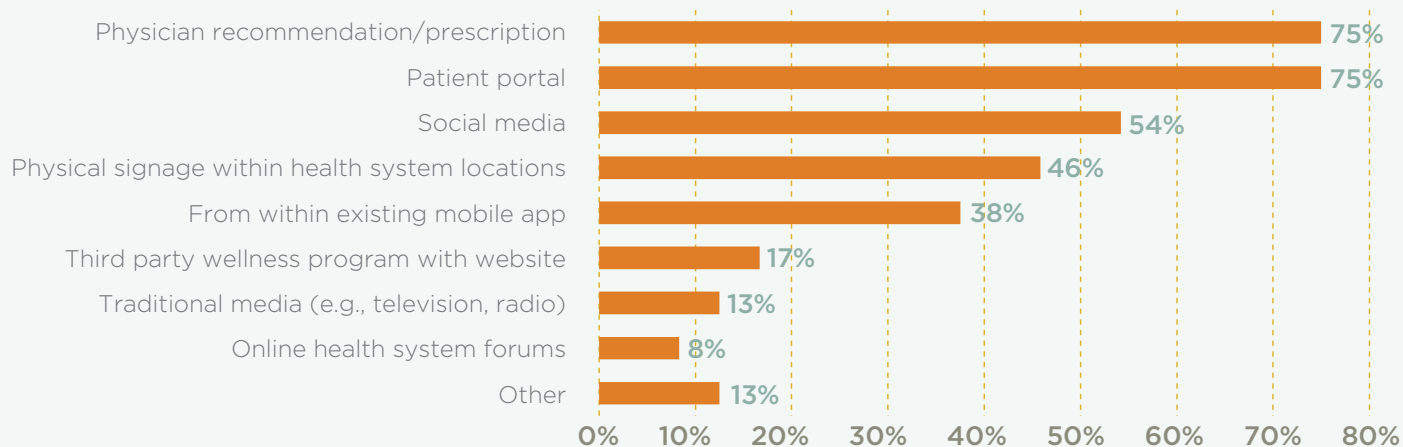
100% of responding health systems plan to promote health and wellness apps to patients in 2018, primarily using physician recommendations or prescriptions (75%), patient portals (75%), and social media (54%).

The growth in wearables and mobile health apps among consumers represent a significant opportunity for health systems to improve care delivery, patient experience, and become more consumer-centric. As health care consumers become more involved in their care and expect a consumer-centric experience, health systems can offer a more satisfactory experience to patients with the integration of these technologies.

However, health systems also note challenges with the growth of wearables and mobile health apps among consumers, particularly around the sheer volume of data and determining what is useful and how to integrate the data in a way that provides value. Additionally, health systems report challenges around adoption, cybersecurity, cost, and infrastructure; lack of consumer interest in certain markets; immaturity of the technologies; ambiguity around data ownership; as well as an uncertainty whether this truly provides additional value.

> *It's patient centric – by using these applications, patients feel better connected and they are receiving health care in the way they want to receive it. It's a satisfier for younger patients, especially."*
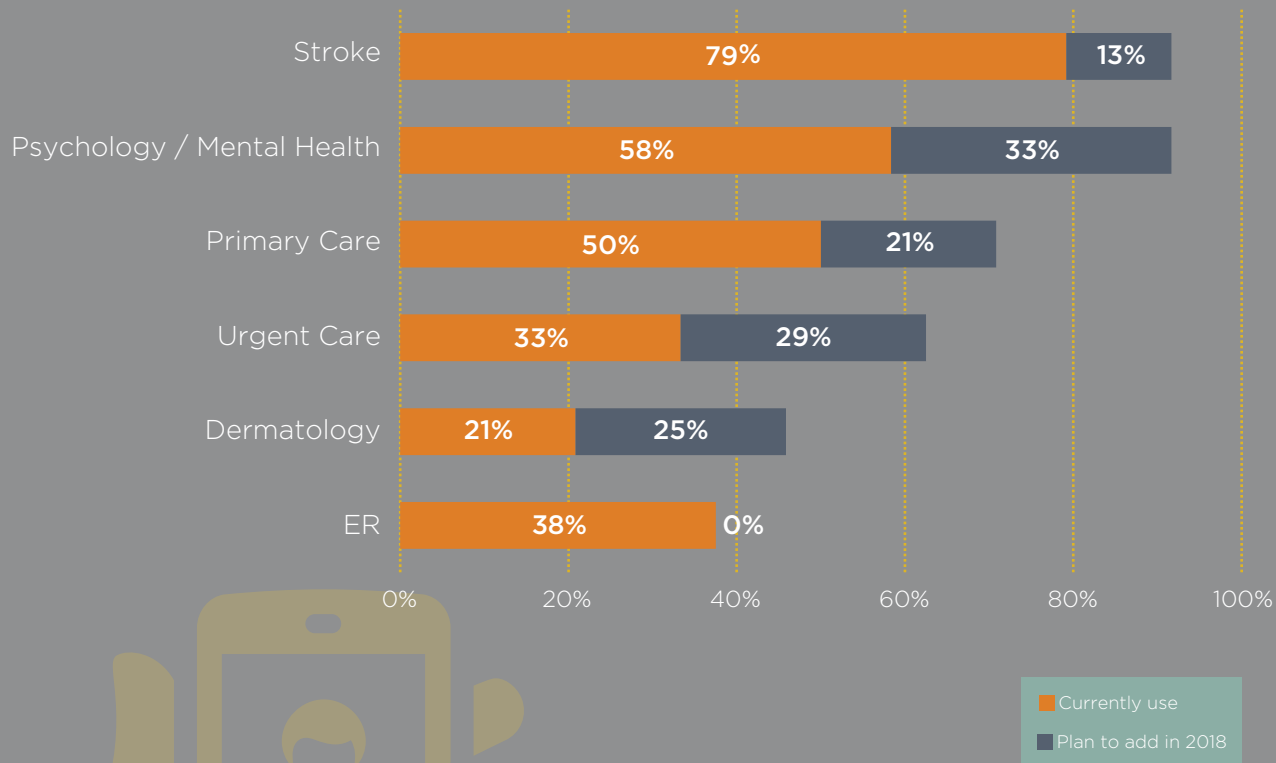>
> (CEO)

How Health Systems will Promote Health and Wellness Apps for Patients in 2018

Method	Percentage
Physician recommendation/prescription	75%
Patient portal	75%
Social media	54%
Physical signage within health system locations	46%
From within existing mobile app	38%
Third party wellness program with website	17%
Traditional media (e.g., television, radio)	13%
Online health system forums	8%
Other	13%

VIRTUAL CARE

Which clinical areas have telehealth services? Where will they be added in 2018?

Clinical Area	Currently use	Plan to add in 2018
Stroke	79%	13%
Psychology / Mental Health	58%	33%
Primary Care	50%	21%
Urgent Care	33%	29%
Dermatology	21%	25%
ER	38%	0%

Legend:
- Currently use
- Plan to add in 2018

Why implement remote monitoring systems?
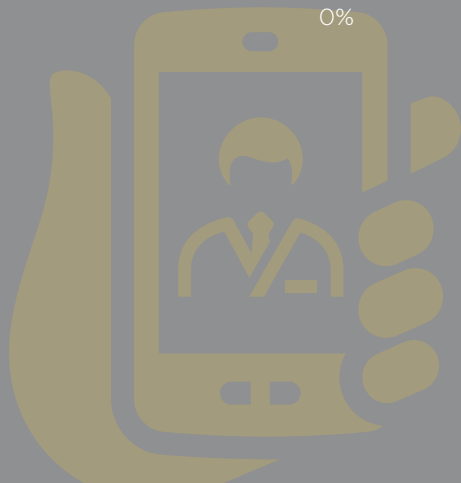Top reasons cited by respondents:

75% Improve quality/safety

42% Demand from patients

46% Lower costs

71% of health systems not currently receiving reimbursement for virtual care expect to begin receiving reimbursement in 2018.

> "The lack of reimbursement has not affected our strategy. We have moved forward because it's the right thing to do. [Telehealth] gives a better consumer experience."
>
> (CIO)

> "If we got reimbursed it would encourage greater investment [in telehealth] – absolutely it would count. We continue to move in this space regardless, but might not go as wide or as deep."
>
> (CEO)

> "We've looked at this in a couple clinical arenas, but the technology is fairly costly and we haven't seen return on investment. We're not in a position to make investments unless we can cover the cost. We would not be inclined to cover the cost unless we see a return."
>
> (CEO)

Fewer than half of health systems currently receive reimbursement for virtual care (39%) or remote monitoring (45%), while over half (67%) currently receive reimbursement for other telehealth services. Of the health systems that are not currently reimbursed, many expect to begin receiving reimbursement in 2018 for virtual care (71%), remote monitoring (17%), and other telehealth services (71%).

Multiple health systems surveyed are promoting legislation to enable reimbursement for these services. One health system noted modest reimbursement in rural markets, where remote monitoring and virtual care/telehealth is necessary to maintain patients' care, however in the urban markets health systems report little to none. Commonly even those health systems that do receive reimbursement for virtual care and/or telehealth report the rate is much lower than what they would receive for inpatient services or primary care visits.

However, many executives noted that their health systems have pursued these technologies and services despite the lack of reimbursement. Health systems understand virtual care as it is the way of the future and a necessary component of delivering care. Health systems are highly focused on becoming consumer-centric organizations, and view the integration of telehealth/virtual care/remote monitoring as part of the journey to putting consumers first. While some noted they have continued investing in these services, those that have little to no funding noted that they would likely be pushing further and more quickly in this space if reimbursement were available. Other health systems note that lack of reimbursement has limited their ability to invest in these technologies.

Investment in virtual care is not without risk, but there's unanimous agreement that virtual care is integral to future of health care.

Health systems are also balancing the remote monitoring investment with the potential for lost hospital revenue. Many health systems note that investment is dependent on the systems' at-risk population and connected to population health/value based care. As more patients are at-risk and the health system is financially responsible for the overall health of the total population, it will outweigh the lost hospital revenue. While health systems are working to balance this equation, they are also considering taking advantage of a first movers advantage, in which they could gain market share and geography.

All health system executives recognize that health systems will be required to provide telehealth/virtual care/remote monitoring services in the future, however the timeframe of the tipping point at which it is necessary for providers is unclear to many executives. While health systems are working on it now, leaders vary in whether they think this move will happen in the next 3 -5 years or 5 – 10 years. Many executives noted they believe this shift will be consumer driven – particularly by millennials who will expect to be able to receive care differently from previous generations.

> First we must determine how much of the population are we at risk for their ultimate health. The more patients we have at-risk, the more our perspectives change relative to keeping them healthy, versus having them come into the hospital. In that scenario that's an expense versus revenue stream. If we're going to lose hospital revenue, and we think it's something that's going to be here to stay, do we have a chance to get outside market share as a result to moving first? We can mitigate the loss revenue by maximizing revenue. First movers often have the greater advantage."
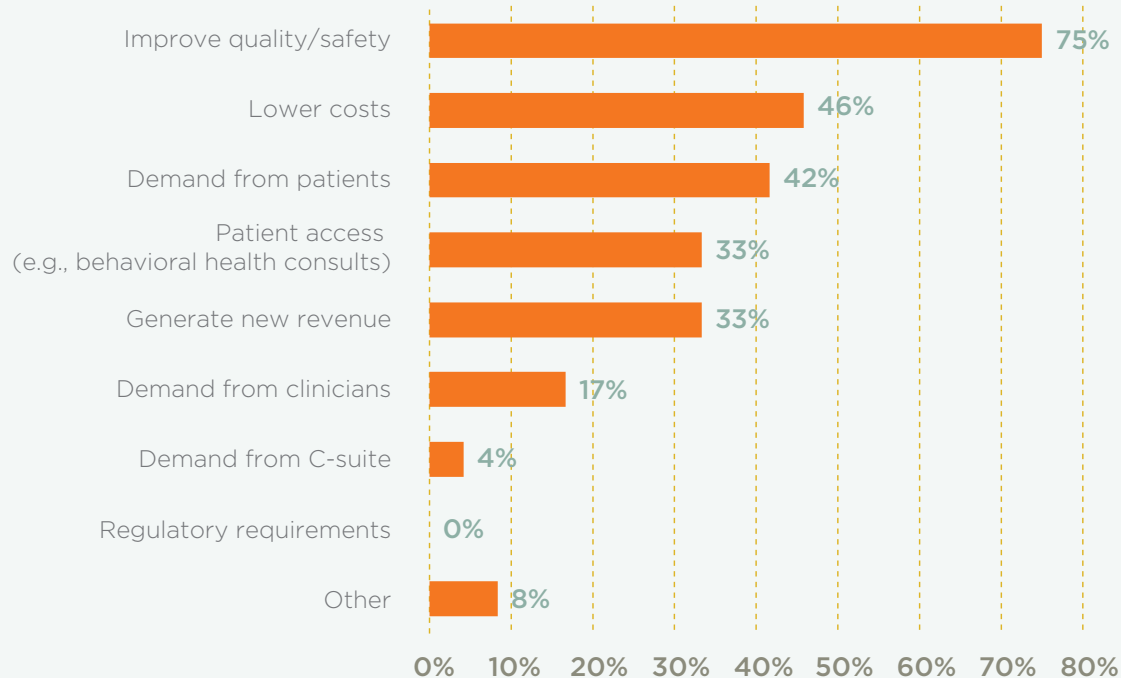>
> (CEO)

Primary deciding factors in implementing remote patient monitoring programs: improving quality/safety (75%), lowering costs (46%), demand from patients (42%).
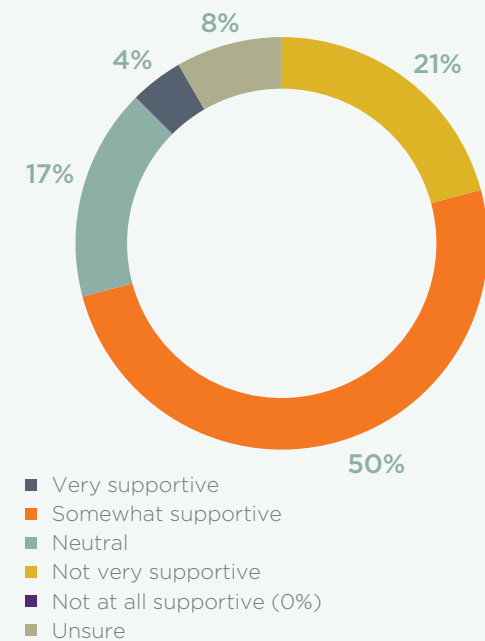
For health systems leaders, the primary drivers for implementing remote patient monitoring programs are improving quality/safety (75%), lowering costs (46%), and demand from patients (42%). Other drivers include enhancing the system of care across the organization and market competition.

Overall, clinicians are supportive of telehealth, with most (71%) executives reporting clinicians have been very (21%) or somewhat (50%) supportive of telehealth at their health system.

Deciding Factors in Implementing Remote Patient Monitoring Programs

Factor	Percentage
Improve quality/safety	75%
Lower costs	46%
Demand from patients	42%
Patient access (e.g., behavioral health consults)	33%
Generate new revenue	33%
Demand from clinicians	17%
Demand from C-suite	4%
Regulatory requirements	0%
Other	8%

Perceived Clinician (e.g., Physicians, Nurses, APPs) Sentiment Toward Telehealth Services

- Very supportive — 4%
- Somewhat supportive — 50%
- Neutral — 17%
- Not very supportive — 21%
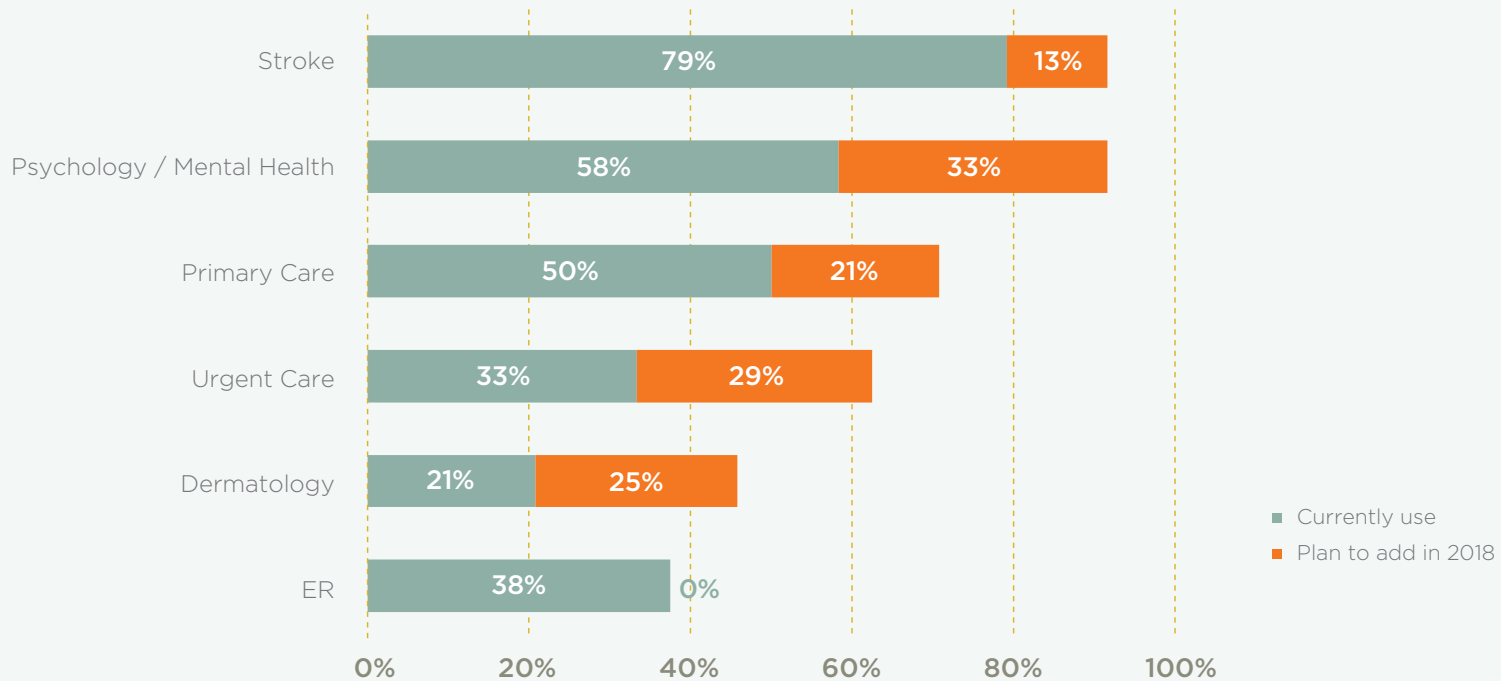- Not at all supportive (0%)
- Unsure — 8%

Telehealth services are currently most used to treat stroke patients; 2018 telehealth expansion plans show big boost in the area of psychology/mental health.

Health systems most commonly use, or plan to add in 2018, telehealth services in clinical areas such as stroke (92%), psychology/mental health (92%), primary care (71%), and urgent care (63%). Other clinical areas in which health systems currently use telehealth include critical care, ICU, ophthalmology, and home health. Other clinical areas in which health systems plan to add telehealth services in 2018 include neurology, cardiology, hepatology, pharmacy, diabetic education, interpreter services, wound & ostomy, genetics, and occupational medicine.

Where Health Systems Currently Use Telehealth Services, and Where Telehealth will be Expanded in 2018

Clinical Area	Currently use	Plan to add in 2018
Stroke	79%	13%
Psychology / Mental Health	58%	33%
Primary Care	50%	21%
Urgent Care	33%	29%
Dermatology	21%	25%
ER	38%	0%

■ Currently use
■ Plan to add in 2018

" Boils down to what's the return of investment and where does it get applied. AI in a more tried and true area, such as business functions (e.g., revenue cycle), may make more sense, and make it easier to justify the expense. Some of the barriers are understanding where it applies in a health care environment that is complex. I haven't seen ROI on these yet, but I think it's coming."
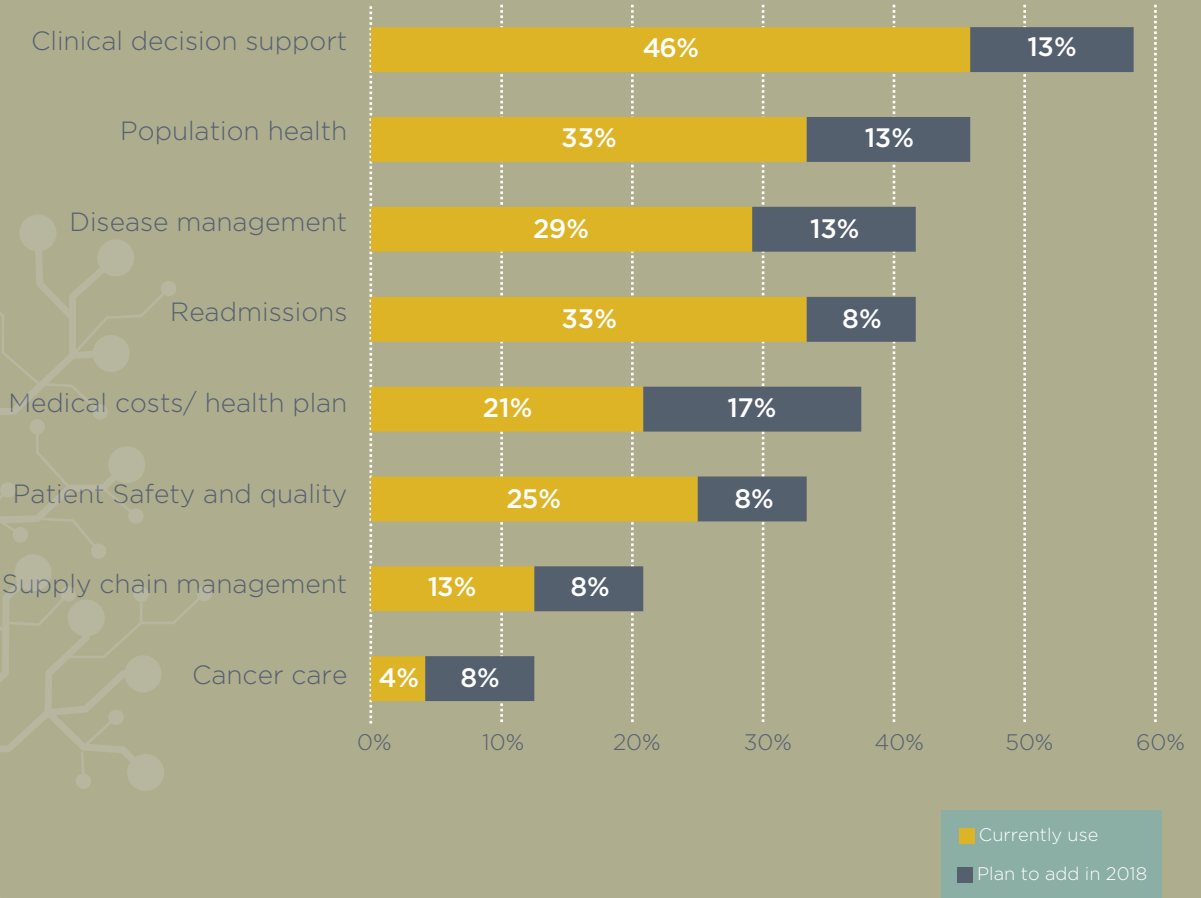
(CFO)

ARTIFICIAL INTELLIGENCE

Where A.I. is in use, and where it will be implemented?

Not a priority for 2018

63%

Nearly two-thirds of responding hospital IT executives said implementation of A.I. solutions are a "low" or "very low" priority for 2018.

Clinical decision support: 46% / 13%

Population health: 33% / 13%

Disease management: 29% / 13%

Readmissions: 33% / 8%

Medical costs/ health plan: 21% / 17%

Patient Safety and quality: 25% / 8%

Supply chain management: 13% / 8%

Cancer care: 4% / 8%

0% 10% 20% 30% 40% 50% 60%

Currently use
Plan to add in 2018

Over half of health systems currently use A.I., yet nearly two-thirds (63%) say A.I. is a "low" or "very low" IT priority for 2018.

Fine tuning of EHR is a top priority, as well as cybersecurity. We are implementing a new ERP system and doing a series of enhancements to existing systems (e.g., revenue cycle, supply chain). These are not cutting-edge things, but it's more about maintaining."

(CFO)

"I think that health care is still figuring out how to get value from data in general. We have use cases, but they are not ubiquitous. Until data is ubiquitous, it makes AI hard to prioritize. Additionally, it's great to predict something, but if you don't have a corresponding intervention it doesn't do much. It's interesting, but still an experiment."

(CIO)

While artificial intelligence (A.I.) is of interest to most health systems, leaders indicated a variety of higher IT priorities for 2018, including enhancing the EHR and standardizing IT platforms, upgrading current IT infrastructure, improving communication solutions, implementing predictive analytics, consumerism, cost control, cybersecurity, and interoperability.

With all of these other priorities, A.I. implementation was not a top priority for participating health systems. Over half of responding executives (63%) ranked the priority levels for implementing A.I. as a 1 or 2 on a scale from 1 (Very low) to 5 (Very high) compared to other IT priorities.

Reflective of the lower priority level, responding health systems expect to spend an average of 2.6% of their IT budget on A.I. in 2018 (range: 0.05% - 10%). Multiple (13%) responding health systems indicated A.I. and would make up 0% of their IT budget in 2018.

How Implementing A.I. Solutions Compares to Other IT Priorities

- 5%
- 14%
- 27%
- 18%
- 36%

Legend:
- 1 (Very low)
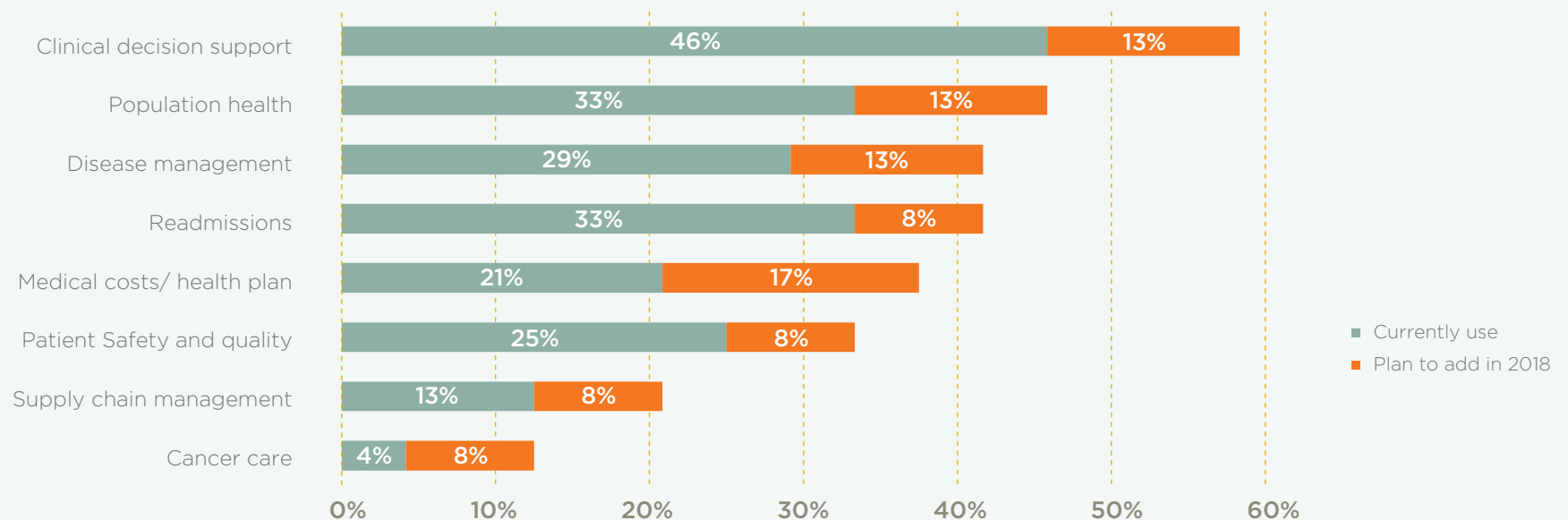- 2
- 3
- 4
- 5 (Very high)
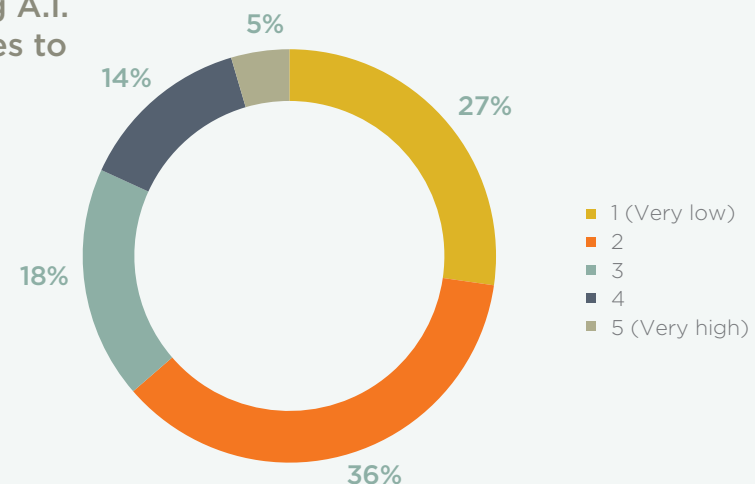
Clinical decision support (59%), population health (46%), and disease management (42%) are the most common areas in which health systems have, or are planning to, implement A.I. technologies.

The most common areas in which health systems have, or are planning to, implement artificial intelligence technologies are clinical decision support (59%), population health (46%), disease management (42%), readmissions (41%), and medical costs/health plan (38%).

Health system executives report that they have implemented artificial intelligence in more operational areas such as revenue cycle, billing, and scheduling but have less commonly implemented in clinical areas. Health systems are starting to utilize A.I. for clinical areas such as readmissions and risk scores, however this is commonly in a pilot stage and hasn't been fully integrated.

> " I think that it's just a technology. It comes down to the priorities of organization. You can use A.I. for anything – rev cycle, standardization, access, readmissions. … A.I. is interesting and fun and exciting, but nascent. It still needs refinement."
>
> (CFO)

Where Health Systems Currently use A.I. Technologies, and where A.I. will be Expanded in 2018

Area	Currently use	Plan to add in 2018
Clinical decision support	46%	13%
Population health	33%	13%
Disease management	29%	13%
Readmissions	33%	8%
Medical costs/ health plan	21%	17%
Patient Safety and quality	25%	8%
Supply chain management	13%	8%
Cancer care	4%	8%

Just 12% of health systems reported they had implemented A.I. for cancer care, or were planning to implement in 2018 – cost cited as an influential factor.

The issue of cost is especially relevant in the area of cancer care, where few (12%) health systems reported they had implemented, or were planning to implement A.I. solutions in 2018. Cancer care is a highly complex, multidisciplinary service line, which makes it highly difficult for health systems to develop and implement A.I. technologies.

While executives noted there is opportunity, all recognize it is very difficult and the technology and data are not there yet to successfully prove the value. Additionally, low physician acceptance of A.I. makes implementing the technology in oncology especially difficult.

Even with these challenges and slow adoption, information executives anticipate A.I. technology will impact the use of unstructured data at their health systems in the near future (3 – 5 years). Currently these health systems are focused on utilizing and building with structured data, but anticipate growth and expansion into unstructured data as well. However, executives note challenges around building a robust environment and having strong employee buy in, education, and trust with the technology before being able to use and integrate unstructured data successfully.
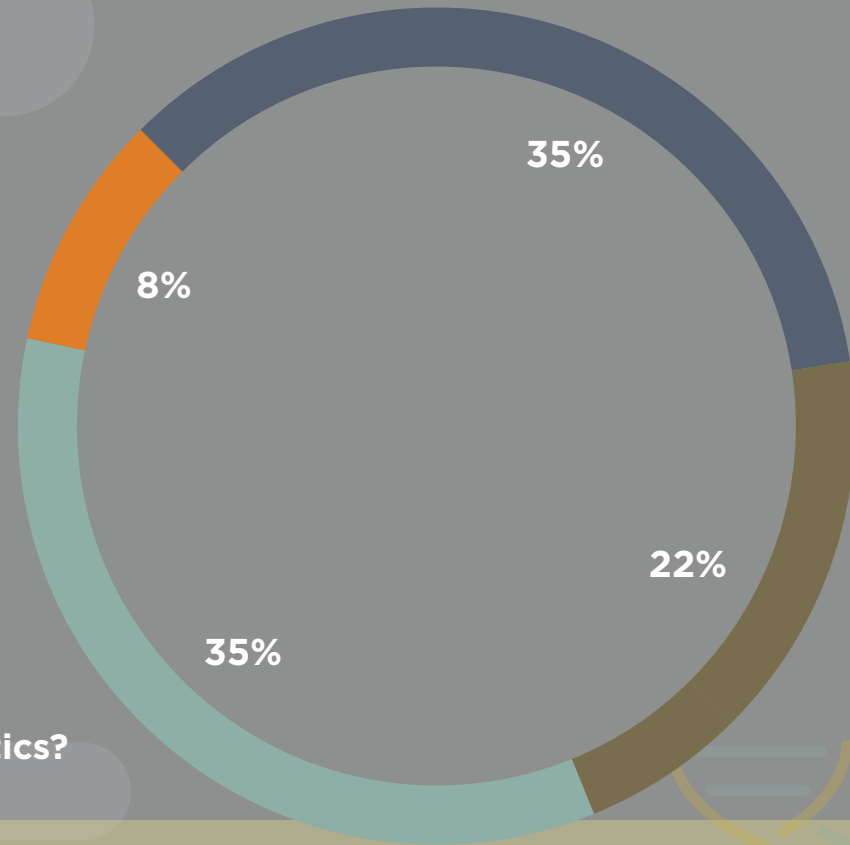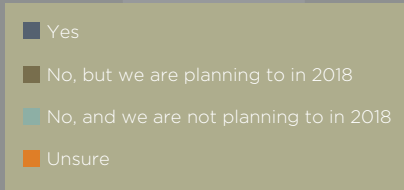
" Cancer care has very complex formulas – very specific. We've worked on this for about three years – moving forward with a few more order sets and a few things around cancer care. With all the complexity, it has been very difficult to move forward."
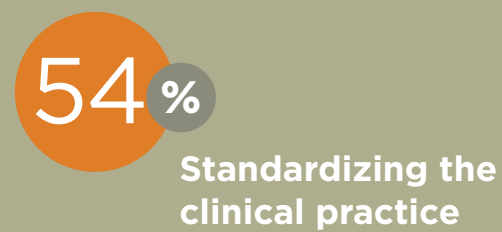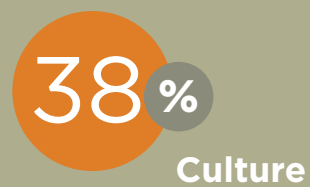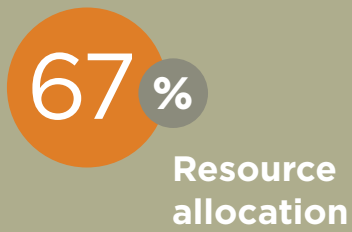
(CIO)

PREDICTIVE ANALYTICS

Are genomic testing and data analytics in use?

Legend:
- ■ Yes
- ■ No, but we are planning to in 2018
- ■ No, and we are not planning to in 2018
- ■ Unsure

35% (Yes)
22% (No, but we are planning to in 2018)
35% (No, and we are not planning to in 2018)
8% (Unsure)

Challenges to implementing predictive analytics?
Top reasons cited by respondents:

67% Resource allocation

38% Culture

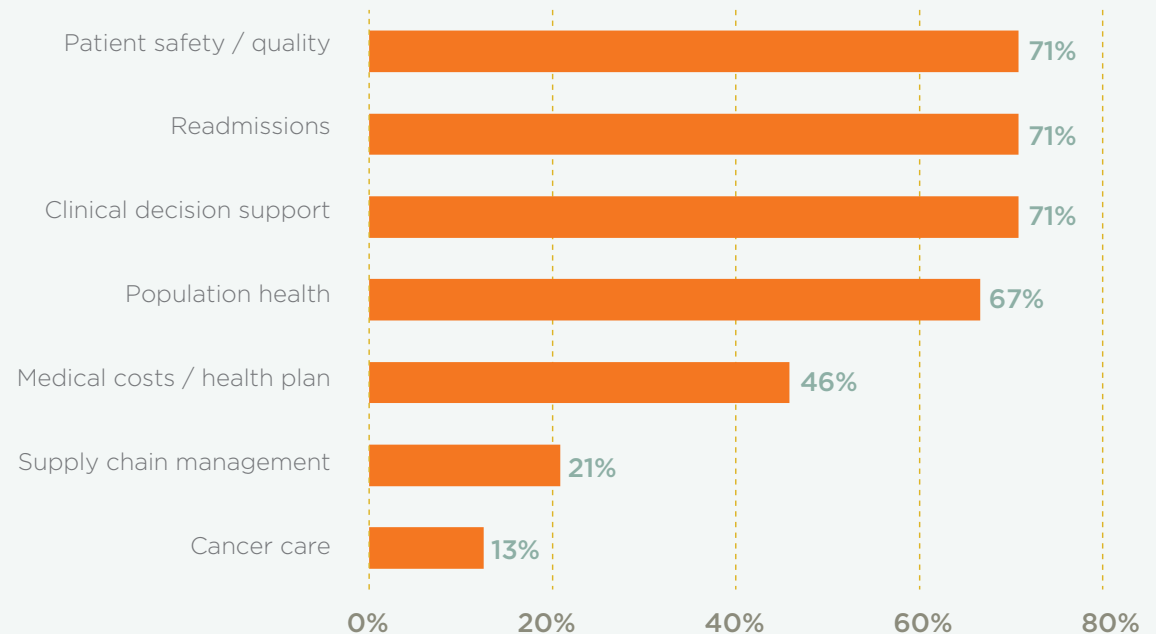**54%** Standardizing the clinical practice

Responding health systems expect predictive analytics to provide significant value in areas such as patient safety/quality (71%), readmissions (71%), and clinical decision support (71%) in 2018.

> **Just getting started on this now. We need to do much more. It's an area of great interest – we can see the huge impact. We are in the early phases of figuring out practically how to integrate that."**
>
> (CEO)

"One really big area is access in the hospital – predicting the length of stay (LOS), predicting how to shorten LOS, plan post-acute what level of care should a patient go to (e.g., home health, skilled nursing facility, etc.)."

(CIO)

Responding health systems expect predictive analytics to provide significant value in areas such as patient safety/quality (71%), readmissions (71%), and clinical decision support (71%) in 2018. Additionally, health systems anticipate value from predictive analytics in operational areas such as productivity, staffing, revenue cycle, and scheduling/no-shows, as well as other clinical areas such as access, length of stay, sepsis monitoring, and post-acute care planning. Where health systems have implemented use cases for predictive analytics, most are seeing success.

Where Predictive Analytics will Provide the Most Value for Health Systems in 2018

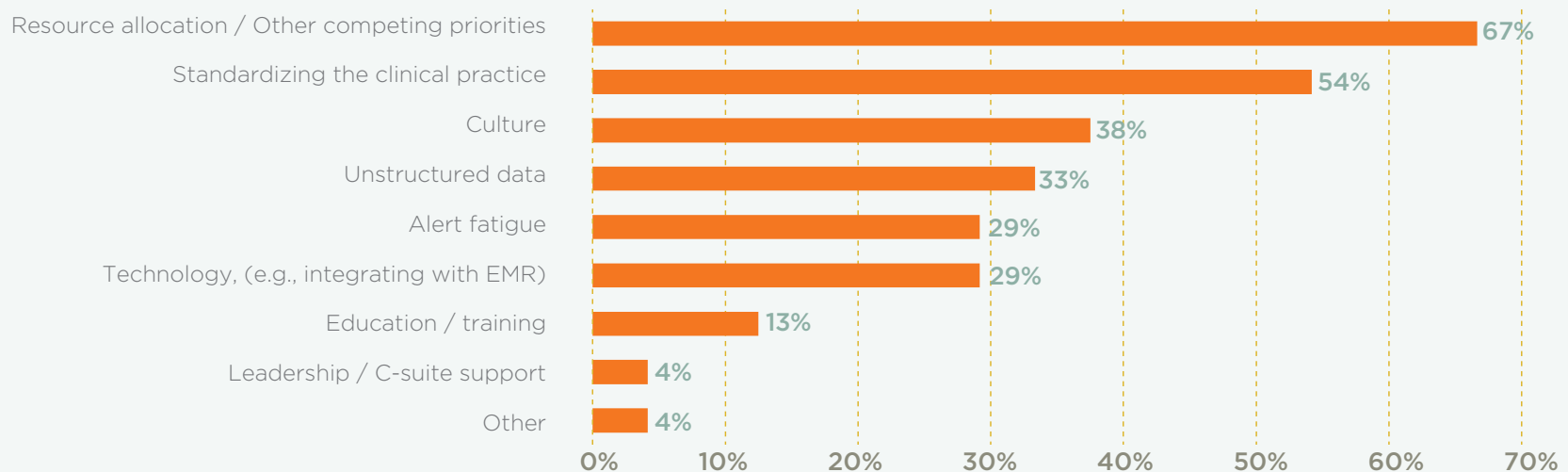| Category	Value
Patient safety / quality	71%
Readmissions	71%
Clinical decision support	71%
Population health	67%
Medical costs / health plan	46%
Supply chain management	21%
Cancer care	13%

Resource allocation is the greatest challenge to implementing predictive analytics in health systems (63%).

Although predictive analytics is expected to provide value, there are significant challenges around the implementation of predictive analytics at health systems, most commonly resource allocation (67%), standardizing the clinical practice (54%), and culture (38%). Other challenges reported include operational support and obtaining data. One executive indicated their health system is considering partnering or outsourcing around predictive analytics to help overcome some of these challenges.

> " This is a priority and we are looking at whether we are going to build the infrastructure and manage internally, or outsource. We could do it at a faster pace of we were to outsource. Our challenge is we have disparate IT systems so we can't get the financial, clinical, and payor data that we need."
>
> (CEO)

Top Challenges Around Implementing Predictive Analytics at Health Systems

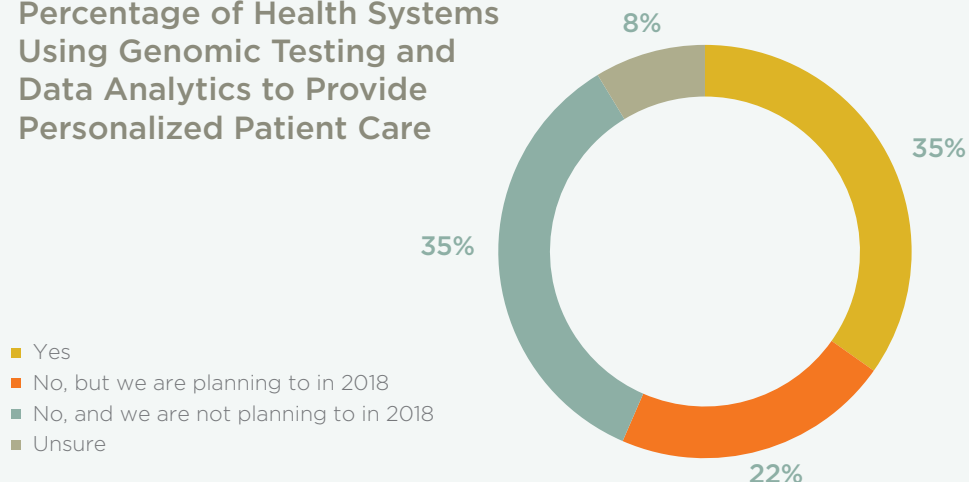| Challenge	Percentage
Resource allocation / Other competing priorities	67%
Standardizing the clinical practice	54%
Culture	38%
Unstructured data	33%
Alert fatigue	29%
Technology, (e.g., integrating with EMR)	29%
Education / training	13%
Leadership / C-suite support	4%
Other	4%

At a tipping point with genomics: over half (57%) of responding health systems are currently using genomic testing to provide personalized patient care (35%), or plan to begin to in 2018 (22%).

Just over half (57%) of responding health systems indicated they are currently using (35%) or planning to use in 2018 (22%) genomic testing and data analytics to provide personalized patient care. Areas in which health systems are currently using, or are planning on using, genomic testing and data analytics include cancer/oncology, anesthesia, and genetics/pharmacogenetics.

Most health systems are also working to utilize genomics at the point of care. Executives indicate utilizing genomic data is part of health systems' strategies, however it is not their highest priority.

Academic health systems especially note a focus on this from a research perspective. However, health systems are still working on developing this capability and few have implemented it widely.
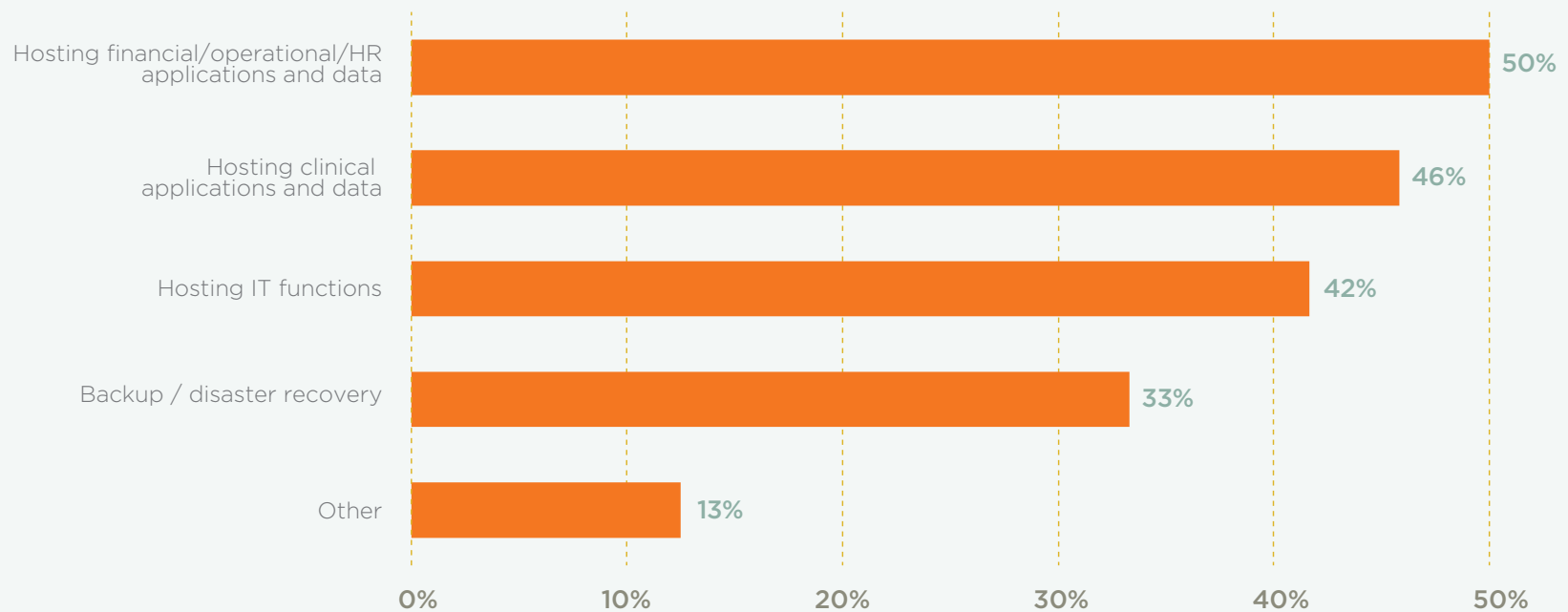
"We have a big investment from a research perspective in genomics. Researchers are more interested in the cutting-edge science, but it needs to be translated to how do we deal with patient care. We have invested real money in it and it is a priority for us, but need to determine what's the improvement in health outcomes and financial capability to keep investing."

(CFO)

Percentage of Health Systems Using Genomic Testing and Data Analytics to Provide Personalized Patient Care

8%

35%

35%

22%

- ■ Yes
- ■ No, but we are planning to in 2018
- ■ No, and we are not planning to in 2018
- ■ Unsure

Fewer than half of responding health systems expect to use Cloud computing or storage for hosting clinical data and applications in 2018.

Half of health systems plan to utilize Cloud computing and/or storage for hosting financial/operational/HR applications and data (50%) in 2018, while 46% of health systems expect to use it for hosting clinical applications and data. Health systems also reported a plan to use Cloud computing and/or storage for general storage and hosting of multiple non-core systems in the environment.

How Health Systems will Utilize Cloud Computing and/or Storage in 2018

Category	Percentage
Hosting financial/operational/HR applications and data	50%
Hosting clinical applications and data	46%
Hosting IT functions	42%
Backup / disaster recovery	33%
Other	13%

" One thing we are excited about this year – predictive model for no shows for patient clinic visits. Designed and piloted interventions for those. Now with fairly high certainty, we can predict if you will no-show. We then implemented wait list offers. This has improved access for patients on the waitlist, and improved same day cancellation and no shows rates."

(CIO)

About Center for Connected Medicine

The Center for Connected Medicine (CCM) is the world's first collaborative health care executive briefing center, supporting stakeholders in defining the transformation of health care. It serves as a resource for innovative patient-centered and population health models, showcasing strategically integrated health information technology. By facilitating connections among those who deliver, receive, and support health care, the CCM helps promote cultural change, coordinated care delivery, and greater patient engagement. Located in Pittsburgh, Pa., the CCM is operated by five partners — GE Healthcare, IBM, Lenovo Health, Nokia, and UPMC — representing various facets of the health information community. Learn more at www.connectedmed.com.

About The Health Management Academy

Founded in 1998, The Health Management Academy is exclusively comprised of executive members from the country's largest integrated health systems and a strategic balance of the industry's most innovative companies. Executive members exchange best practices and benchmark information on increasing the quality and efficiency of healthcare. The Academy is a knowledge source for identifying and monitoring tactical and strategic issues. The Academy's model of educational programming assesses the top priorities of its members, monitors the organization and development of large health system executive teams and facilitates structured interaction among its health system members. Peer-focused, problem-solving based programs—where the latest Academy research, policy analysis and expert views on the issues driving healthcare are analyzed and discussed—create the foundation for developing the leadership strategies and skills needed to guide strategically critical health system decisions. The Academy is an accredited CE provider. Learn more at www.academynet.com.

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