Reports

Top of Mind for Top Health Systems 2020

Technology priorities for health systems managing the shift to value-based care

Center for Connected Medicine

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A report from the Center for Connected Medicine and KLAS

Contents

Introduction

The Top of Mind for Top Health Systems 2020 (Top of Mind) research is designed to explore health systems' strategies and priorities for top-of-mind health technology areas. Drawing on their market knowledge and previous research, the Center for Connected Medicine (CCM)—in consultation with KLAS Research and CCM partners—narrowed the scope of this year's research to three areas:

Patient Engagement	Data Aggregation and Analytics	Precision Medicine

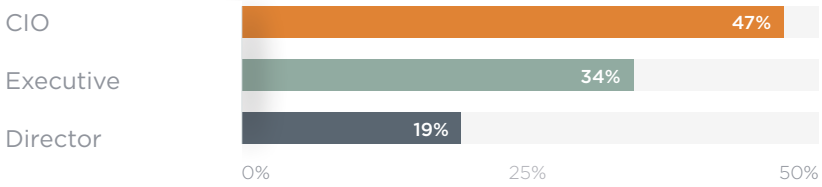
Health systems are currently investing heavily in patient engagement and data aggregation/analytics. In other research conducted by KLAS, nearly two-thirds of respondents planned to invest in data aggregation and analytics technology—including fully integrated electronic medical records (EMRs) and population health data aggregation tools. In this same research, two-thirds also cited patient engagement technology—such as patient portals, telehealth, patient education, and customer relationship management systems—as a top investment priority. In contrast, relatively few organizations are currently investing in precision medicine technology. However, 62% of those surveyed in last year's Top of Mind research felt it would be a high-impact health IT area within the next five years.

These three areas are highly connected to the shift from fee-for-service to value-base care. As provider organizations continue to shift their payment models and take on more risk, there is a greater need for data visibility so that organizations can manage their most at-risk populations and make better care decisions. Patient engagement is a large component of organizations' efforts to be more proactive about keeping patients healthy. Finally, precision medicine is seen as a future-looking way to improve patient treatment and lower the cost of care.

Methodology

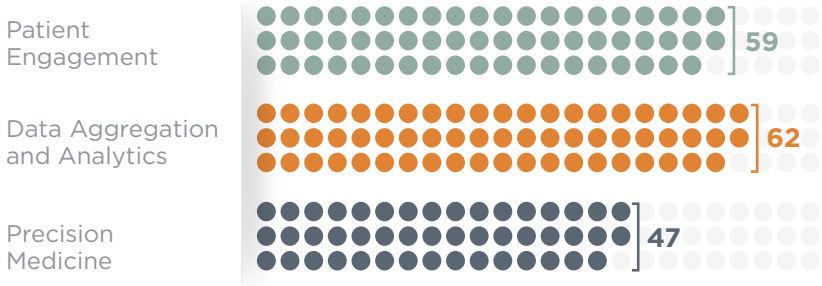
To determine what technology health systems are deploying in these three key areas, where they are seeing success, and what obstacles need to be overcome, KLAS conducted in-depth interviews with 70 health care professionals, a majority of whom were chief information officers (CIOs). The interviewees represent 65 unique health systems, and findings from their collective perspectives make up the remainder of this report.

Participant Job Level (100-percent scale) (n=70)



Note: Interviewed executives and directors include individuals from clinical, IT, operations, and innovation departments.

Participants Who Completed Each Section (n=70)



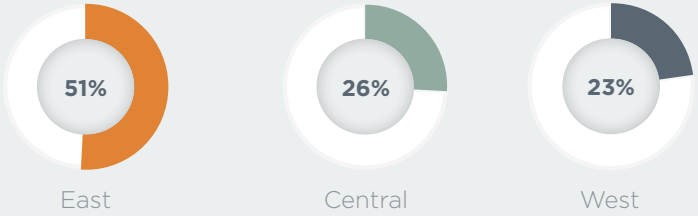
Participant Organizational Bed Size

(100-percent scale) (n=70)

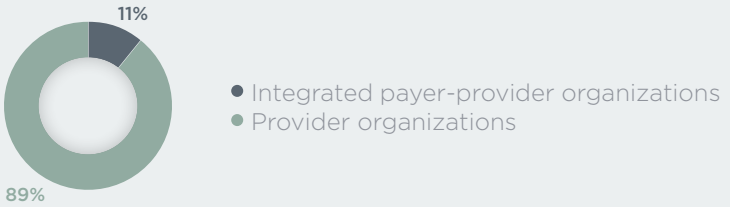
Top of Mind 2020 Respondent Demographics

Total number represented

Region of responding health systems



Payer-provider representation



Patient Engagement

Meaningful use acted as a catalyst for many health systems to implement patient engagement technology, primarily patient portals. However, several trends have contributed to a growing demand for a broader variety of patient engagement capabilities. First, the acceleration of consumerism in health care has led patients to increasingly expect a digital experience on par with that found in other industries. Second, as the industry moves toward value-based care, organizations are increasingly looking to patient engagement tools to encourage patients to proactively manage their care and choose less costly care options. All of this has resulted in the market being inundated with an abundance of patient engagement solutions offering a wide variety of capabilities. Health systems are in the process of determining which ones actually provide value.

Key Questions

1. What are health systems' top patient engagement priorities?
2. Where are health systems investing in patient engagement technology?
3. What progress has the industry made toward engaging patients?
4. What barriers prevent adoption of patient engagement technologies?

Key Findings

- Patient portals and telemedicine are the technologies most often deployed in health systems' patient engagement efforts; 82% of respondents identify the patient portal as one of their top three currently leveraged engagement strategies.
- Only 17% of organizations report a high level of patient participation with engagement tools.
- 70% of respondents are at least somewhat confident in their ability to change patient behavior via engagement platforms, mechanisms, and technologies.
- Actual patient adoption is still low. On average, organizations report that 35% of patients have adopted the patient engagement technologies that are in place today.

Patient Portals and Telemedicine Are the Top Technologies Currently in Use for Patient Engagement

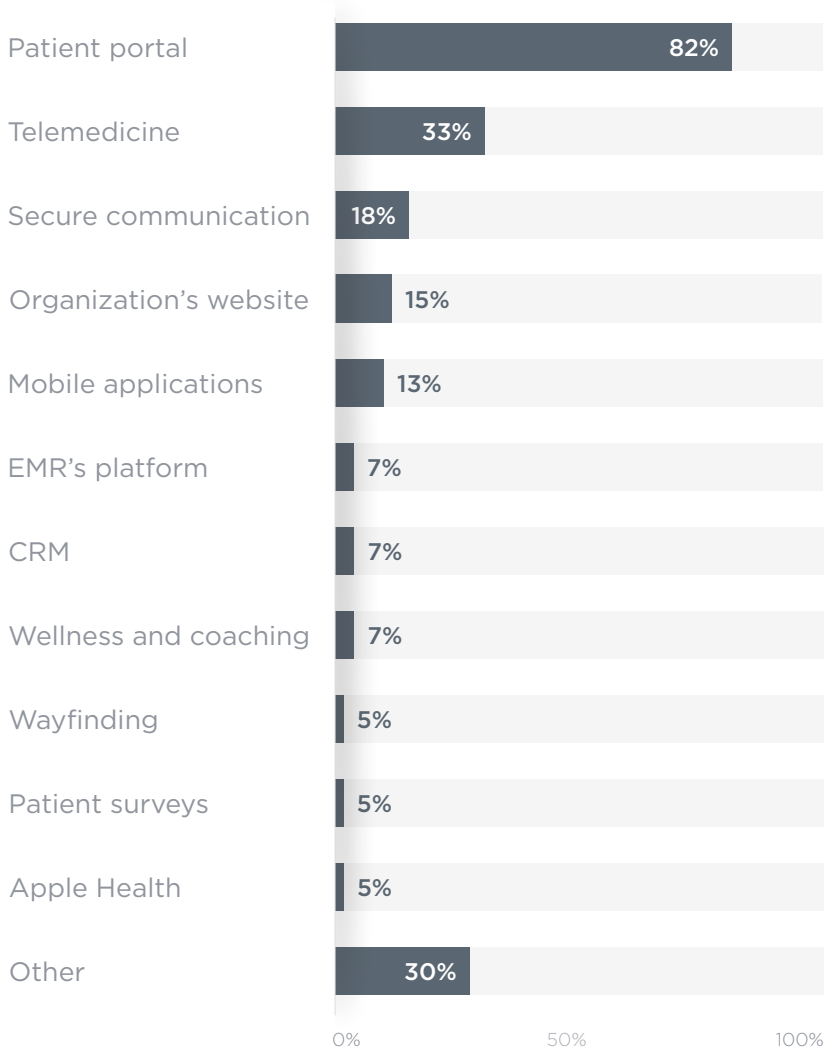
Health systems report that patient portals are central to their patient engagement strategies. Portals are used for a variety of activities, including appointment scheduling and secure messaging. Respondents note that while getting patients signed up for a portal is easy, getting them to actually use it is often still a challenge.

One-third of respondents—mostly larger organizations—leverage telemedicine as part of their patient engagement strategy, and most of these organizations report that their efforts have been met with just moderate success; those few who report strong success recognize that they are an exception. Reimbursement remains a common barrier.

Other engagement technologies see much lower adoption. Health systems that have deployed secure communication solutions are happy with the success they have achieved and appreciate the ability to communicate with patients via multiple mediums, including email, text, and phone. They report that the patient response to such communication is generally positive.

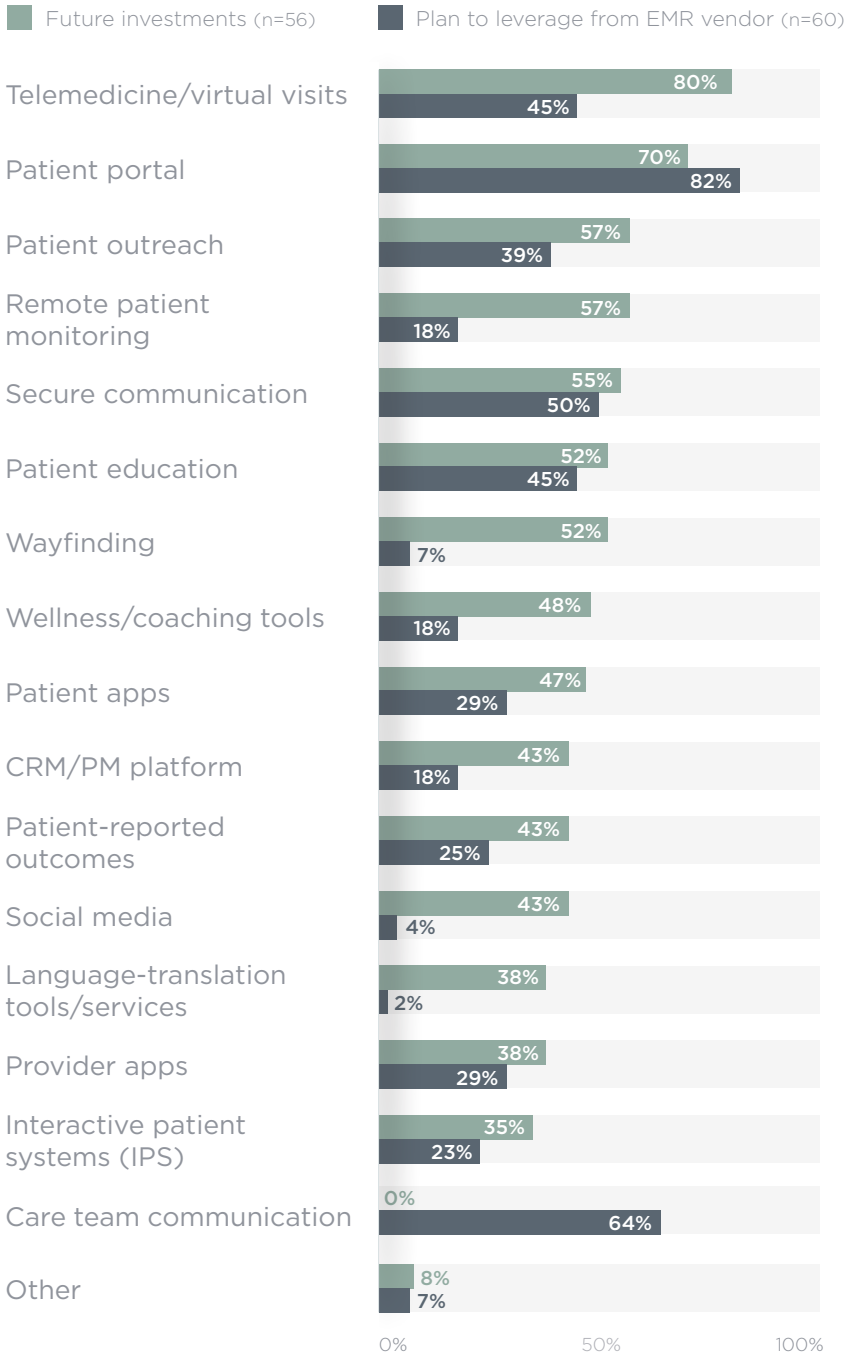
There is early energy around Apple Health, which allows providers to access patient-generated data and enables patients to view their medical records on their mobile device. A few respondents currently use the technology for patient engagement. A handful of respondents have also deployed unique engagement technology, such as apps that allow patients to reserve a spot in an urgent care waiting room.

Top Technologies Currently Leveraged to Engage Patients (100-percent scale) (n=55)



Note: "Other" includes discharge calls, online bill payments, social media, kiosks, language translation, online scheduling, patient rounding, diabetes management, remote patient monitoring, RTLS, and wait times software.

Future Investment in Patient Engagement Technologies (100-percent scale)



Patient Portals and Telemedicine Also the Most Common Areas of Future Investment

Health systems are increasing their investment in patient engagement, reporting plans to invest in an average of eight different patient engagement initiatives over the next few years. All five of the top areas of future investment are focused on connecting with, communicating with, and monitoring patients outside the walls of the health system.

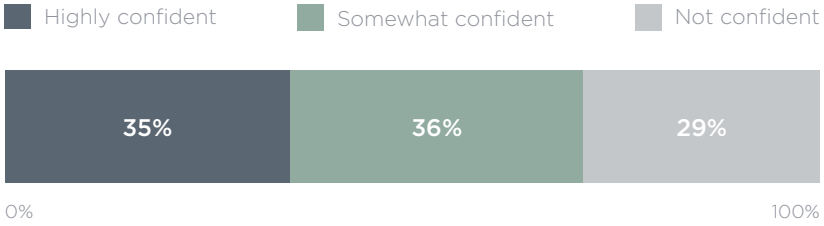
Telemedicine is the most common investment priority. Patient adoption is currently low, and payers have been slow to embrace reimbursement for telemedicine practices, but respondents report tremendous energy and optimism for the future.

Patient portals, which are viewed as central to patient engagement efforts, are also a common investment priority. Seeking native integration, most organizations plan to leverage the patient portal technology provided by their EMR vendor. Beyond the patient portal, health systems also plan to leverage their EMR vendor for various patient communication tools. In other areas, most health systems feel they still need third-party tools to fill patient engagement gaps in their EMR vendors' offering.

> "The patient portal is one of the top three technologies that we leverage to engage patients. We are also focusing on telemedicine and virtual visits. We have really tried to stress telehealth as an organization, and I think that our ability to drive volume there is pretty far ahead of the rest of the country. A lot of places have built services like that but haven't necessarily seen the uptake, and we have been really good at driving those outcomes."
> —Medical Director of Patient Engagement

Confidence in Technology's Potential Is High

Confidence That Engagement Technology Can Change Patient Behavior (100-percent scale) (n=55)



Many patient engagement efforts are aimed at changing patient behavior in ways that improve patients' health and hopefully lead to lower costs. The majority of health systems (70%) are at least somewhat confident that their deployed patient engagement technology can change patient behavior. Respondents believe that they have at least given patients the opportunity to engage, though they acknowledge that much of their ability to affect change is contingent on patients actually adopting the technology.

Those who report high confidence have already had success with their deployed patient engagement technology and believe that patients want to be more engaged in their health care. Those who are somewhat confident note that patient engagement isn't a one-size-fits-all strategy and that many patients aren't seen often enough for any engagement efforts to have a significant impact. They believe that some patients will change their behavior, while others will not. Those who do not feel confident in their ability to effect change report a variety of concerns. Some feel that financial incentives will need to be created in order for patients to change; others note that certain populations, such as the elderly, are unwilling to change or to learn new technology; some feel that physicians' and patients' motivations are not currently aligned to create hoped-for changes and that physicians will be more invested in changing patient behavior when reimbursement models involve more risk.

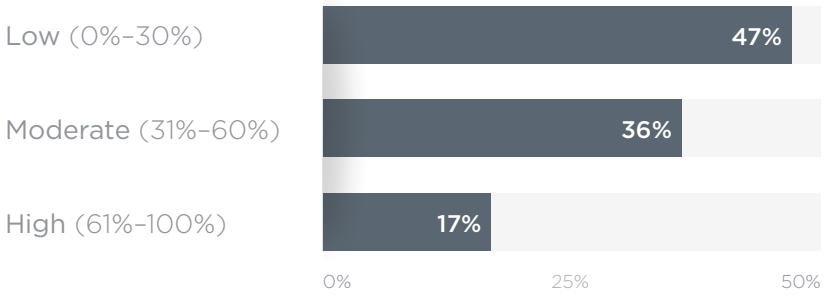
In a sentiment shared by many other respondents, a chief technology officer (CTO) expressed optimism that the industry will eventually get there but that it will likely take longer than organizations would like: "There is a quote from Bill Gates that says people overestimate what they do in one year and underestimate what they will do in ten years. That is the case here. A lot of people say they are going to make a lot of changes within the next year, but that isn't true. Changing people's behavior is more difficult in our environment. We have predominantly underserved markets. If I were at a facility where most people used technology a lot in their daily lives, I would give the platforms a perfect score. But in our region, the score is low."

> "Our confidence in patient engagement technology depends on the kind of behavior it is targeting. If it is behavior centered on managing patient care and involving patients in their care, our confidence is high. But if we are talking about changing patient behavior related to a particular health condition, our confidence is low. It is very difficult to use technology to change a diabetic's behavior around nutrition habits. But when it comes to using technology to connect patients to their primary care physician in a way that works for them, that is something we are interested in."
> —Director of IT Innovation

Current Adoption Is Low, with Patients Seen as the Biggest Roadblock

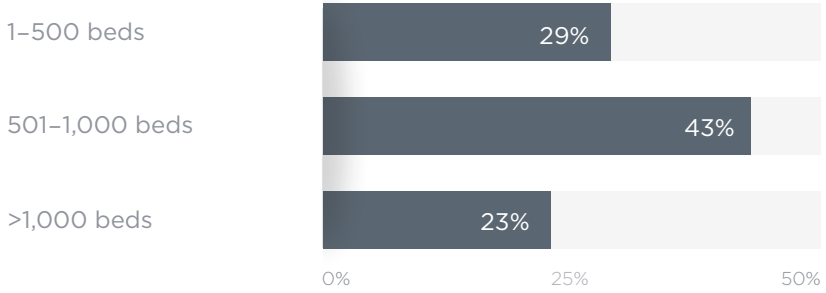
Level of Patient Adoption of Engagement Technology

(100-percent scale) (n=59)



Average Percentage of Patients Adopting Patient Engagement Technology—by Organization Size

(100-percent scale) (n=53)

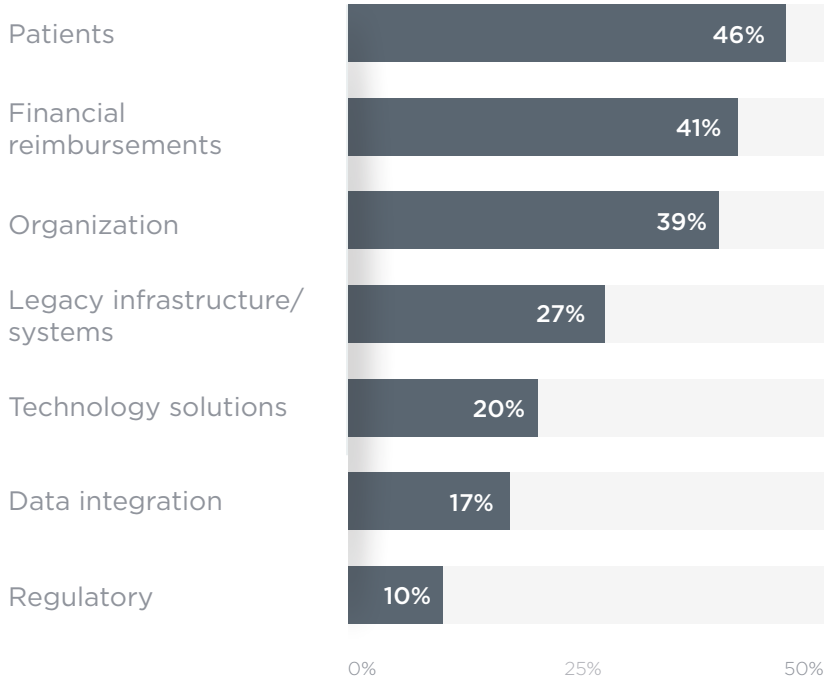


Overall, patient adoption of patient engagement technology is lower than health systems would like. Almost half of organizations report low rates of adoption, while only 17% report high rates. Midsize organizations are the most likely to have achieved high adoption. Very few small organizations report high or even moderate adoption.

Multiple respondents note that patients are more active with patient engagement technologies in the ambulatory setting than they are in acute care environments. They attribute this to providers not seeing the benefit of using such technology for independent acute care episodes. An informatics vice president explained, "There is disparity between the ambulatory and acute care environments because our surgeons, our hospitalists, and sometimes our ED physicians don't see value in encouraging a platform that promotes increased communication following acute care stays. Patients are not encouraged to sign up or use the technology, or if patients do use the technology, they don't get the responsiveness they expect. There is some value-add in the ambulatory environment that encourages those providers to entice patients to use the tools."

Biggest Barriers to Patient Engagement Adoption

(100-percent scale) (n=59)



Patients are identified by respondents as the biggest barrier to the adoption of patient engagement technology. A variety of factors—including a patient's age and socioeconomic status—impact whether patients choose to adopt the technology. Additionally, some organizations feel that while much of the needed technology infrastructure is in place, incentives for participation are lacking, including rewards for participation and penalties for not engaging.

Reimbursements are the second most commonly reported barrier, and midsize organizations actually identify financial factors—as well as internal organization factors—as being bigger barriers than the patients. Telemedicine in particular was called out as an area in which payer buy-in is lacking. While a few telemedicine practices are reimbursed, widespread financial support does not currently exist. A director explained, "The biggest barrier is reimbursement. Everyone knows that it works very well, and the payers drive a lot of it, so we look at it as if there are bundled payments. That works well, but obviously, adoption rises when something is covered by insurance because people can consider convenience and cost."

Organizational barriers are also commonly reported. Some respondents describe misaligned priorities in terms of the governance, budget, and speed of their patient engagement strategies. Others say internal staff members have been unwilling to change their workflow to accommodate patient engagement. For example, enabling patients to directly message their clinicians can create a significant amount of extra work for the care team.

> One of our biggest barriers to patient engagement, quite frankly, is the patients themselves. If you think about engagement with the primary care physician, there is an incentive because you are continually going back to that person. We don't have any patients knocking our door down wanting to see the records of how many times they visited a certain therapy setting. They don't want to relive their experience. They want to move on, and after that, they don't really care. They may come back and tell their primary care physician they want some records about some lab results." —CIO

Top Strategies for Connecting with Hard-to-Reach Patients

Text Messaging

"People don't pick up their phones anymore, so we are trying to utilize texts. People respond to text messages. People are less embarrassed to do things over text or chat." —Director of IT Innovation

Care Management

"The coordinator is a nurse that calls patients daily or weekly depending on their risk scores. . . . Also, I think the nurse visits once a month. We also have health coaches. They visit once every week or two and make a home visit to the patient." —CIO

Medication Management

"The medication reminder tool sends text messages to patients or calls them to remind them to stick to their medication schedules. The attractive thing is that the tool allows for two-way communication. There isn't just a reminder, an automated push, or an alert. Patients have to confirm receipt of the alert and give some type of feedback." —CIO

Telemedicine

"We are using telemedicine a lot for inpatient consultations or specialists located at our main hospital; those specialists reach out and do remote telemedicine visits to outlying facilities. That work extends our reach to those patient populations." —CIO

Church-Based Networks

"We have a national best practice, if not an international best practice, and we have a number of folks that come to learn about it. We have a congregational health network of over 500 different churches that we partner with to reach out to their congregants in a number of different ways." —CIO

Advertising

"Our strategy is to send people out in the field. Our people travel all over the state because some people won't hear about us any other way. We advertise like crazy and put up billboards." —Chief Enterprise Architect

Letters, Social Media, Phone Calls

"We use social media, traditional US mail services, and direct telephone calls to contact our hard-to-reach patients." —CIO

Care Coordination with Mental Health Facilities and Government

"We have good engagement with our community organizations, including social services; our local, federally qualified health centers; and similar entities." —CIO

Specialized Locations

"Right now, we spend a lot of time and effort on men's health. We opened a primary care practice for men only. . . . We want to promote the idea that our facility is a place where men can safely go and talk about their health problems. Men are worth taking care of, and the facility is a place where they can easily go to receive care." —Director of Interoperability

Patient Portal for Homeless

"The homeless population here is high. They are actually very high utilizers of the patient portal because they interact with the world through their phone. They also go to the library to look up their results. The patient portal has taken on a life I would not have guessed. The portal is probably one of the more successful things that meaningful use has brought out." —CIO

Community Outreach for Underprivileged/Homeless

"We service a large percentage of patients classified as underprivileged. We have a fairly successful outreach program, but the biggest challenge is that these populations don't have access to basic technologies. . . . When we roll out our app, these patients will be assigned a device that they can use for the duration of their stay." —CIO

Data Aggregation and Analytics

Effective and comprehensive data aggregation has the potential to enable better clinical decision-making and power population health management efforts, making it a top priority as health systems attempt to shift to value-based care. In order to move the needle on outcomes and cost, organizations are seeking clean, normalized data from an ever-growing number of data sources. Many believe that complete data aggregation will be an ongoing pursuit. For the purposes of this report, we define several terms as follows:

Data aggregation: Refers broadly to the ability to access data from disparate sources to generate valuable insights.

Clinical integration: Refers to the ability to access patients' complete clinical data within the EHR rather than needing to go into individual systems.

Full integration: Refers to the ability to access all patient data—including clinical, financial, demographic, and other data—within one system.

Key Questions

1. How close are health systems to full integration?
2. What data sources have been successfully integrated?
3. What motivates organizations' data aggregation and analytics efforts?
4. What barriers still exist to data aggregation?

Key Findings

- On average, organizations report they are 71% of the way to complete clinical integration and 61% of the way to full integration (which includes clinical data as well as claims, financial, and other data sources).
- Larger organizations are slightly further along with integration than smaller organizations.
- Nearly all respondents leverage their EMR as a central component of their integration strategy.
- In addition to the EMR, health systems deploy an average of two or three additional analytics tools to support their integration efforts.
- Most organizations employ an internal analytics team as part of their strategy; one reported benefit is the money saved by not using external resources.
- Nearly 70% of respondents report patient-centered motivators as the top factors driving their integration efforts.
- The barriers that most commonly prevent organizations from fully achieving their integration goals are limited resources/ funding and poor data normalization.
- Nearly half of participants report that the barriers they encounter are due largely to health IT vendors.

Complete Integration Not Yet a Reality

On average, respondents report they are 71% of the way to complete integration of their clinical data. Most organizations use a single software platform or completely integrated EMR to integrate the majority of their clinical data sources, the exceptions being disparate ambulatory EMRs and a handful of ancillary systems (e.g., cardiology, radiology).

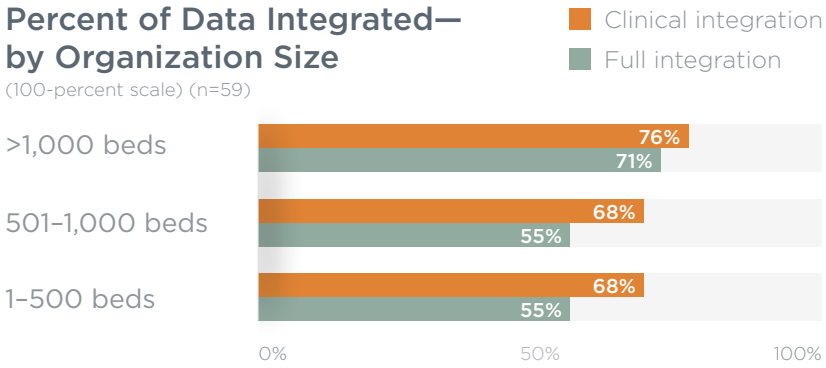
Percent of Data Integrated (100-percent scale) (n=59)

When it comes to full integration—aggregating clinical data with data from financial systems and outside data sources (e.g., claims data)—strategies are less complete. On average, organizations report 61% completion. Most commonly, health systems lack integration with outside organizations (such as public health information exchanges [HIEs] and neighboring health systems), various internal systems, and claims data from payers.

Compared to their small and midsize peers, large organizations prove to be slightly more advanced in both clinical and full integration. These organizations are less likely to cite resource or funding constraints as a barrier.

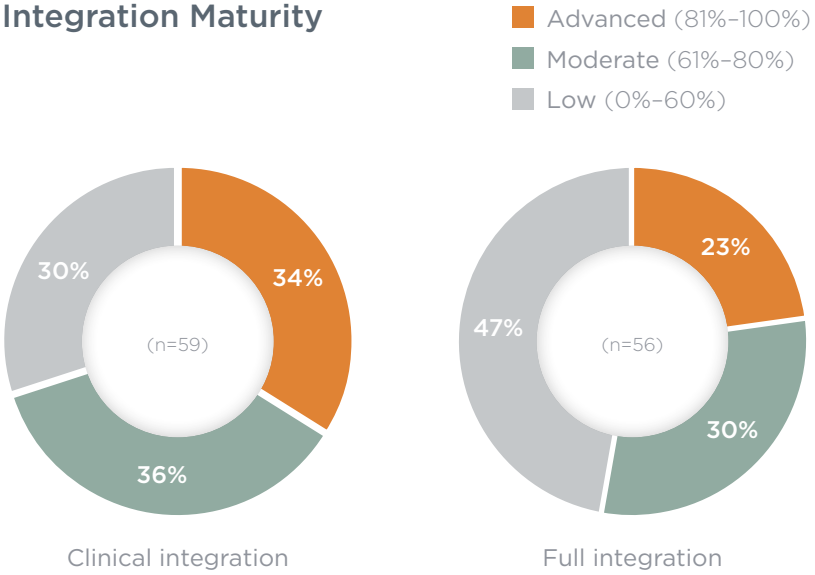
Percent of Data Integrated—by Organization Size

(100-percent scale) (n=59)



Across organizations, advancement toward complete clinical integration is split nearly equally between those who can be considered early, those who have attained moderate integration, and those who are advanced.

Integration Maturity

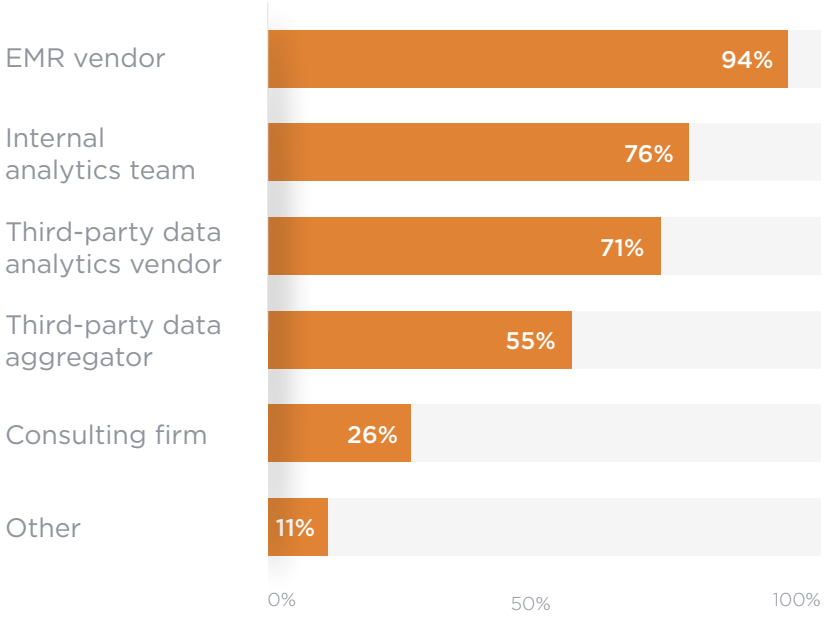


Advancement toward full integration is less evenly distributed, with nearly half of organizations reporting a completion percentage below the average. While the industry has made progress, many respondents—including some from organizations with more advanced integration—still see significant room for growth, especially when it comes to making data useful and valuable to providers. A senior IT director stated, "All of our clinical and business data goes into our enterprise data warehouse (EDW), so it is possible that we could use that data. Part of the challenge, of course, is actually making the data useful. . . . Yes, we pull all of that data. Yes, a number of systems are integrated into our EMR, but not all. We are working on the integration. The data is technically all usable; the question is whether we have the capacity to use it all. We need to continue to grow and refine our analytics and EDW teams."

EMR Is the Core

Driven largely by the need to make data available for clinician use at the point of care, almost all respondents (94%) report using their EMR vendor for help achieving their aggregation and analytics goals. About three-fourths of organizations utilize an internal analytics team, opting to use in-house resources rather than pay for a third-party consulting firm. Larger organizations are the most likely to have such a team, which they leverage often, as there are always additional data sources to integrate. In addition to the EMR, organizations typically use two or three other analytics software tools as well as an integration engine for the connections needed.

Partners Being Used to Achieve Data Aggregation and Analytics (100-percent scale) (n=62)



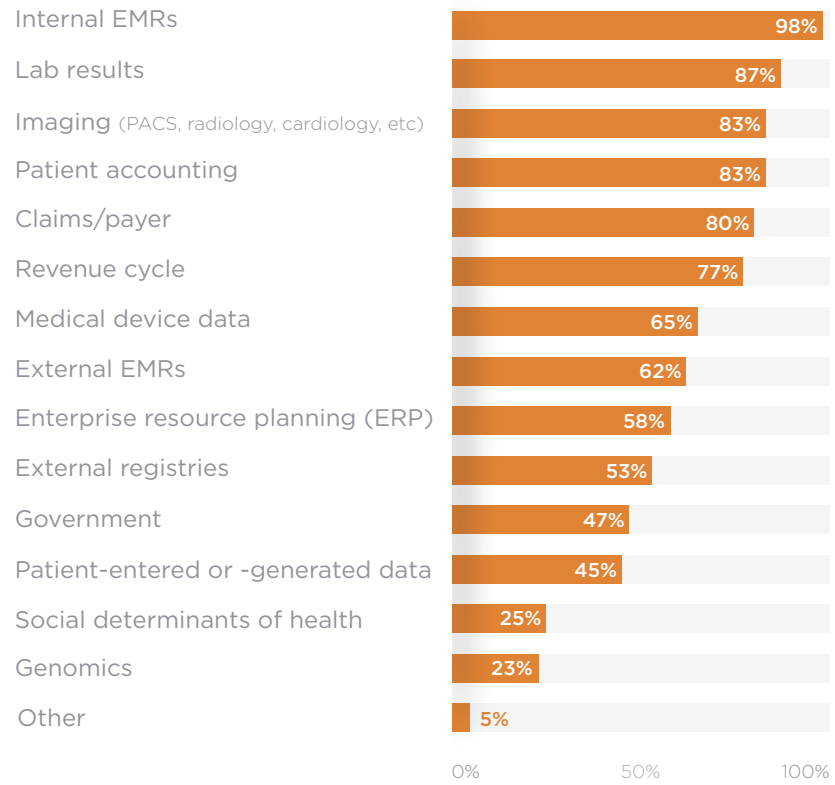
> We currently get our analytics from a bunch of different sources, and we have been on a kind of analytics and data integration hunt. But again, data without actionable information is of no value. And finding somebody who can provide that actionable information is tough because we have to have so many different pieces to make it work. There's also a tremendous naiveté out there about how you're going to have this tremendous impact if you do it." —CMIO

> We are definitely on a journey with clinical data integration. We have been able to leverage our EMR vendor's database to get a lot of external data sources in the system. We are able to report based on some of those sources. There are still some important gaps, and we are definitely trying to fill those gaps. We have a lot of connections in place with different systems to achieve full data integration. I am not sure how much is manual versus automated. We are getting there, but we still have a ways to go before everything is electronic." —CMIO

Integration Common with Internal EMRs and Lab Results; Room for Improvement with Other Data Sources

Imaging data and claims/payer data have historically been difficult to aggregate, so it is surprising that such high numbers of respondents report successful integration in these areas. However, even those that report success have some of the same challenges that have always existed with these data types—i.e., imaging data is reported as incomplete (organizations have integrated referential data but not diagnostic data), and claims data is often outdated and hard to ingest due to a lack of data standards. A CIO shared, "Integration with payers is tough. I would say we are closer to 70% integration with the payers we track. One of the biggest struggles with payers is the lack of standardization for claims data. They are not obligated to adhere to a particular file format. [Our EMR vendor] has a standard, but none of the payers adhere to it. When we look at clinical data language, FHIR, and HL7, we are making progress. With payers, we are far from it." CMS has recently proposed new rules that will require payers to make patient health information available electronically through a standardized, open application programming interface (API).

Integrated Data Sources (100-percent scale) (n=60)



Respondents note room for improvement with integration of enterprise resource planning (ERP) data. Large health systems are the most likely to report success in this area. Some of the least commonly integrated data sources include social determinants of health (e.g., socioeconomic status, education, zip code), genomics data, and patient-generated data. Despite the low success rates for genomics data (due to its complexity) and social determinants of health (due to data being difficult to collect and share), most respondents report high energy and optimism for these areas for the future. The 25% who are currently integrating social determinants of health are very early in these efforts. A chief executive officer (CEO) stated, "We are just dipping our toe in the water as far as social determinants of care are concerned." Health systems are still trying to figure out how to integrate and manage the large volumes of patient-generated data.

> I personally have a lot of concerns about the integrity and amount of patient-generated data. Even the amount of data from one Fitbit is overwhelming, and most of our EHR systems are not constructed for that. It would be nice to be able to use patient-generated data, but we would need to stream it through some sort of machine learning so that we could take all of this unsolicited data and actually take appropriate action on it." —CMIO

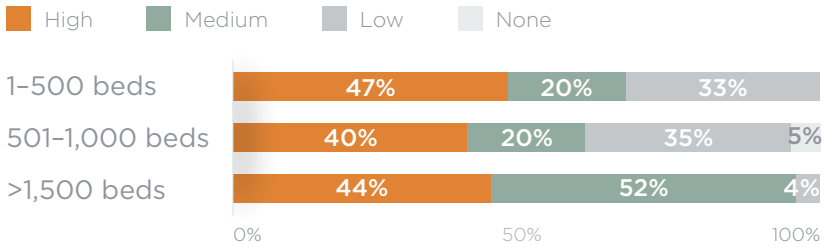
Patient-Centered Motivators the Top Drivers

When asked to rank the priorities driving their data aggregation efforts, nearly 70% of respondents selected patient-centered activities as their first or second priority. As one CIO put it, "If we aren't putting patient outcomes first, then what is this all for?" Additionally, the priorities ranked as the top three—improving clinical outcomes, lowering the cost of care, and managing population health—all relate back to organizations' value-based care efforts. Many of those that selected clinical-outcome improvement as their top motivator feel that success in this arena will naturally lead to the achievement of other desired outcomes as well. Few respondents report clinical research as a top driver of their data aggregation efforts. A director of clinical information systems noted, "Our number one priority is improving clinical outcomes. That is our highest, most important priority. That is what drives everything for us. Clinical research is kind of at the bottom. Only a few of our hospitals are engaged with research; in most cases the research is done through joint ventures with academic medical centers."

Though the patient is at the center of organizations' data aggregation efforts, financial concerns—like generating revenue and meeting the requirements for value-based reimbursement contracts—are also a top priority, especially for larger organizations. These organizations are much more likely than their smaller counterparts to cite financial factors as a medium- or high-priority consideration.

Respondents who don't rank revenue and financial risk as significant factors in their data aggregation efforts are still engaged in mostly fee-for-service payment, though most anticipate that over the next several years, value-based care will make up an increasing portion of their revenue model. "We don't have much value-based care yet in our state," said an IT director, "but we know it is coming. It is not the biggest driver of our efforts yet. If our payers were to switch to that model like we know Medicare is going to do eventually, that would certainly change our priorities." Rather than financial concerns, organizations with less risk-based reimbursement cite improved clinical outcomes and patient safety as the main drivers of their data aggregation efforts.

Degree to Which Financial Concerns Play into Data Aggregation Efforts (100-percent scale) (n=59)



Priorities Driving Data Aggregation Efforts (n=59)

1. Improving patient clinical outcomes
2. Lowering cost of care
3. Managing population health
4. Improving patient experience/engagement
5. Increasing revenue
6. Reporting to government and other entities
7. Reducing IT complexity/cost
8. Clinical research

> There isn't necessarily one priority that is higher than the others. All of the priorities are bundled together. We want to figure out how we can improve patient outcomes at the lowest cost and in the most efficient manner without compromising our patient care. We look at reporting to the government and other entities as more of a requirement. The importance of clinical research depends on the health care system; some people see it as a high priority. We do have advanced research branches, but we don't have a teaching medical center. That priority is a little lower for us because of the nature of our health care system. In terms of reducing IT complexity, we want to make sure that we aren't overengineering solutions, and we also don't come into a project thinking only about how simple we can make it. We ultimately want to do what is right for the patients in the most efficient way." —CIO

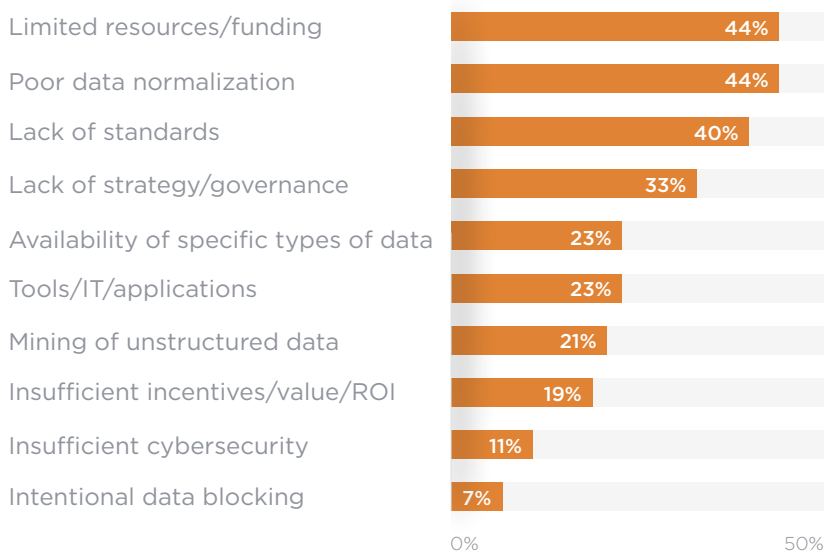
Limited Resources/Funding and Poor Data Normalization Inhibit Progress

Cited by almost half of respondents, the most common barriers to data aggregation include limited resources/funding, poor data normalization, and lack of standards. The cost to integrate can be high, and it is common for organizations to lack the funding or resources needed to properly integrate and analyze their data. Additionally, aggregated data is useful only if it is accurate, and poor normalization and standards inhibit organizations from being able to trust the data they have. This lack of standards, in conjunction with a lack of strategy and governance, is cited by the majority of midsize organizations as their biggest challenge. Small organizations were the only ones to report intentional data blocking as a barrier.

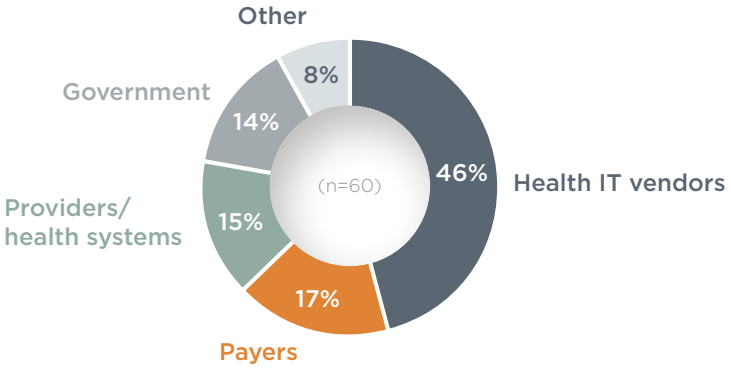
Health IT vendors are viewed as the most common source for data aggregation roadblocks. Some vendors are unwilling to facilitate data sharing, and even minor differences in data formatting and naming conventions can make it impossible to aggregate and compare patient data. An IT director explained, "Vendors bear the greatest responsibility for causing barriers. I don't put a lot of blame on the other stakeholders because we can't integrate data unless it comes from a system. We can scan miscellaneous data into our image-storage place, but that is not really usable data. Everything else that is worth anything as actual data comes from systems we have purchased from IT vendors, and it is a lack of standards and interoperability between the vendors that causes most of the problems. I guess one could put payers on the list of responsible parties; part of the issue comes from their end as well."

Biggest Barriers to Data Aggregation

(100-percent scale) (n=57)



Stakeholders Most Responsible for Causing Barriers



To a lesser extent, payers, provider organizations, and government agencies can also create barriers. As the following CIO explained, payers are not always willing to engage in reciprocal data-sharing relationships with provider organizations: "[Payers] have a lack of standards in terms of data exchange and in terms of their IT shops. Health care IT shops have to be disciplined for patient safety and regulatory issues; payers don't. They have an attitude that their data is their data, and they don't adhere to a democratic notion of sharing it. They are very competitive against other payers. They don't like the fact that we might be mingling their data with other payers' data." Government agencies contribute to the problem by creating confusing or hard-to-meet regulations.

Regardless of who is responsible, all parties must contribute to the solution. Respondents suggest that health systems can help by working together to create standardization, implementing internal change management to facilitate the quick implementation of solutions, and educating patients to be consistent in how they report data to the different provider organizations from which they receive care.

Precision Medicine

With its potential to improve treatment options and clinical outcomes for any number of diseases—including costly, hard-to-treat diseases such as cancer, neurological disorders, and rare genetic conditions—precision medicine is a growing area of interest for many health systems. Health systems are optimistic that the science will continue to advance to help providers use genetics and other individual variables to create novel treatments. However, barriers to entry are high, reimbursement can be a challenge, and adoption is currently limited to relatively few organizations and use cases. Despite these near-term challenges in adopting precision medicine, a majority of respondents anticipate that it will be a significant area of focus in coming years.

Key Questions

1. What is the current state of the precision medicine market? How mature is it?
2. What is motivating provider organizations to move toward precision medicine?
3. How will organizations measure success?
4. What barriers are preventing the adoption of precision medicine?

Key Findings

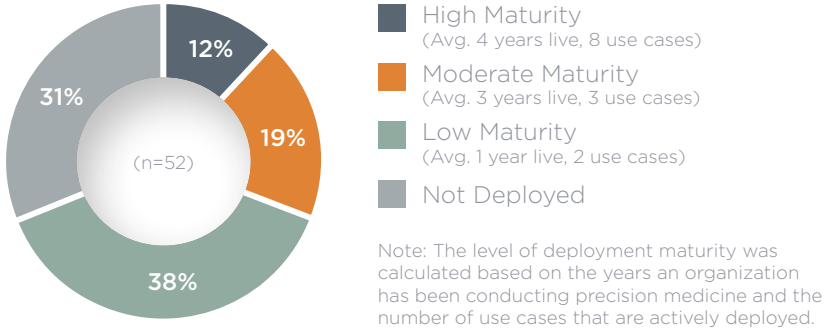
- Nearly 70% of interviewed organizations report low maturity or no deployment of precision medicine efforts.
- On average, those organizations with a deployed precision medicine strategy have been live for about three years and have adopted three precision medicine use cases.
- Oncology is the predominant use case, with the deepest deployment and adoption.
- Improving patient care is the primary focus of precision medicine programs, especially for organizations that have just recently launched their efforts. Among organizations that have been doing precision medicine for years, clinical research is the most common motivator.
- Many organizations feel it is too early to track the outcomes of their precision medicine programs; however, they most often cite lives saved and improvement to quality of life as their top metrics for success.
- There is tremendous optimism in the potential of precision medicine. However, reimbursement and generating a return on investment (ROI) are significant barriers, reported by 51% of respondents.
- Currently, precision medicine is funded primarily through fee-for-service or out-of-pocket payments. Respondents expect payment to shift to a value-based model over the next few years.

Precision Medicine Still Early at Health Systems

Most organizations are very early in their exploration of precision medicine. A CEO stated, "We are in the really early stages [with precision medicine], along with most organizations. Some are a little further ahead, but we are in the really early stage." Even the organizations with the longest, broadest precision medicine experience are still far from maximizing its potential. However, interest in the field is high, and a majority of health systems plan to expand their current efforts or begin an initial deployment.

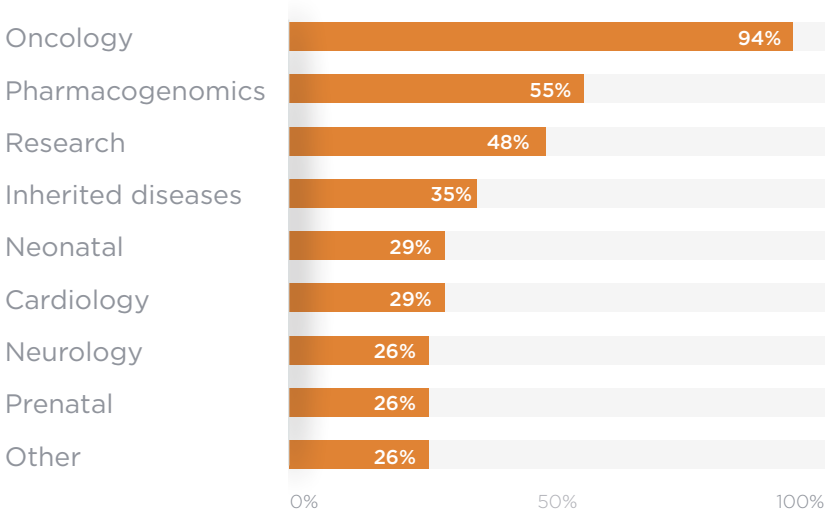
Only 12% of interviewed health systems, mostly larger organizations, can be categorized as mature in their precision medicine efforts. On average, these organizations have been engaged in precision medicine for four years and have deployed eight use cases.

Level of Precision Medicine Deployment Maturity



Note: The level of deployment maturity was calculated based on the years an organization has been conducting precision medicine and the number of use cases that are actively deployed.

Use Cases for Precision Medicine (100-percent scale) (n=50)



Overall, health systems interviewed for this research use precision medicine for an average of three use cases, the most common being oncology, an area in which health systems have achieved proven outcomes. Almost all respondents with precision medicine programs report use cases in oncology, and those who begin a precision medicine program today are likely to start with oncology (or with use cases involving chronic illness, especially in children). A CIO shared how their precision medicine efforts have directly impacted oncology treatment: "We do a lot with cervical cancer and breast cancer. Genomic and phenome studies can pick up the genes that mean a woman has a high probability of developing cervical or breast cancer. In a number of cases, women have decided to go forward with care based on these studies because they find out they have an early stage of cancer nodules. Those studies really do work and can save people's lives, and that is tremendous."

Precision medicine has the potential to enhance care across a breadth of specialties, though in many areas, the use case for precision medicine is still being developed. However, as health systems achieve outcomes with their initial programs, they are starting to expand precision medicine treatments to new areas, such as behavioral health, inherited diseases, and pediatrics.

Health systems that have not yet begun precision medicine efforts or that have experienced difficulties starting a precision medicine program mention concerns about EMR integration. A chief enterprise architect shared, "We are absolutely using personalized therapies, but I don't see them as true enterprise focuses right now. They just aren't really integrated into our current systems, and everybody is struggling with that." Additionally, some organizations are focused on other goals and don't feel that precision medicine will help them achieve their current priorities.

Improved Patient Care the Main Driver of Precision Medicine Efforts

Respondents make it clear that the patient is the center of their precision medicine efforts, with four of the top five adoption drivers falling under the umbrella of improved patient care and outcomes. This patient-centered motivation is most evident among the one-third of organizations that are planning to deploy or have just recently deployed their precision medicine efforts.

Some highly mature organizations report that clinical research was a significant driver in their early deployment of precision medicine. A CTO stated, "A combination of things is driving the adoption of precision medicine. It started out as research. . . . We started out on monkeys and things like that, and then it moved into patient care. We are still doing the research side." Another CIO added, "Our adoption is largely driven by research and innovation at the moment."

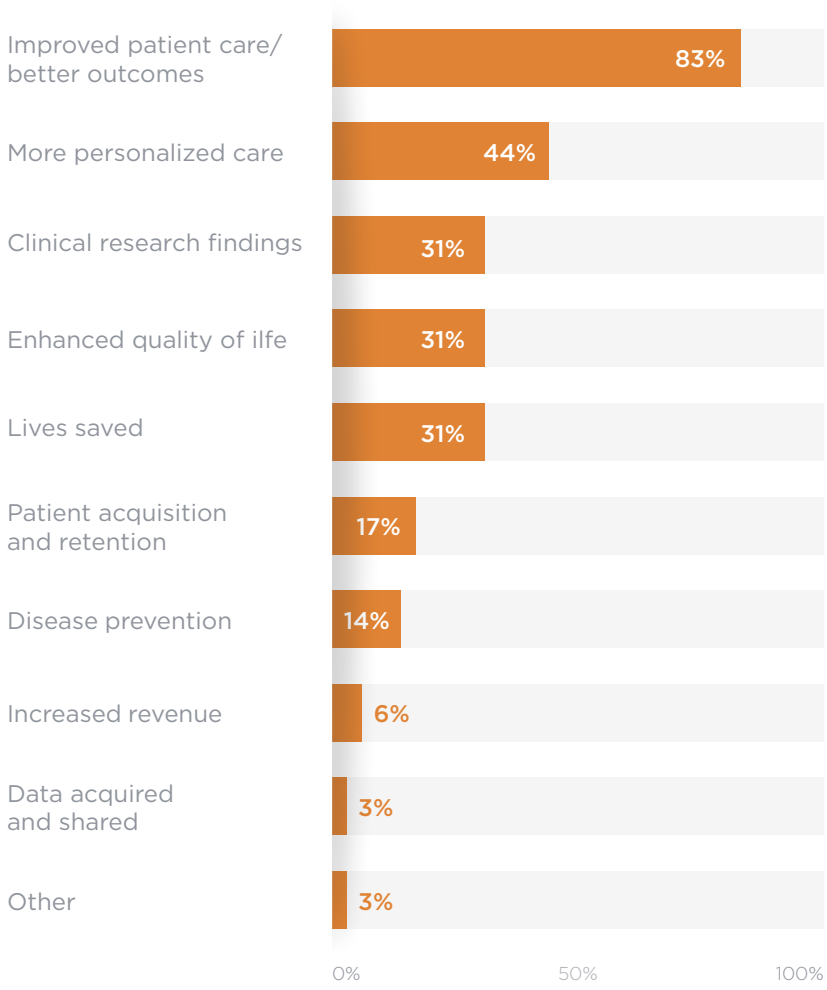
Several respondents specifically highlight that financial incentives are not currently a major motivator in their precision medicine efforts:

> "We are not in it for the money at this point. We want to improve patient care and provide better outcomes; that is definitely the number one priority." —IT Director

> "Our driving reasons behind adoption are improved patient care, better outcomes, clinical-research findings, and more personalized care. Increased revenue does not really come into play yet. It always does at some point." —IT Director

Drivers of Precision Medicine Adoption

(100-percent scale) (n=36)



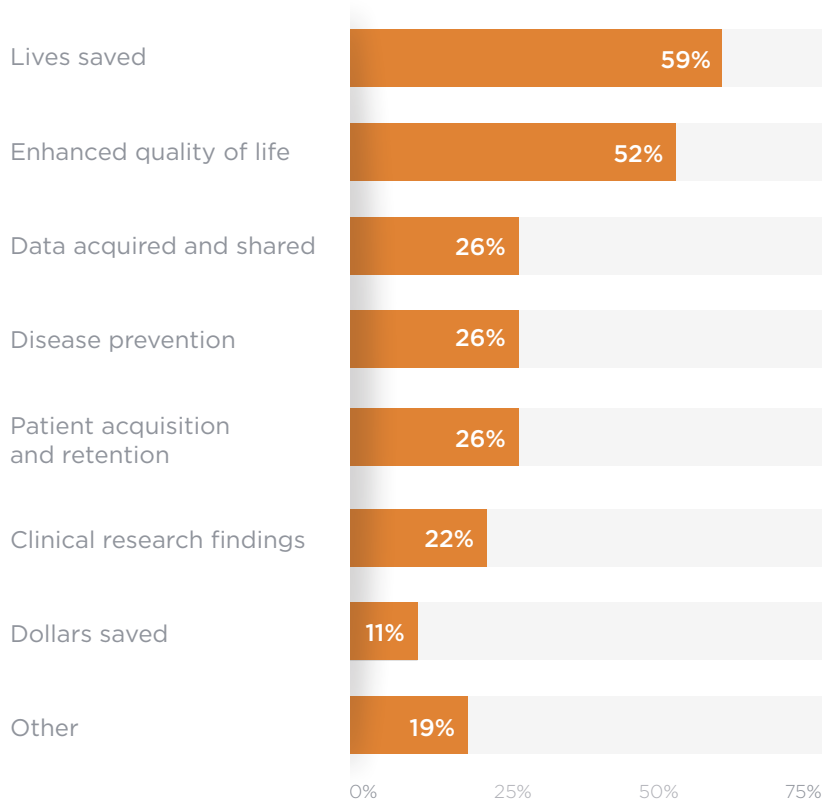
Note: "Other" includes improving patient experience, improving dose optimization for medications, reducing ER volume, and reducing readmission rates.

A large number of respondents feel it is too early for them to measure the success of their precision medicine efforts. Organizations that track their outcomes consider reduced mortality rates and improved quality of life as their top metrics for success. They hope to improve quality of life by finding the right treatment for each patient's situation and making sure that appropriate care plans are put in place. Organizations are reducing costs by being able to identify treatments and medications that are unlikely to be effective and instead focusing on treatment methods that will have the fastest, most effective impact.

Many organizations are trying to differentiate themselves through their personalized/precision medicine offerings, making patient acquisition and retention another metric of success. Some organizations measure the success of their programs by evaluating the outcomes of individual cases.

Metrics Used to Measure Precision Medicine Success

(100-percent scale) (n=27)

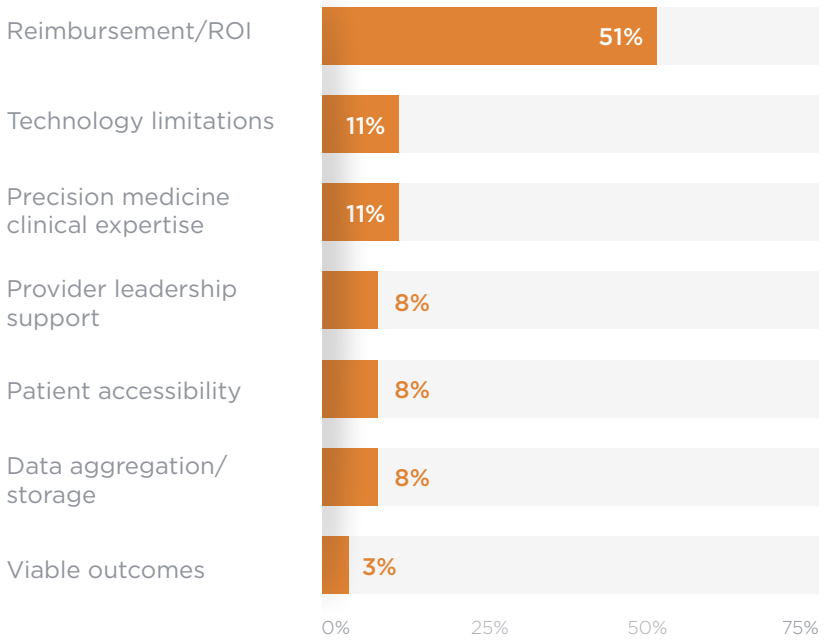


"Our metrics for success are a combination of enhanced quality of life, lives saved, and then ultimately dollars saved. If we really improve patients' quality of life and keep them from becoming the type one diabetic who needs dialysis, a kidney transplant, multiple vascular procedures, and eye surgery, and we turn them into type one diabetics who take their medications every week or every day, then we enhance their quality of life and we save money long term. That is going to save lives ultimately, and that is going to be the measure of success." —CIO

Optimism for the Future amid Current Reimbursement Barriers

Biggest Barriers Preventing Adoption of Precision Medicine

(100-percent scale) (n=37)



There is a tremendous amount of optimism and energy around precision medicine's potential to improve patient care—62% of those surveyed in last year's Top of Mind research felt it would be a high-impact health IT area within the next five years. Respondents report that this high interest is due to precision medicine's potential to identify people who may be prone to or at risk for certain diseases. Additionally, in certain areas, such as oncology, precision medicine has already improved patient outcomes and mortality rates.

Despite this optimism, significant barriers to adoption exist, the largest being getting payers to reimburse precision medicine treatments and creating an internal business case with an appropriate ROI. In order to get internal buy-in and be able to negotiate reimbursements from payers, organizations need to be able to show the value of precision medicine. Oncology is currently one of the only areas in which precision medicine is being reimbursed. In other areas, continued research and validated outcomes are still needed to help organizations build a strong financial case.

> In reality, we should be doing personalized medicine across the board. From the moment you are born, we should be doing personalized medicine. We should actually be doing personalized medicine even from the amniotic fluid to figure out what conditions a baby may be born with. So it should be a standard practice for literally anyone and everyone today. We are making all kinds of advances in oncology, but there are still a whole bunch of other areas that we haven't made as many advancements in just because we don't understand them." —CTO

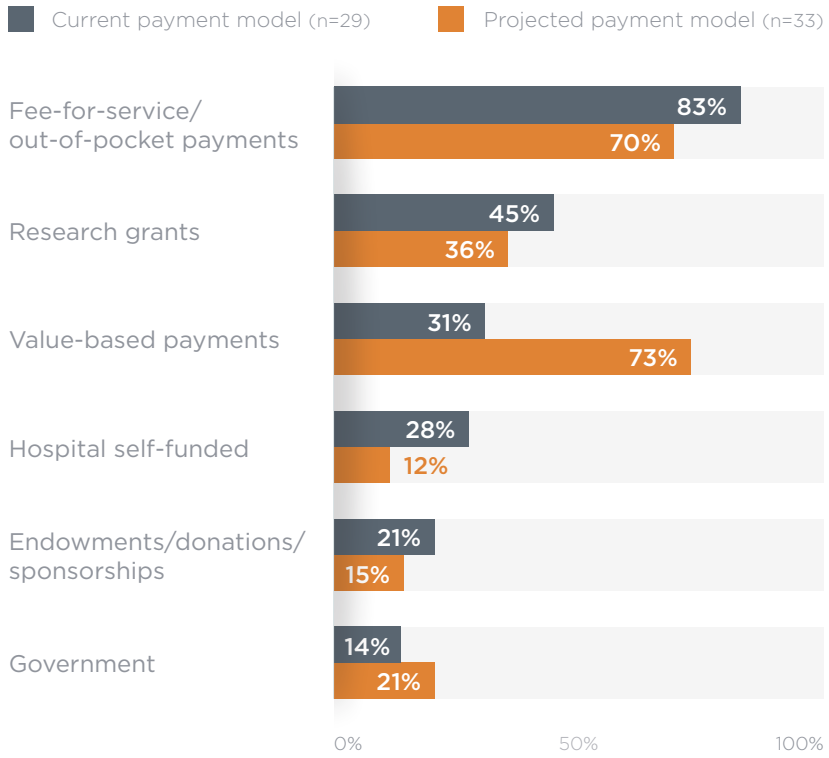
Currently, most precision medicine efforts are being funded through fee-for-service models or out-of-pocket payments by patients. Many organizations also utilize research grants as a source of funding, but this is not seen as a viable option for accelerated or long-term growth. Organizations expect that these funding strategies will decrease in usage as value-based payments for precision medicine increase in alignment with the general industry's shift to value-based care.

Some respondents believe this shift to value-based care will be advantageous to their population health management strategies given that genome mapping can help identify predispositions to risky diseases, allowing health systems to proactively care for specific patient populations.

> "Our biggest roadblock is reimbursement from the insurance companies. Because [precision medicine] isn't a mainstream treatment, they won't reimburse it. The technology is all there to do precision medicine, but because it is so expensive, people would rather not do it. Somehow we have to get the cost per unit down to levels comparable to those of traditional therapies so that insurance companies will see they can actually save money by doing things this way. I still think we are far away from that." —CIO

> "I am optimistic that payers will recognize the value of pharmacogenetic testing and increase coverage of that testing. Payers should at least do that for certain disease states and medical services." —CIO

Payment Models for Precision Medicine—Current vs. Two Years from Now (100-percent scale)



About the Authors

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The Center for Connected Medicine (CCM) is a gathering place where those seeking to drive improvements in health care through technology come to connect and inspire each other, in both the real and digital worlds. The CCM, jointly operated by GE Healthcare, Nokia, and UPMC, connects and inspires leaders and innovators through original research and industry analysis, virtual events, and on-site experiences. Learn more at connectedmed.com.

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