

The Role of Technology in Value-Based Care & Patient Engagement



INTRODUCTION

eHealth Initiative conducted a series of interviews to gain insight, from an industry perspective, on the impact of healthcare reimbursement policies on technology. In October and November 2017, twelve executives, primarily from provider organizations and health information networks (HINs), were interviewed for this research project. The names, titles, and organizational affiliation of each respondent are listed at the end of this report. Executives answered questions that aimed to establish how policies, consumerism, and patient engagement strategies influence provider decisions around the acquisition and usage of technology, while also affecting revenue.



VALUE-BASED CARE TRENDS AND THE IMPACT OF TECHNOLOGY

VALUE-BASED CARE

Value-based care programs reward healthcare providers with **incentive payments for the quality** of care provided to those using Medicare.

The programs are part of a larger quality strategy to **reform healthcare delivery and payment methods**.

Value-based care programs provide:

- Better care for individuals
- Better health for populations
- Lower cost

Centers for Medicare & Medicaid Services (CMS) 2017

Value-based care trends are having a significant impact on the technology decisions made by provider organizations and “creating an environment that supports high quality coordinated care.” Although value-based care was not the starting point for providers when thinking about technology, it now affects how data is conceptualized, collected, and analyzed in their practices. Organizations are deciding how to build onto, and beyond, their existing fee-for-service platforms. These decisions are impacting revenue and causing a level of stress for some providers. According to different respondents, when it comes to value-based care, “there can easily be hundreds of quality measures” and viewpoints vary about its meaning. There is no roadmap when moving from volume- to value-based care.

Several respondents stated that value-based care trends have led to a greater concentration on population health approaches and have forced providers focus to shift toward more robust clinical decision strategies, both in quantity and quality, by supporting workflow and scientific changes in data strategies. Providers want to maximize what they have learned about populations in general, and patients in specific. They stated that when the proper technology and resources are in place, population health programs can improve patient care and financial bottom lines.

Even providers who stated that value-based care was not specifically driving technology decisions found that their missions already hinged on the value of care. Multiple organization’s stated that their promise to enrich the lives of those they serve was explicitly stated in their missions. Therefore, clinical innovations around healthy communities and affordable, compassionate

care organically required the technology to support initiatives. These providers were utilizing technology such as enhanced business analytics and electronic health records (EHRs).

Providers consistently stated that substantial investments have been made in EHR technology, specifically related to value-based care. They are using analytics to optimize the EHR, so it may be used as a tool to close care gaps and identify populations of patients who need closer attention. With this data providers can help patients avoid unnecessary hospitalization, visits to the Emergency Department (ED), and manage ailments like diabetes better.

Value-based care trends require different analytics strategies.

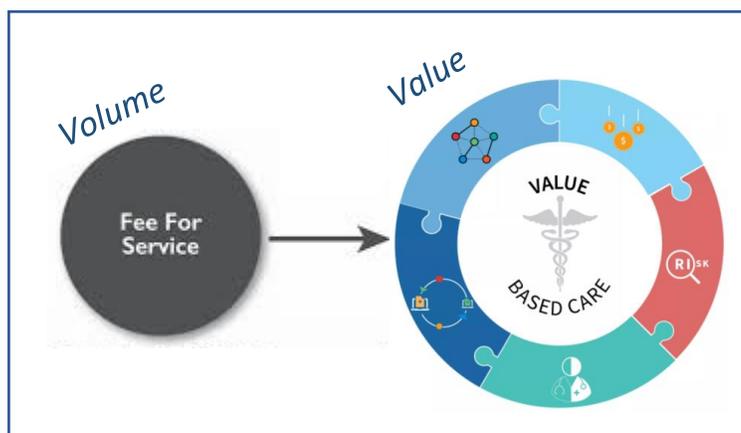
Many providers also stated that they are moving towards EHRs with built-in population health analytic tools. Health Information Networks (HINs) and Health Information Exchanges (HIEs), are helping physicians effectively use EHRs, and improve quality measures and claims reporting for CMS and insurance companies. HINs have invested in technology that tracks patients across the continuum of care and provides clinical staff with process templates. They are implementing clinical and claims repositories, creating tools to normalize data, supplying analytics staff to providers, and helping practices in the Center for Medicare and Medicaid Innovation (CMMI) programs understand their data and find actionable information.

Comprehensive Primary Care Plus (CPC+)
A national advanced primary care medical home model that aims to strengthen primary care through regionally-based multi-payer payment reform and care delivery transformation.

Providers also need analytic tools to conduct Merit-based Incentive Payment System (MIPS), Advanced Alternative Payment Models (APMs) and pay-for-performance activities. One respondent mentioned the CMMI programs, Comprehensive Primary Care Plus (CPC+) and classic, which allows CMS and commercial insurance carriers to work together to provide a per member, per month, care management fee and participate in shared cost savings if they can reduce cost of care. These programs enable providers to receive information about cost measures and utilization for their practices, as well as those of other provider groups. This data sharing allows providers to compare themselves with other practices.

Respondents from HINs found that value-based care programs required their providers to utilize a variety of resources, while stretching their profit margins. With recent changes in federal policy, the future of value-based care regulations is as uncertain as is the return on investment. HINs found that their providers were struggling to understand, and balance, value-based care program requirements with operational needs.

Although everyone interviewed is working on value-based care initiatives in some capacity, respondents recognized that some providers are still dependent upon traditional fee-for-service models. Other providers have taken “a leap of faith,” joining together to become Accountable Care Organizations (ACOs) or other value-based propositions. The uncertainty of the future makes providers cautious. As they search for examples of successful value-based care implementation, they know that duplicating success is contingent on varying factors. Providers are



getting involved with an expanding number of value-based organizations and are seeking out those who are experienced with Medicaid, Medicare Access and CHIP Reauthorization Act of 2015 (MACRA), and MIPS.

ADOPTION OF TECHNOLOGY

Provider organizations stated that they are continuing to increase their adoption of new technology, while HINs stated that their providers were primarily optimizing already acquired technology and focused on getting the most out of their investments for workflow integration. The consensus was that adoption of new technology for value-based care should be selective, in conjunction with the company's strategic plan and other organizational needs, and scalable for the enterprise. In general, providers would like EHRs to better support their needs. Respondents were not looking to replace their EHR, but wanted comprehensive tools to improve their existing software, including:

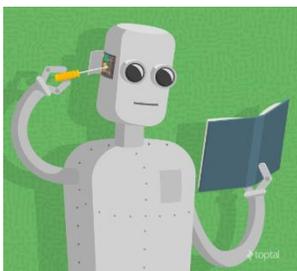


- Solutions designed to support value-based care, that could be layered on top of current EHR or billing systems
- Tools to track and manage patient flow and admissions
- Tools specific to acute care
- Tools that document outcomes and free up provider time

One respondent stated that value-based care technology is difficult to support. This respondent explained it was especially hard for providers to find staff that truly understand data analytics, which creates a dynamic of organizations that have automation for which they cannot hire. The respondent also saw a strong correlation between the revenue of an organization and its willingness take technology risks. Many value-based care initiatives are expected to accomplish more with increased organizational risks, insufficient staff, and return on investment that has not yet come to fruition, despite the heavy investment made.

The desire for providers to enhance population health management tools, and to stratify risks around patient populations capabilities, was reiterated. Although some confusion exists about exactly what constitutes a population health solution, providers know they want to address social determinants of health and are interested in combining data and knowledge to move forward. In addition to population health tools, respondents stated that tools to improve their imaging, lab platforms, administrative systems, and management reporting are needed; as were tools that addressed services not previously rendered.

Some respondents have spent the last several years putting technology in place that will enhance workflow. They are focusing on how to get the information physicians, clinicians, and case managers need embedded in their workflow processes, so they do not need to leave applications like EPIC, Cerner, Allscripts, and Meditech. HINs stated that they were providing appropriate data for case management of a defined population or implementing alerting processes for similar populations. Each provider has specific requirements based on their needs and existing tools.

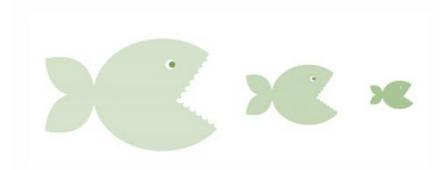


Analyzing data from numerous sources is a critical need. Respondents desire tools that meaningfully merge data from claims, clinical information, and electronic dispensing tools to produce actionable reports and more robust and functional claims databases. One HIN has been using more machine learning to better define predictor models and support enhanced analytics for their providers. Providers and HINs alike are open to vendors who can assist in their goals, as multiple respondents mentioned significant investments in analytics. Organizations also mentioned investments in artificial intelligence (AI), the internet of things (IOT), cybersecurity, patient engagement, and genomics to better manage patient care.

IMPACT OF CONSOLIDATION

We asked respondents which of the three types of consolidation was having the greatest impact on provider organizations:

- *Provider consolidation* — Hospitals have acquired providers and providers organizations have merged
- *Solution and technology consolidation* — Organizations consolidate technology in preparation for changing reimbursement models
- *Vendor consolidation* — Organizations limit vendors to those who can meet multiple business needs



More than half of respondents said provider consolidation impacted providers the most, although respondents saw all three kinds of consolidation occurring over the past two years and anticipate even more in the future. Provider consolidation affected those trying to integrate acute care into their service or expand venues of care. In some geographic areas providers are retiring or fully converting to hospital systems by becoming hospitalist, creating a shortage of primary care physicians. The hospitalist route is an attractive option for some as the hospital bears the primary burden for federal regulations.

Of the respondents stating that vendor consolidation was having the greatest impact on their organization, their regions had already gone through a period of provider consolidation. In their quest to find solutions which integrate with their platforms, providers are noticing that the vendors they were potentially interested in were purchased by larger vendors; vendors were merging with other vendors in order offer multiple solutions; vendors are compressing staff and shifting direction because of the changing market.

One respondent stated that mergers and acquisitions, or systems acquiring physicians, have not had an impact, especially on the services being provided. Another stated that convergence to a single EHR and their revenue cycle management system had the largest impact on their organization, not consolidation.

TECHNOLOGY: IN-HOUSE, OUTSOURCED, CONSOLIDATED



The question of consolidating, outsourcing, and leaving technology in-house garnered the largest variety of responses from interviewees. Providers viewed technology as a joint venture *with vendors* and ancillary services. They saw consolidation as an efficient way to deal with commodified technologies that overlapped in function and capability, a method to strengthen infrastructure, and a means to create room for diversified and specialized applications. One provider stated that as their system matures, they are moving away from companies that are considered the best to those who can deliver most of their needs and standardize their IT platforms.

While respondents recognized that some providers have not moved to electronic health records (EHRs), and are still using paper charting, EHR management was a major factor in the decision to outsource, consolidate, or leave technology in-house. EHR options are dynamic, with products that could be managed in-house or off-site. Vendors offer a combination of options for outsourcing and in-house data management. Scheduling, internal systems, human resources, and anything that required and understanding of operations were among items some respondents felt should remain in-house. A third of respondents felt like an organization's EHR is *best* managed in-house, while some felt that EHRs were creating technology consolidation, and EHR convergence was creating

minimization. Private cloud servers, Cerner's hosted facility in Kansas City, and EPIC moving in the direction of hosting services were mentioned during this discussion.

Integration and collaboration were also important to providers. Respondents specifically stated a desire for products that enabled HIEs, PCPs, and specialists to collaborate and facilitate better patient care. An HIN respondent stated that EPIC-based EHRs dominated the market in his region, which prompted the health systems to unify their voices about the direction EPIC should take. They leveraged their power as a collective of users to identify best practices and maximize their individual investments.



Along this vein, a provider stated that EHR systems should exchange data more seamlessly. This respondent said that large groups tend to have different systems for different providers, thus cancer, cardiology, and gynecology all operate different EHRs. The provider believes that consolidating data from all the records will help with population management technology.

Another HIN respondent stated that their investments should involve collecting information across the spectrum of providers and conducting community data searches across all participants. For example, an HIN could be a repository for information on emergency department visits made to different hospitals by the same patient. This respondent also advocated for HIEs investing in technologies that offered a competitive advantage, but were too expensive for one health system to afford.

A third of respondents also felt like absolutely nothing must be managed in-house. One provider stated that it takes a while to become comfortable with not being able to "touch" things. Those who indicated no technology had to remain in house, felt strongly that people and technology management mattered more than anything, therefore any solutions providing the greatest patient experience, with the lowest cost, and most amount of accuracy should be explored. For these respondents, it was limiting to think of technology in terms of what should be in-house versus what could be outsourced. A respondent stated that anything that does not require face-to face interaction with patients does not have to remain in-house, "If someone can do it more efficiently there is nothing that has to stay in-house."

Partnerships between health organizations and technology vendors optimizes organizational needs.

Another provider went on to say industry needs to move away from the mindset of individuality in provider models and the construct of an absolute line on anything, including the EHR. This provider stated that industry has spent too much money on EHRs, which financially enriched IT firms, making them rich, "Instead of seeing the EHR as a competitive differentiator, providers should have worked collaboratively at a much lower price point."

In deciding on outsourced versus in-house technologies, respondents lived in both worlds and acknowledged that an examination of the organization's current technology, what could be integrated and core competencies, was needed to make informed decisions. Cost, service, long-term usability, the application itself, and organizational needs were all variables. Multiple respondents stated that a combination of in-house and outsourced technology is best, particularly if the organization did not originally begin with "homegrown" solutions. Conversely, an HIN respondent stated that all off their products used to be outsourced before they made a concerted effort to bring things in-house.

Instead of consolidating and downsizing, one provider was upsizing internal builds; another was getting software from vendors and training in-house staff on its usage; and a third stated that their analytic work is internal, both from a workflow and analytics standpoint, because it is “an absolute must” for the organization to understand the subtleties of the data. While some suggested documentation, progress notes, and billing could be outsourced, others made clear that vendor monitoring was extremely important to outsourcing. One respondent was aware of multiple practices that were not financially sustainable because the vendors they hired to take care of billing were not being monitored. Other nuggets of wisdom from respondents included the importance of economies of scale and a desire for a standard format to comply with regulations.

CONSUMERISM & EXAMPLES OF PATIENT ENGAGEMENT



We asked interviewees about the types of resources and technology they were allocating to patient engagement efforts, either autonomously or in relation to increased consumer requests or perceived consumer needs. Some providers have always used technology to engage patients and are combining the old with the new. Respondents mentioned patient portals, the telephone, applications that allow virtual visits for certain conditions, and mobile apps that are clinically and analytically relevant to disease-specific strategies for populations in need. Stakeholders are acknowledging

the fundamental paradigm shift occurring in healthcare. The move towards value-based care has prompted providers to leverage a variety of customer-centered technology and respond to consumer needs and wants.

Multiple providers stated that their patient portal was a primary instrument in their engagement efforts. One provider did not have adequate staff or manpower to fully implement their patient portal, while another prioritized expanding the portal’s filtering capabilities. A different provider was using the EHR to increase the portal and is interested in technology that communicates with engaged patients. For this provider, the EHR is their biggest asset, and it is important to use it to enhance analytics and better understand the link between financial operations, the clinical enterprise, and patient needs. The provider is also doing a deep dive into social determinants of health and trying to understand the needs of an entire population, primarily through enterprise data analytics. Their goal is to better quantify and qualify how various socio-economic groups manifest unique needs and then define how these populations experience gaps in care.

Providers are finding that, patients want engagement on their own terms, whether it was being able to successfully send a message to their doctor in the middle of the night or having the option to fill out paperwork at home. One provider stated that his organization had a very clear understanding of the need to engage with patients, in ways that were convenient for the patient. Another specifically mentioned that patients were “demanding a different work style” and wanted to see their doctors on the days and at the times most convenient for them.

In a culture of value-based reform, payers, providers, and patient stakeholders are changing the paradigm for demand.

Example

Along this vein, one provider shared an example about trying to reduce costs while aligning services with patient needs. They were working on deciphering how to improve the availability of resources in relation to when consumers wanted to receive those resources. Their Medicare beneficiaries were comfortable driving in the daylight, therefore mid-morning appointments worked best as it allowed them be home by early afternoon. Commercial populations leaned more towards early morning, weekend, and evening appointments for a variety



of services, including urgent and primary care, and diagnostic procedures. This provider launched a hospital home program, where instead of admitting patients to the hospital, they utilized technology, home health, and physician services to monitor and care for patients. The program lowered cost and created better patient experiences and outcomes.

Example

Some use technology to assist in accommodating access to care by creating access points, such as online scheduling and evening and weekend appointment time slots. While some requests can be accommodated through the EHR, the provider opens multiple channels when that is not possible. New and existing patients can find a doctor and book an appointment online, even if he or she does not have access to the EHR. The provider is hoping for a seamless system in the future, where anyone searching for a physician online has the option to book an appointment. A different provider is trying to better understand their online presence and utilize banners and inserts for Facebook and Twitter. Their goal is to be present to social media users and offer “book now” appointment options through ads that interface with their scheduling system. Conversely, another provider is staying clear of trying to engage patients via social media because of uncertainty around policies.

Example

One provider organization was using technology to receive patient feedback via surveys, validated general questionnaires, and “immediate and more dynamic response” to specific interventions in the clinic. This provider used a spectrum of patient engagement efforts and looked for different technology to serve various purposes, including snail mail, email, text messages, and point-of-service surveys on tablets, either in the waiting room prior to service or in the clinic room immediately after service. Multiple respondents mentioned the use of surveys and questionnaires to keep track of patient requests. One provider organization has an integration that allows data from the questionnaires to be populated back into the EPIC-based EHR.

Example

As another provider stated, there are plenty of opportunities to better engage patients. They were working on supporting e-visits, modernizing and integrating their entertainment system, and using the Propeller health asthma technology, which sends information on patient inhaler usage directly to the EHR. Another provider organization developed a price estimator that allows prospective patients to make online inquiries about the cost of care. Once insurance information is entered, the patient receives real-time eligibility information that includes an estimate of out-of-pocket expenses, if the patient is within the health system. The provider has hundreds of services and offers price information on the most popular. The estimator improves price transparency, as does their efforts to simplify billing. This provider has seen positive results and patients have had an easier time paying their bills because they are clear about out-of-pocket costs prior to a visit or procedure, and understand the bill received after service has been rendered.

An HIN respondent said that patient engagement was new to healthcare and that some organizations do it better than others. In a healthcare model where the medical staff is no longer the customer, consumers are shopping for health services, whether through telemedicine or the Minute Clinic at CVS. Consumers are interested in convenience and cost. Organizations that work with providers are figuring out how to proactively engage patients on the behalf of providers. One respondent stated that physicians went to school to be physicians, not run a business, therefore the balance between the business of medicine is sometimes challenging, and that includes the concept of patient engagement.





Another HIN respondent saw improvement in reimbursement rates for telehealth services. For providers that have staff limitations on certain specialties, telehealth and shared services is an attractive option. In one geographic area, consumerism has led to new innovations such as a mobile stroke unit that is dispatched with the first EMS call. After witnessing providers implement numerous trials to figure out what works well, this HIN stated that well-settled organizations are dealing with the best way to include patient generated data into an EHR, while provider organizations that do not have as many resources are listening and learning from others to see what might be beneficial to them.

One of the HINs is a CPC site with a care management fee. Primary care physicians in the network are motivated to work with patients on protocol-based care and are making sure patients are proactively getting necessary testing. They have seen patient engagement technologies that revolve around registry data types and patient compliance initiatives such as the gathering of clinical and claims information to proactively identify care managers; emergency department notifications; and standard CORI query response technology that allow virtual health records to connect to patient-centered data homes. The latter enables HIEs / HINs to broadcast necessary medical information outside of a patient's home base, for example, if a patient is seeking treatment out of town.

Another HIN is working on a Personal Health Record (PHR) for all medically related care. Instead of having individual medical records for each entity a patient visits, the PHR will give patients a "one-stop shop". Patients will be able to view their information, from various healthcare providers, on one website. The HIN is not looking to disrupt the progress hospitals and doctors have made over the years with individual EHR interfaces or to create a wedge between providers and patients. They are trying to augment the data and make information more available and complete. This HIN has entered into information sharing agreements with providers and has a non-compete agreement in place as a catalyst for data-sharing. Most of the doctors in this geographic area do not belong to a hospital system, 75% are in practices of five people or less, making the PHR a great EHR alternative for "mom and pop" practices.



CURRENT TECHNOLOGY USE

Respondents were asked for three examples of technology resources they used for patient engagement, and stated the following:

- Community Health Record (doctor portal)
- Carweb, a repository that allows patients to access clinical data from various providers
- Clinical and claims repositories (community wide)
- Disease Management Applications
- Electronic Health Records
- Electronic Fax Messages
- EPIC
- Epocrates
- Event Notification Service (ENS)
- Greenway Patient Portal, allows patients to message a nurse or physician and see lab results
- HL7 messages that can be incorporated into an EHR
- Nurse Call Line, for over the phone treatment and to assess the correct level of care

- Open Notes
- Patient Portal
- Personal Health Record (PHR) patient interface
- Popcare, and other population management tools
- Predictive analytics
- Prescription Drug Monitoring Program (PDMP) / HIN technology, to help deter opioid over use
- Prevail, pre-visit and in-office registration system
- Propeller Health, asthma medication adherence product
- Revenue Cycle Converge with the EHR
- Secure Online Mailboxes
- Talksoft, automated patient reminder, confirmation, and cancelation system
- Virtual Health Records, across health systems



TOP TECHNOLOGIES IN THE NEXT 12-18 MONTHS

When asked what they believed their top technology areas would be over the next 12-18 months, respondents echoed the examples of their current technology. Several were excited about the use of predictive analytics to get in front of issues like sepsis, depression, self-harm, instead of reacting to them afterwards. Other responses:

- Document management systems robust enough to send requests and receive the actual records
- Dashboards with key performance indicators that can provide managers with real-time data on the number of no-shows and cancellations
- Integrations for eligibility and benefit information

One provider organization is going to continue their investment in genomics and expand to microbiome and systems medicine concepts. They have large amounts of data from multiple sources, environmental, behavioral, life style, biology, and health systems, and are trying to look at their data differently. Providers also mentioned transitioning IT infrastructure to new vendors or diversifying vendors. These providers want to find better products and reliability, and are moving from all-in-one solutions to multiple vendors. They are also fine-tuning data by drilling it down and making it more actionable, for instance high-level data can drive improvement for specific clinical or hospital interventions.

PRE-SERVICE INNOVATIONS



The opportunity to improve the pre-service part of the patient journey is driving a great deal of innovation across the industry, among existing players and new entrants. We asked respondents what pre-service innovations may be missing from the market, yet are needed among the existing services such as scheduling, pre-registration, financial counseling, registration, and denial prevention services.

One respondent stated that standardization was missing in pre-services and concepts presented by surgeon Atul Gawande in *The Checklist Manifesto: How to Get Things Right* would be beneficial in this aspect of healthcare. A different provider stated that innovators should focus on solutions that meet the needs of both providers and payers, such as systems that simultaneously create authorizations and prior authorizations of service for multiple patients. Prior authorizations were mentioned by another respondent, as was the importance of patient identification in pre-services.



Similar themes to those around consumerism and patient engagement emerged around pre-service innovations. One provider stated that patients need information available when it is most important to them. He mentioned activity around registration, various financial components, and a push for interoperability, however patients still struggled to access their records when they need them. It is problematic when a patient visits a doctor and has no EHR data. He went on to say that more development was needed for the usability of the EHR and as industry figures things out, the data belongs to the patient. Technology should be used so that patients can decide who gets access.

Other suggestions for pre-service innovations focused on creating better communication between entities to streamline and break down silos, a smooth process for referral management, and systems that do not require patients to constantly repeat the same information. Also suggested was pre-servicing that correctly identifies the specific reason for visits to ensure patients end up in the correct area of care from the beginning. This could potentially be achieved through more scientifically-based algorithms, rather than those that are operationally based. One provider is implementing pre-service software that allows for more time dealing with information, instead of gathering it. Another respondent felt strongly that price transparency would drive innovation for healthcare services and providers should share upfront costs for services, independent of insurance coverages.

WHAT DO BOARDS, PATIENTS, AND INTERVIEWEES WANT?

Administrative areas for Board of Directors & CEOs (Respondents were asked what administrative areas their Board of Directors and CEOs were most interested in seeing progress):

- Access to care
- Care coordination
- Claims processing
- Collective model impacts, including employer involvement
- Collaboration with the justice system and correctional facilities
- Consumerism
- Cybersecurity
- Digitization
- Equitable treatment of patients
- Fiscal security
- Organizational growth
- Patient experience / Quality measures
- Referral sources
- Revenue cycle / Billing processes / Payment reform / Understanding the impact of affordability and demand for service
- Strategic plan implementation

Board of Directors and CEOs want organizational progress with fiscal security and their strategic plans.

- Care across borders—telehealth, the Enhanced Nurse Licensure Compact (eNLC), the Interstate Medical Licensure Compact (IMLC), and parity across state lines for advanced practice clinicians
- Value-based care regulations that do not penalize physicians, or require patient co-payments for services such as chronic care management (CCM); CCM should be considered preventative care without co-pays

Overwhelming, respondents stated that patients want **access to healthcare on their terms.**

Areas patients are most interested in seeing progress (according to respondents):

- Access to care, in their preferred format
- Care coordination
- Convenience
- Lower costs /price transparency / affordable care
- High quality care and understanding of quality measures
- Medication (better options)
- Patient record /EMR (education on the data it contains and access in preferred formats)
- Patient experience (registration, front desk, nurses, doctors, billing)
- Quality care / high-quality outcomes (IOM quality domains)
- Relationship with physician



Administrative areas respondents would like addressed

- Acute care growth strategies
- Analytics
- Availability of specialty providers
- Billing
- User experience in the EHR
- MPI master patient index
- Partnerships with HIE
- Predictive analytics
- Price transparency, including pre-service estimations and pre-payment plans
- Prior authorizations
- Process monitoring, especially as data continues to be brought in, stored, and moved
- Referrals
- Security, specifically multi-factor programs
- Telehealth

“America has the most expensive health system in the world because there are so many layers of overhead that require constant tweaking.”

--Interviewee

Future resource investments (the next 12-18 months)

Respondents were asked about the specific investments in resources they were planning to make in the next year to year and half, and how those investments differed from their current ones. Investments in analytics and the electronic health record topped the list, with respondents stating that analyzing data drives improvement.

Predictive analytics, population management solutions, and analytics that integrate with other forms of technology were all mentioned. Respondents were eager to transform their data, transitioning from transporting and storing to turning data into information sources for wholistic decision making.



Additional responses were:

- Access to care (expanded hours, online scheduling, better customer service)
- Acute Care
- Bio-Med
- Cloud solutions and hosting
- Cybersecurity
- Hardware solutions
- EHRs that communicate with APIs and are fully optimized
- Improving patient experience to be consumer friendly and flexible
- New facility
- Patient experience
- Making the transition from transporting and storing data to making data useful, transforming data into information for wholistic decision making
- Social determinants of health

SUMMARY

As organizations decipher the best way to move from volume- to value-based care, value-based care trends are having a definite impact on how data is conceptualized, collected, and analyzed. Although the return on investment for value-based care is uncertain, and some providers are having difficulties understanding and balancing requirements with operational needs, value-based care is affecting revenue cycle decisions. Providers are looking for EHR technology that enhances workflow, incorporates value-based care and population health management tools, and generally support their needs.

Analytics were a prominent theme throughout the interviews, with respondents feeling strongly about the value of data in improving patient outcomes. Organizations are combining data and knowledge to move forward. They are continuing to increase their adoption of new technology or optimizing already acquired technology, with a focus on workflow integration. Providers viewed technology as a joint venture with vendors and sought out those who could deliver most of their needs and standardize their IT platforms.

Integration and collaboration were also important to providers and they did not draw a hard line between technology that needed to remain in house and that which could be outsourced. "If someone can do it more efficiently there is nothing that has to stay in-house." Respondents also acknowledged that an examination of the organization's current technology, what could be integrated, and core competencies was needed to make informed decisions.

In terms of patient engagement, the consensus was that a fundamental paradigm shift was occurring in healthcare. Overwhelming, respondents stated that patients want access to healthcare on their own terms, including access to care, in their preferred format; care coordination, convenience and price transparency. The move towards value-based care prompted providers to leverage a variety of customer-centered technology and

respond to consumer needs and wants, including EHRs for patient engagement, patient portals, traditional technology (the telephone), applications that allow virtual visits for certain conditions, and mobile apps that are clinically and analytically relevant to disease-specific strategies. The importance of interoperability was mentioned in this discussion as patient data still needs to be accessible to patients and providers at the time of care.

Ultimately, organizations are seeking fiscal security as they progress towards their strategic plan goals. Their future resource investments include predictive analytics, population health management solutions, and analytics that integrate with other forms of technology.

INTERVIEWEES		
<p>William Borden, MD Chief Quality and Population Health Officer, Associate Professor of Medicine & Health Policy</p> 	<p>Chuck Christian Vice President of Technology</p> 	<p>Gordon Edwards Chief Financial Officer</p> 
<p>Jean Groves Chief Financial Officer</p> 	<p>Keith Hepp Chief Financial Officer</p> 	<p>Tom Lee, PhD Chief Executive Officer & Founder</p> 
<p>Charles Macias, MD Chief Clinical Systems Integration Officer (Texas Children's), Executive Director (EMSC), Associate Professor (Baylor)</p> 	<p>Shawntea (Taya) Moheiser Director of Health Policy & Product Development</p> 	<p>Mark Norby Vice President of Revenue Cycle</p> 
<p>Albert Oriol Chief Information Officer</p> 	<p>Dhruv Sikka LeHigh Valley Health Network</p> 	<p>Michael Sims Chief Financial Officer</p> 