Research Insights

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The emergence of value-based health

Delivering optimal health requires technology to create insights, enhance efficiency, and improve patient outcomes

IBM **Institute for Business Value**

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Talking points

The transition to value-based health

"Value-based health," like "value-based care," uses collaboration models, shared information, and technology solutions among stakeholders to promote better outcomes across the lifespan of the individual. It is the extension of health and wellness beyond the traditional clinical environment into their daily lives, homes, and communities.

The six steps to value-based health

Based on an analysis of our recent research, we have identified six steps to successfully and effectively deliver value-based health: consult the consumer; embrace empathetic automation; build support for analytics; focus on time to value; overcome innovation barriers; and optimize the "value" equation—value=quality/cost.

Delivering value

Both healthcare providers and payers recognize their roles in achieving high-quality and cost-effective care and the need to engage patients to consistently deliver value. Automation and artificial intelligence (AI) can reduce the time in finding treatment options and augment many routine tasks.

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Value-based health: Better outcomes, expanded access, lower costs

The concept of value-based care—a movement away from a fee-for-service healthcare model to one based on more effective patient care—has been around for decades. Value-based care, in fact, was codified in 2010 by the passage of the United States Patient Protection and Affordable Care Act (PPACA). The law mandated extensive reforms about the quality of care and the manner in which it was to be delivered to millions of Medicare and Medicaid patients. As a result, a number of programs were established to facilitate value-based care, including the formation of Accountable Care Organizations (ACOs). ACOs consist of a group of health care providers who come together to provide coordinated high-quality care to populations of patients. The goal is to provide patients and populations—especially the chronically ill— with the right care at the right time.[1] The Affordable Care Act also started a fundamental change in the conversations about provider reimbursement—with a primary focus on paying for better health outcomes and lowering costs—while also expanding access to healthcare.

Today, however, both providers and payers have realized that the basic cornerstones of value-based care—better outcomes and reduced costs within their traditional roles—are insufficient to create a truly holistic healthcare ecosystem that extends beyond the clinical environment and into the daily lives of patients/consumers. Consequently, a new healthcare paradigm—"value-based health"—has emerged to provide care and maintain wellness in almost every aspect of a patient's life.

Numerous value-based programs, pioneered by providers, payers, life sciences organizations, and others in the healthcare ecosystem, have a shared mission of delivering care with better quality, a better patient experience, and a significant reduction in unnecessary costs. Various studies consistently show that "healthcare" has a smaller impact on an individual's health than social factors, including health behaviors, socioeconomic elements, and physical environment.[2]

44%

of providers and 23% of payers surveyed cited the improvement of health and wellness of their targeted populations as their top priority.

87%

of payers and 90% of providers say the patient/consumer will become the top collaborator in the healthcare ecosystem over the next 3-5 years.

Both

payers and providers say interoperability across the ecosystem is the #1 barrier to innovation.

Moreover, technological progress in the last decade, such as predictive analytics, digital health, and automation, has profoundly reinvented how health (and its value) is measured, managed, and delivered. According to the International Data Corporation (IDC), healthcare organizations are on a mission to digitally transform to create a value-based healthcare system. "The digital transformation journey begins with a common definition of the mission, strategic priorities, and programs so that individual projects or use cases support the healthcare organization's overall goals and objectives," stated an IDC executive.[3]

To better understand how organizations have undertaken this digital transformation in a relentless search for value, as well as provide a roadmap for others to follow, the IBM Institute for Business Value (IBV) and IBM Watson Health conducted extensive research to determine what is needed to transition traditional value-based care into the more inclusive value-based health—a system that integrates technology to accelerate progress and helps move healthcare beyond hospitals, doctors offices, and other clinical environments (see Study methodology, page 17).

This was the second study the IBV conducted over the past three years to determine the future path of healthcare. In 2016, based on a survey of almost 300 healthcare providers and payers in the United States, we predicted the convergence of population health management and precision medicine into a new healthcare model we called "Precision Health and Wellness."[4] We believed a key component of that model would be a continued transition to outcome-based results and lower costs.

In our newest research, we found that the predictions we made several years ago have become real and continue to accelerate at a rapid pace. Today, as healthcare systems around the world consider how to maintain access, quality, and efficiency in the face of ever-increasing demand—along with a diminishing physician workforce—providers and payers are more intently focused on understanding how to optimize their operations to deliver value.[5] They have discovered that value measurement

Care delivery, combined with community awareness, and new technological advances promises to help value-based health pay significant dividends.

must be centered not only on individual patients, but groups or populations of patients as well.

However, as previously cited, the focus on "care" alone in delivering value-based health is insufficient to deliver the degree of outcome improvement and cost reduction desired by both providers and payers. To optimize these outcomes, individuals, employers, communities, and social organizations must also become key partners in this process. As a result, providers and payers are becoming more engaged in creating better patient outcomes while, at the same time, identifying population-level cost reductions through more efficient, innovative care models.

The combination of care delivery, community awareness, and new technological advances promises to help value-based health pay significant dividends in the near future. For example, the Yale School of Public Health in 2016 found that states that focused more on social programs than health spending had better outcomes for a number of health outcomes.[6]

Based on an analysis of answers to our survey questions, as well as on-going conversations with executives from organizations across the healthcare ecosystem, we have identified six steps that can accelerate the transition from value-based care to value-based health:

- Consult the consumer
- Embrace empathetic automation
- Break down silos to build support for analytics
- Focus on time-to-value
- Overcome innovation barriers
- Optimize the value equation.

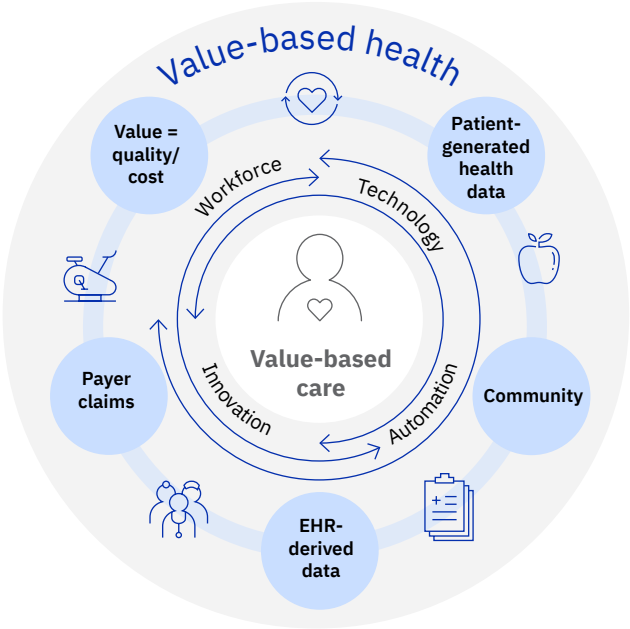
Value-based health takes care to a new level

Value-based health is not just about traditional care in hospitals and doctors' offices; it also entails keeping individuals healthy and well even when not receiving healthcare services. This includes lifestyle, employment, fitness (including input from wearables and connected health technologies that help provide a holistic view of the individual), and numerous other factors. Engaging people and communities in health, identifying and addressing social determinants of health, and making sure community resources are available and accessible are cornerstones of VBH. The desired result is the creation of a value-based ecosystem with the consumer/member at the core.

Value-based health leverages the equation of quality/cost and focuses on the elements of overall health as a broader measure of value, rewarding stakeholders for the effectiveness of health outcomes (see Figure 1). It requires the capture, aggregation, and analysis of local and regional data to determine value. Patient-generated health data (PGHD) must be available and used, along with payer claims and electronic health record (EHR)-derived data.[7] The additional use of predictive analytics, machine learning, and artificial intelligence (AI) can help clinicians and care managers anticipate problems before they develop, as well as mitigate health issues before they worsen (see "What is AI?," page 4).

Figure 1

Value-based health encompasses both healthcare in medical facilities and health/wellness programs in communities and social scenarios. It includes a combination of workforce, technology, automation, and innovation investments.



What is AI?[8]

Artificial Intelligence (AI) is computer science that uses algorithms, heuristics, pattern matching, rules, deep learning, and cognitive computing to approximate conclusions without direct human input. By using AI, researchers can take on complex problems that would be difficult—or almost impossible—for humans to solve. Because AI can identify meaningful relationships in raw data, it can be used to support diagnosing, treating, and predicting outcomes in many medical situations. AI has the potential to be applied in almost every field of medicine including drug development, patient monitoring and personalized patient treatment plans.

AI is patterned after the brain's neural networks. It uses multiple layers of non-linear processing units to "teach" itself how to understand data—classifying the record or making predictions. AI can synthesize electronic health record (EHR) data and unstructured data to make predictions about patient health. For instance, AI software can quickly read a retinal image or flag cases for follow up when multiple manual reviews would be too cumbersome. Doctors benefit from having more time and concise data to make better patient decisions.

AI technologies mainly fall into two categories. The first includes machine learning (ML) techniques that analyze structured data such as imaging, genetic, and electrophysiology data. In medical applications, the ML procedures attempt to cluster patients' traits or infer the probability of disease outcomes. The second category includes natural language processing (NLP) methods that extract information from unstructured data, such as clinical notes/medical journals, to supplement and enrich structured medical data. The NLP procedures target turning texts to machine-readable structured data, which can then be analyzed by ML techniques.

Before AI systems can be deployed in healthcare applications, they need to be "trained" through data generated from clinical activities, such as screening, diagnosis, and treatment assignment, so that they can learn similar groups of subjects and associations between subject features and outcomes of interest. This clinical data often exists in big data, including, but not limited to, demographics, medical notes, electronic recordings from medical devices, physical examinations, clinical laboratory, and images.

In resource-scarce settings, the benefits of expanding care with innovative technology and automation are two-fold: it increases the quality of care by identifying and caring for at-risk patients, and it reduces costs that may be incurred from preventable future hospital or emergency department visits.

Providers, for example, can use AI to detect changes in voice patterns to better screen for depression/dementia and offer appropriate therapy once a diagnosis is confirmed. Payers can use AI solutions—such as chatbots—to support call-center staff in assuring members get the most appropriate services for their specific needs. This includes not just provider-based care services, but also community-based programs, such as weight-loss programs, fitness centers, and social services. Community programs can use AI to identify opioid use/abuse risk and to create personalized interventions. Medical device manufacturers can leverage AI to better predict and prevent poor health outcomes, such as hypoglycemia.

To realize the full benefits of VBH and accelerate toward implementing the six steps to greater value, both providers and payers should understand:

- Why they need to move quickly to create consensus-driven quality and cost measures and then reward those high-value outcomes
- How to navigate the roadmap to VBH, including adopting data, analytics, automation, and other technology solutions that can help efficiently deliver desired results
- Which organizations and institutions are most critical and ready to collaborate in this new evolutionary journey.

Consult the consumer

The consumerization of healthcare has brought the needs of an empowered patient to the forefront, and many healthcare leaders recognize this and are actively embracing the change. Many other industries have radically transformed over the past decade to become more consumer-centric, which provides ample benchmark material and lessons for healthcare leaders. Research published in the New England Journal of Medicine found that the top areas where healthcare can learn from other industries include improved customer service,

> “Consumers are getting more and better healthcare with the implementation of VBH and also helping us in making crucial decisions effectively.”
>
> **CHRO**, Payer, US

customization to individual needs and preferences, and new models of interaction based on virtual visits or electronic communication.[9]

For providers and payers, this means that consumer engagement is key. Traditional fee-for-service models incentivize the quantity of care. It does not matter financially who the consumers are as long as consumers are present. A value-based health model, however, cares for the long-term health of the consumer, both in and out of medical facilities. Consumers are more than a driver for revenue. As they become the number one stakeholder in the value-based ecosystem, they need to be truly understood by the organizations that provide and pay for their care. Consumer engagement is key to obtaining a long-term holistic view of the patient. Once engaged, consumer data will be foundational for predicting health risks and integrating strategic interventions into day-to-day life.

Today, while payers and providers consider consumer engagement important, they name each other as their top collaborators in the value-based journey (see Figure 2). This is expected to change rapidly, with both payers and providers anticipating the consumer to be their leading collaborator over the next three-to-five years. They say they will also continue to collaborate closely with each other, commissioning bodies, technology companies, policymakers, and others.

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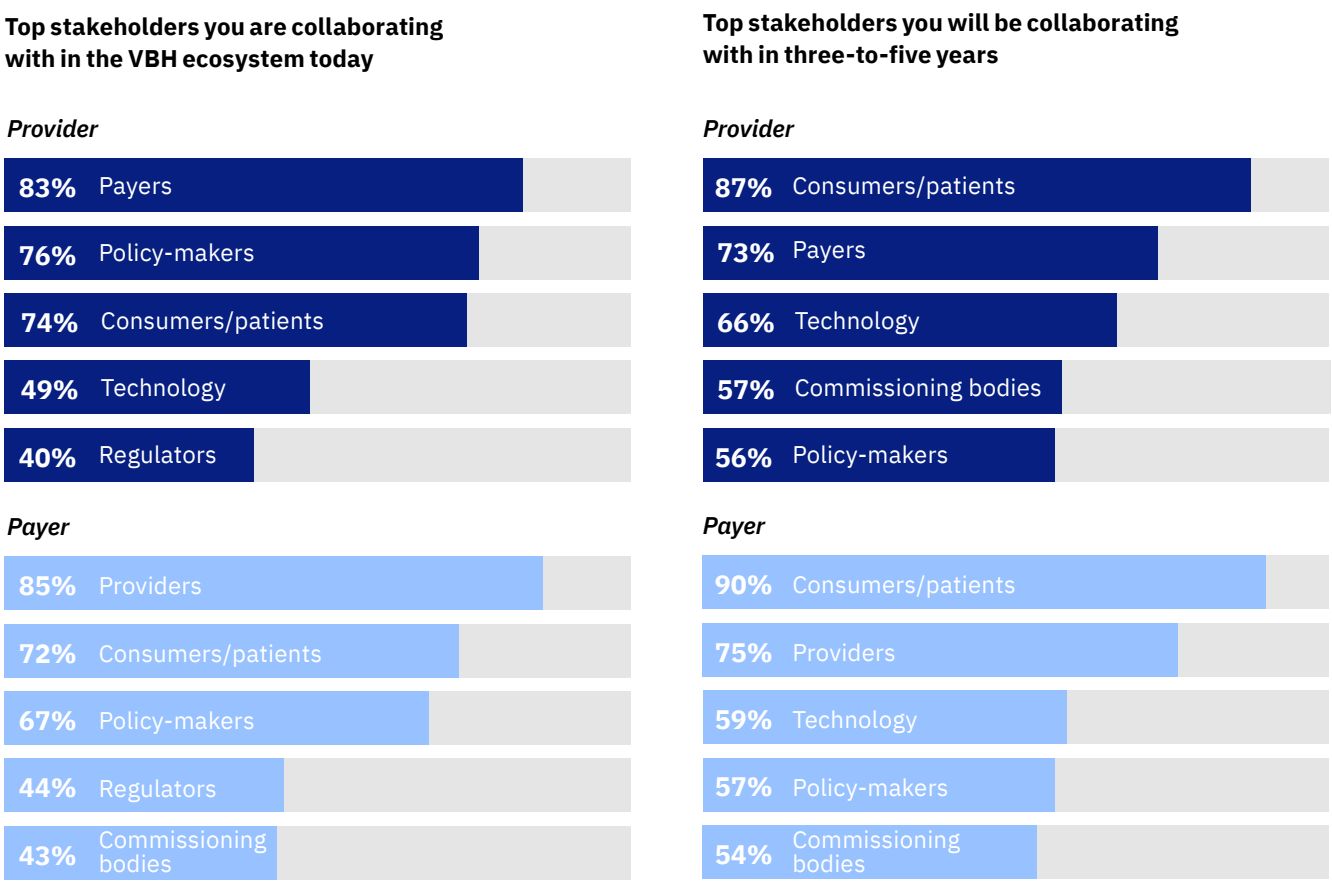
Figure 2

Changes in how healthcare providers and payers collaborate are expected to change substantially over the next three-to-five years



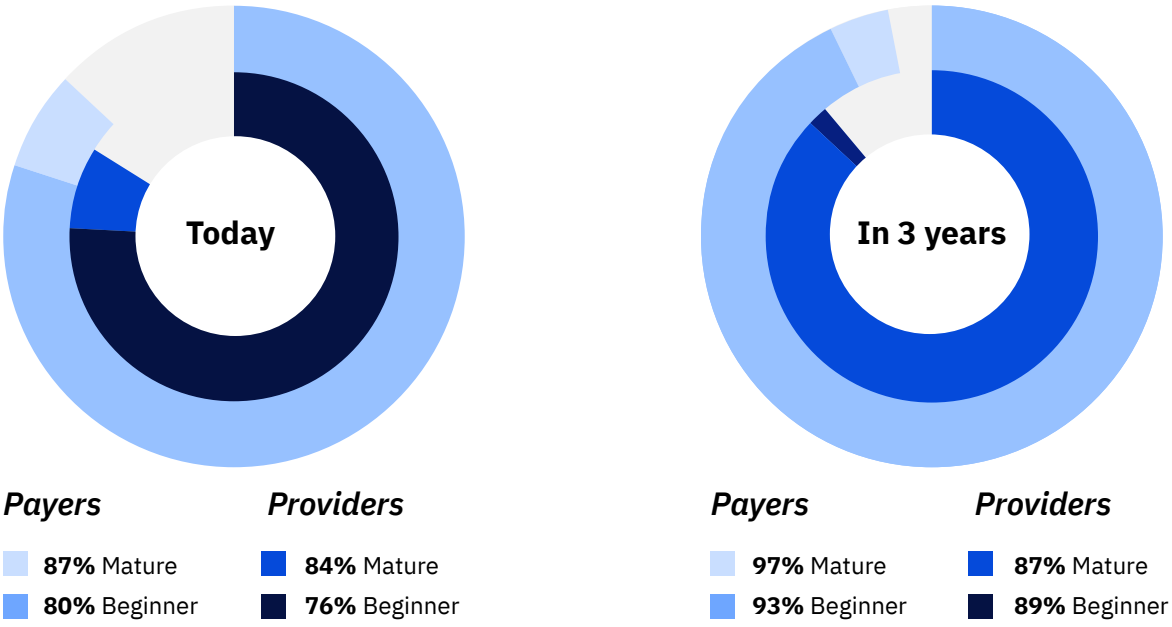
Consumer engagement is now getting more attention as more healthcare organizations incorporate various patient/consumer strategies into their goals.

Payers and providers frequently find themselves at different stages in their journeys to change the way healthcare is delivered. Some are well into their move from volume-based to value-based care, while others are just beginning. Regardless of where they are in VBH implementation, both payers and providers agree that the consumer/patient will outpace other collaborators even further as the primary stakeholder in the next three-to-five years (see Figure 3).

Consumer engagement is not novel to medicine. But it is now getting more attention as more healthcare organizations incorporate various strategies into their goals. Regulatory pressures, highly competitive markets, and advances in technology and healthcare delivery models increasingly support new consumer engagement programs. While primary care has often been the first point of contact for patients, technology has enabled more touchpoints beyond the healthcare facility. These touchpoints are ideal for engaging patients in conversation about their health needs, conditions, values, and preferences. As outlined in the World Health Organization's Patient Engagement publication, there are several areas in which to consult the consumer—from education and feedback systems to involving patient advocates and communicating through online video calls, telemedicine, and home health devices.[10] Engaged patients are more educated and, accordingly, are able to make more informed decisions about the care options that work well for them.

Figure 3

Stakeholders in the value-based health system today versus what is expected in three years



Note: Mature = Organizations that self-reported themselves as farther along in their value-based health transformation; Beginner = Organizations that self-reported themselves as fairly new to value-based health transformation.

Next steps: How can providers and payers incorporate a consumer-centric approach?

– Develop a consumer-engagement strategy.

  The first step is to adopt a strategy that empowers the consumer and motivates desired health behaviors. The critical steps in empowering the patient include implementing web portals and mobile apps that enable transparency to comprehensive information (administrative and clinical), facilitate communication with patients or members, and provide access to curated healthcare resources. An organization's technical and digital strategy must be tied to the consumer strategy.

– Deploy individually tailored programs.

  The next step is to create, deploy, and promote health and wellness programs tailored to activate behavioral changes in specific individuals, both in clinical and social environments. To do so, organizations must make sure they have a process to get input from patients or members about their satisfaction and ease of engaging throughout various touchpoints.

– Develop and analyze multiple sources of data.

  Applications, such as next-generation chatbots, that can individualize dialog for health conditions, health plan benefits, and patient preferences can potentially improve patient/consumer participation. Ideally, this will lead to improved health and satisfaction for patients, as well as lower costs for both services and administration.

  Finally, any consumer-centric approach needs to measure and adapt to what the data may be revealing through analytics that examine outcomes for various subgroups of consumers and their caregivers. Metrics, such as patient satisfaction or net promoter scores in conjunction with clinical quality and health costs, should be generated for each step of the initiative.

How companies are consulting and interacting with consumers[11]

Consumers/patients will be the top stakeholder to provide the most positive impact in the value-based health ecosystem in the next three-to-five years. Healthcare benefits today offer limited consumer choice. In the future, consumers may have a greater voice and can choose the care delivery that works for them.

To facilitate this, a local government authority in the UK expects to improve preventive care effectiveness by providing more personalized care guidance, while also reducing the unit cost of care, through more competition among providers within a local community.

Further, a major healthcare and consumer products company has created consumer-focused apps that combine AI with health data to provide virtual coaches for patients. The vision is to combine deep expertise in behavior modification, rich data, and predictive analytics to directly address significant health and wellness challenges, including the management of chronic conditions and pre- and post-operative care. The company is applying lessons from consumer electronics and other consumer-facing industries to the healthcare sphere to improve the quality and speed of recovery.

Another example is a global healthcare payer that wants to define the various connections between employee health and business performance and identify opportunities to improve both. Using AI and analytics, the company collected and analyzed a variety of employee data to see how health and lifestyle risk factors affected productivity, absenteeism and more. As a result, the company was able to pinpoint specific opportunities to engage and assist employees in improving their health and financial wellness.

"A value-based model is all about improving the patient experience and engagement with appropriate steps taken by providers with the help of technology and workflow."

CMO, Provider, Germany

Embrace empathetic automation

Automation in the healthcare industry has dual potential—from both a business perspective and a clinical perspective. First, healthcare executives who aim to reduce costs and improve efficiency can find many solutions across administrative, operations, and IT-related functions. Second, those who aim to improve quality of care and reduce human error can also discover automated solutions that aid in decision making, convenience, and efficiency. Regardless of whether automation will ever achieve human-level empathy, in healthcare settings, automation must be designed and implemented to be supportive of empathetic interactions, given the nature of patient needs.

Simply lifting and shifting automation from other industries may not support the unique needs of patients and support staff in VBH. When considering healthcare automation and labor, there are, of course, certain areas that humans carry out best. However, software automation provides a better option when the focus is on speed and accuracy in executing rules-based repetitive tasks. The goal is for automation to augment human function. Automation technology ultimately serves to produce more time for professionals to perform the tasks for which they are uniquely qualified. This allows both health systems and commercial health plans to focus time and resources on high-priority work, leaving low-priority—yet important—routine work to technology.[12]

From the "Triple Aim" to the "Quadruple Aim"

Both payers and providers must decide where automation fits within their global business priorities, what benefits they hope to derive, and how they plan to leverage both business and clinical capabilities. Primary benefits that can be accrued from implementing technological resources include lower costs, improved customer experiences, and better-quality outcomes. This is known in the industry as The Triple Aim.[13] Both providers and payers expect increased automation to support success in the Triple Aim. Closing the gap between mature organizations (those well into their VBH transformations) and beginners is a next step to applying the Triple Aim across the healthcare ecosystem. (see "What is relevant to embrace automation?" page 9).

The first step in embracing automation often involves a current-state maturity assessment across the organization. Where do you find inefficiencies, redundancies, and tasks that require more administration time instead of time with members or patients? Identifying those areas for improvement is critical for pairing them with solutions. Further, engaging a technology partner to help facilitate and benchmark available options is always helpful. Whether it is automating the identification of patients who have gaps in care or help from a clinical perspective, many areas exist to reduce costs and equip staff members to operate at their best. Examples include applying an overlay of technology to the existing IT infrastructure to create automated prescription refills or generate automatic patient reminders to decrease patient no-show rates.

Overall, empathetic automation should enhance patient experience and outcomes, factors that have also been associated with clinician satisfaction. For many organizations, bringing back the joy of medicine adds another element, thus transforming The Triple Aim into the Quadruple Aim. This is critical at a time job satisfaction among clinicians is being touted as a public-health crisis.[14] To replace a doctor can cost an estimated USD 800,000 to USD 1.3 million in recruitment, training, and productivity costs, depending on the specialty.[15] Appropriately designed automation could potentially help with clinician burnout. Moreover, enhanced automation can also reduce costs, improve the customer experience, and potentially drive higher net promoter scores (NPS) for payers that may improve member retention and growth.

Next steps: How can providers and payers embrace automation?

– Create an automation strategy that is achievable and shows early success.

  Embracing automation can help create better efficiencies and outcomes. However, to effectively accomplish this requires a strategic approach to value-based health that includes an assessment of what types of automation your organization needs. Evaluate the largest pain points of friction within interactions between payers and providers, as well as with consumers. Determine what inefficiencies and redundancies can be reduced or eliminated by deploying the right automation technology.

– Find the right balance between high-tech and high-touch.

  Technology that can automate low-value tasks and identify common standardized patterns can augment the duties of healthcare professionals, freeing them up to connect with patients and spend time on the higher-value, creative aspects of improving consumer experiences.

– Strengthen the relationship with the consumer.

  Further, a detailed blueprint of future needs is critical to help make sure what you install does not become obsolete in a short period of time. Most important, if properly implemented and applied to appropriate tasks, automation can help strengthen the relationship between the consumer and organization, especially in areas where there is mutual agreement that the status quo is inadequate. Incorporating the consumer-centric voice in determining when and where automation will be utilized can lead to greater adoption and better outcomes.

What is relevant to “Embrace empathetic automation[16]

Automation in the service of delivering value-based health is designed to reinforce–not replace–the human connection between healthcare providers and their patients. AI is providing three distinct benefits to patients.

– Personalized service–Patients expect their healthcare providers to be familiar with their medical record history as well as their record of calls, payments, and messages. Automation can provide a 360-degree view of the patient, including previous doctor’s visits, medical history, transactions, and past inquiries.

– Provide omnichannel service–Like any other consumer group, patients want to connect with their providers in a fast and convenient way. To meet this demand, AI-powered virtual agents are providing a way to scale quality service with an omnichannel experience. Trained on healthcare-specific knowledge, virtual agents can carry complete conversations with patients to answer questions. When necessary, the case can be escalated to a live agent, who can use automation to quickly access relevant information to correctly respond to a patient’s inquiry.

– Offer 24/7 Patient Services–Healthcare providers can better influence patient outcomes when they leverage contact centers as a patient tool. By using new technology, healthcare providers can transform their call centers into a single digital, patient-centric platform for continuous engagement and services–a patient portal.

"Analyzing data on quality, costs, and utilization, will allow us to identify opportunities to improve care and lower costs."

CFO, Payer, US

Break down silos to build support for analytics

From the growth of electronic health information, such as imaging data, prescription data, blood tests, and procedure results, to greater access to administrative claims and electronic medical records, the collection and usefulness of disparate and increasingly complex data in healthcare have been amplified through technology advancements. This wealth of data can be the foundation for powerful insights that help improve patient outcomes and reduce costs. However, the insights gained are highly dependent on the systems that work to produce them. With so much data being generated, it becomes critical to combine, clean, and implement models that enable predictive analytics.

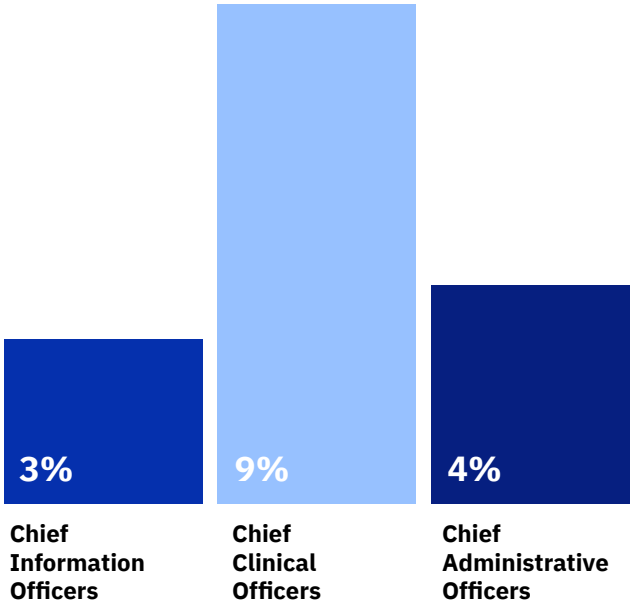
The challenge today involves balancing the time spent collecting data, integrating all the data into one centralized database, and actually deriving useful insights from the data. Assimilating data into a centralized format and repository, aligning business requirements of various stakeholders, and complying with actual and perceived regulatory requirements can be an overwhelming endeavor—one that has contributed to silos across the system. This can create a data paradox: do the benefits of collection, integration, and analysis truly outweigh the administrative burden such efforts impose? The C-suite answers this with a resounding "yes." Across the board, top executives agree that analytics can improve quality and reduce cost, as well as identify and measure the value that is delivered.

The data measured, collected, and analyzed by healthcare organizations includes submitted claims, paid claims, prescription claims, labs and imaging, labor rates, technology, waste/unnecessary rework (such as duplicate tests), and fraud. Despite the volume of data that has to be collected and analyzed, less than 10 percent of C-suite officers interviewed say analytics will add more administrative burden to their organizations. Of those surveyed, Chief Clinical Officers, at 9 percent, were the most likely to cite increased administrative work as a drawback (see Figure 4).

Further, existing silos within the healthcare ecosystem are a result of not only data or technology issues but also differences in alignment among leadership with varying views on the process. It is important to level-set on the journey from data collection to data insights. Whether it's asking how long it will take or if enough data is present to make a decision, imperfections will crop up that make the process a little uncomfortable. Once all parties understand that there is no perfect data, no perfect benchmark, or no perfect analysis, more time can be spent on quickly taking action and iteratively making improvements based on the useful data and insights that are available.

Figure 4

C-suite officers who say they believe that analytics will add administrative burden



Note: Chief Administrative Officers responding to our survey include: Chief Executive Officer (1), Chief Finance Officer (2), Chief Operating Officer (4), Chief Human Resources Officer (5), and Chief Quality Officer (6).

Next steps: How can healthcare organizations break down silos and build support for analytics?

– Develop an analytics vision.

  An analytics vision and information agenda are necessary tools to align the efforts of the various stakeholders, who will need to mold both structured and unstructured data into an integrated, consistent, and trustworthy information foundation—one that facilitates alignment within the healthcare ecosystem. This enables both information and patient care to be consistent across both clinical and social environments. Every phase of implementation needs to align its data foundation to an overall information agenda that accelerates the ecosystem's ability to share and deliver trusted information.[17] It is important that this strategy is embraced by the entire organization, from the C-suite to department-level analysts.

– Empower an analytics champion.

  Organizations may already be using analytics, but VBH demands a new and different commitment to looking for, and acting on, the insights that analytics can reveal. As such, analytics will need a champion—someone who will work tirelessly to help senior leadership with different views about analytics and understand the substantial efficiencies and increased effectiveness that can be brought to the organization. Creating this endeavor should even alter the perception of those outlying Chief Clinical Officers who say employing analytics this way will increase the organization's administrative burden. Bringing the entire C-suite into alignment on analytics is a critical step to creating a culture that fosters value-based health.

– Create a governance process.

  Help ensure analytics standardization and remove barriers with a solid governance process. Pivot from gathering data to interpreting and acting on insights from the data.

What is relevant for break down silos to build support for analytics?

Breaking down silos that impede coordination and progress is critical for value-based health programs to succeed. One county in California is already making considerable progress.[18]

Sonoma County recognized it needed a better way to address the needs of its most vulnerable individuals and families. To do that, it needed tools and technology to transform how it delivered support services to these citizens.

The Sonoma County Board of Supervisors made strengthening of its safety net system a priority through a program called Accessing Coordinated Care to Enable Self Sufficiency (ACCESS) Sonoma County. This program identifies the most vulnerable people in the community and strives to help them through a personal crisis and become more self-reliant. This includes individuals experiencing ongoing unemployment, homelessness or housing insecurity, behavioral health and substance use issues, and those in the criminal justice system.

To succeed, Sonoma County safety net department leaders are stepping out of their service and program silos to develop holistic strategies that address the complex needs of its citizens and improve their outcomes. These departments include Health Services, Human Services, Community Development Commission (the County's housing development organization), Child Support Services, Probation, and other criminal justice units. Through closer coordination, agencies can more effectively and efficiently deliver services to clients with complex needs, while improving their health, well-being and economic stability.

"Health care needs a system that increases efficiency as a whole. Value-based health is helping to change the system from proficiency-based to a data-driven science."

CIO/CTO, Payer, Japan

Focus on time-to-value

The role of AI in healthcare

AI has a vast array of roles to play in optimizing value-based health. It can be used to develop algorithms to derive insights from large amounts of data and can then, over time, "self-learn" and "self-correct" to improve accuracy. The combination of these features can help flag health risks and predict outcomes.[19]

How quickly can healthcare organizations adapt to change? To understand this, we asked both payers and providers a series of questions about their top priorities over the next three-to-five years. We gave our respondents multiple options to understand what technologies and innovations are most important to delivering VBH today and in the near future. Options included:

- Advanced analytics to drive insights from data
- Machine learning to streamline the design and performance assessment of value-based care models
- Integrated data to command and control operations
- AI to reduce the administrative burden on the physicians and staff
- Advanced genomics diagnostics to drive personalized/tailored medicine.

What we found is that organizations that consider themselves "mature" in the VBH journey are investing heavily in AI and other technologies, such as advanced analytics that derive insights from data. And, while providers and payers are both eager to use this technology to improve their operations, they have different priorities as to how they want to apply it.

Providers

Our research reveals that providers prefer artificial intelligence to reduce administrative burden on physicians and staff. What this means, simply, is that executives from provider organizations—particularly those in mature organizations—plan to invest in technology that allows doctors and staff to become more productive by spending more time with their patients.

Providers cited as their second priority advanced analytics to drive insights from data. Hospitals and medical institutions have gathered a tremendous amount of data, and now they want to know how to best leverage this information to improve operations and outcomes. Connecting the dots—from data, to insights, to applications for operational improvement—promises to provide the clarity and assurance that analytics are needed to unlock greater value.

The final priority providers cited was machine learning to streamline the design and performance assessment of value-based health models. This is a "pulse check" of the current operating system to help determine whether or not organizations are continuously learning, improving care, and lowering costs.

Payers

According to our research, payers expressed different technology investment priorities. For example, the top priority was investing in advanced genomics diagnostics to drive personalized medicine. Genomics diagnostics offers new value in the value-based health ecosystem, with a better understanding of patients' health, enabling more targeted interventions and an associated reduction in costs over time. The next priority for payers was advanced analytics to drive insights from data. Like providers, they have accumulated large banks of data and want to know how to apply the information for the benefit of the patient and the ecosystem as a whole. Finally, tied for third was machine learning and integrated data to command and control operations.

Next steps: How can providers and payers focus on time-to-value?

– Create a needs assessment

  Faster results and increased value (time to value) require a needs assessment, predetermined and measurable metrics, and an investment plan to fund a successful implementation. Such a plan requires a thorough understanding of what can most benefit healthcare organizations. Is the need to focus on AI and machine learning, or will a focus on predictive analytics best meet an organization's needs? Next, it is important to integrate investment priorities into the daily operating model of the organization. How, for example, can investment be scaled across the organization?

– Use data to help decision making

  Making decisions without the benefit of data can damage outcomes with missed diagnoses, improper treatments, and optimized action plans. Streamlining data-driven decisions can help improve patient outcomes while also boosting revenue, efficiencies, and reputation. A clear view of how clinical operations affect individual outcomes can help lower costs associated with recidivism and readmissions. Ensure that data and data governance is ready for AI projects, and tackle early pilots that are focused and show early success.

– Consider training patient advocates

  Time-to-value encompasses more than technology that streamlines processes. It also requires a human touch—someone who can help both medical staff and patients develop a plan of care that reduces healthcare time and optimizes outcomes. For example, a number of practices, particularly in oncology, have nurse navigators that help educate patients about all of the stages of cancer treatment. Carrying this step further, consider developing patient advocates among clinical support staff who can help coordinate clinician care and efficiency in improving patient outcomes and increasing time-to-value.

Overcome innovation barriers

Every organization is looking at how to innovate and keep up with healthcare change. Evidence continues to mount that healthcare is increasingly challenged by entrenched inefficiencies, including wasting more than USD 2 trillion annually.[20] These inefficiencies can be attributed to several factors, including the ineffective gathering, sharing, and use of information.

Over the years, health organizations have shared information with each other in a haphazard fashion, often acting as impenetrable silos that were, ultimately, to the detriment of patient/consumer needs. With increasing focus on patient outcomes, however, more incentives exist for ecosystem-wide data exchange, as well as the elimination of other innovation barriers that affect overall patient wellness.

Yet, significant challenges still stand in the way of seamless communication throughout the ecosystem. Funding availability, interoperability across the ecosystem, security, reliability, privacy, and unproven/untested technology are just some of the roadblocks organizations must go around.

The most daunting challenge, according to both payers and providers, is interoperability across the ecosystem. With so many new entrants into the market, and with each having different technology, the ability to share information can be limited. Reliability of technology is also of concern, as is an adequate supply of skills in the workforce. Particular to payers is concern over regulatory approval and patient buy-in of new processes and programs. Providers, on the other hand, are worried about unproven/untested technology and security.

Overcome innovation barriers[22]

The biggest challenge across both payers and providers is interoperability across the ecosystem—mainly involving alignment along technology, platforms, and data. Additional barriers are regulatory approval and the reliability of new technology.

One solution by a nonprofit health system in the US relies on state-of-art services to optimize its application environment, accommodate the growth of its healthcare network, and comply with data security regulations.

Another case involves a healthcare provider that uses technology to identify factors associated with a higher risk of sepsis mortality. It also supports more personalized care and helps researchers stay better informed by using data science tools to develop machine learning models capable of analyzing thousands of patient records and medical journals.

Further, two academic institutions have received a 10-year commitment for USD 50 million to advance the science of artificial intelligence and its application to major public health issues.

The scientific collaborations with each institution will focus on critical health problems that are ideally suited for AI solutions. Initial areas of study are expected to include the use of AI to improve the utility of electronic health records and claims data to address significant public health issues such as patient safety, precision medicine, and health equity.

Lack of interoperability and the failure to effectively exchange information creates a negative impact on consumer perception. Today's empowered consumers have access to more information through more devices than ever before. As with other aspects of their lives, they are demanding more accountability and transparency from every organization with which they do business, and this applies to their healthcare providers. They have high expectations about the quality of care they receive.

Recently, the lack of interoperability to streamline the flow of health information among stakeholders and allow consumers access to their data was the impetus for The U.S. Department of Health and Human Services to propose new rules to support seamless and secure access, exchange, and use of electronic health information.[21] The rules, issued by the Centers for Medicare & Medicaid Services (CMS) and the Office of the National Coordinator for Health Information Technology (ONC), would increase choice and competition while fostering innovation that promotes patient access to and control over their health information. The proposed ONC rule would require that patient electronic access to this electronic health information be made available at no cost.

Until the rules are finalized—sometime in late 2019 or early 2020—and stakeholders implement those standards, the lack of interoperability in health data and information systems access among stakeholders stands in the way of accelerating innovation.

"Patients receive superior care... and cost efficiency with value-based care. It improves the contribution of the doctor to patient care, outcomes, and clinical involvement."

CFO, Provider, US

Next Steps—How can providers and payers overcome innovation barriers?

Overcoming and accelerating innovation requires three fundamental steps:

- Create and foster a culture of innovation that rewards novel approaches to solving well-articulated challenges and encourage inter-team review of best practices to build trust. Choose C-Suite leaders to be sponsors of innovation initiatives.
- Identify and remove barriers (organizational and technical) that prevent standardization of data access, analytic methods, and collaboration while promoting compliance and appropriate "firewalls" between teams. Interoperability among data, tooling, and people is a place to begin.
- Measure the impact (clinical quality, consumer experience, ROI) of innovation projects and showcase successes and failures to encourage participation and sustained investment in ongoing activities.

Optimize the value equation

The untapped value in this emerging VBH healthcare paradigm lies in the continuing focus by providers and payers on outcome-based results. And, while they agree on what value means (value=quality/cost), they are divided on whether to focus primarily on improving quality, lowering cost, or an approach that addresses both. In the future, both need to bring their expertise in quality and cost-savings to help make sure value is delivered at the highest levels (see Figure 5).

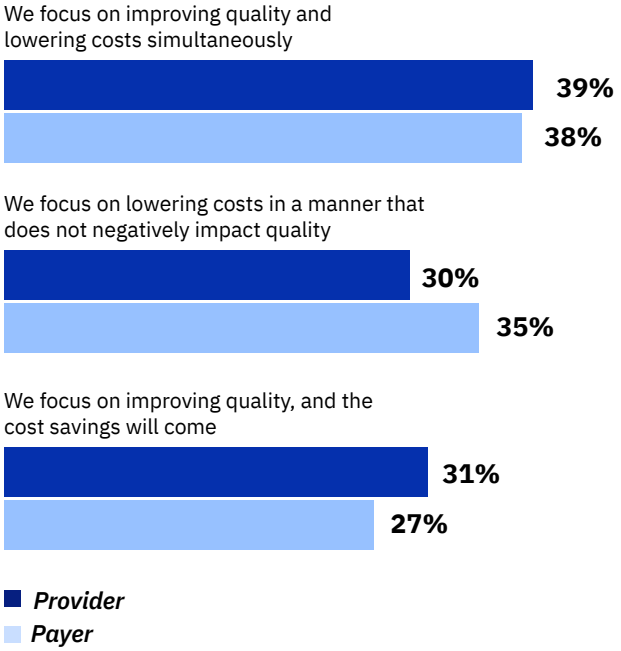
Additionally, few say that transitioning from a fee-for-service model to value-based health will place a considerable financial strain on health systems. Usually, organizations face significant expense and disruption when in the process of changing business models. For VBH, however, healthcare professionals surveyed say this is not necessarily the case.

Value-based health is a reality today, but it is going to take some time for payers and providers to come into complete alignment. The path forward may be arduous at times, but the rewards in patient outcomes, efficiency, and cost savings have the potential to create an entirely new era value in both medical facilities and the communities they serve.

—

Figure 5

How healthcare providers and payers look at quality of care versus cost savings



Next steps—How can we connect the value equation?

Healthcare leaders must position their organizations to optimize for both quality and cost. Further, it will be necessary to determine what financial changes a new healthcare model will introduce:

- Determine the aspects of value-based health that can increase patient/consumer satisfaction while also constraining costs, such as AI implementations that allow clinical staff to spend more time with patients.
- For providers, the obvious focus is on quality of care, but they also need to explore efficiencies to lower costs. Using analytics and AI can help create solutions that enable both. For payers, the emphasis should be on lowering costs without negatively impacting quality.
- Develop machine learning models that create efficiencies by analyzing patient records and medical journals.

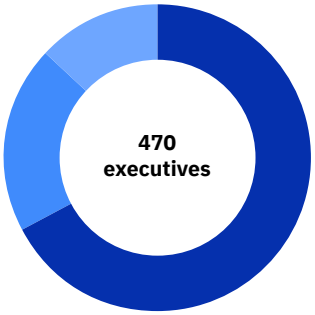
How will you implement the strategies necessary to transition to value-based health?

- How will you assess risks to your population to help make sure the right level of care is being provided?
- How will you engage your consumers and what technology will you use to support health and wellness?
- How will you capture social determinants of health and link to community services and consumer groups?
- Are you collaborating with other members of the ecosystem (such as other providers, payers, life science companies, policymakers)?
- What role will health information technology play and how will you drive more interoperability to innovate most efficiently?

Study methodology

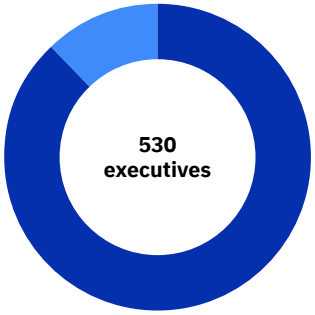
The IBV and IBM Watson Health recently conducted interviews with 1,000 healthcare executives (470 providers and 530 payers) across the US, Canada, UK, Denmark, Germany, Japan, and China.

Provider organizations



68% For-profit hospitals
20% Non-profit
13% University Medical Schools/Teaching Hospitals

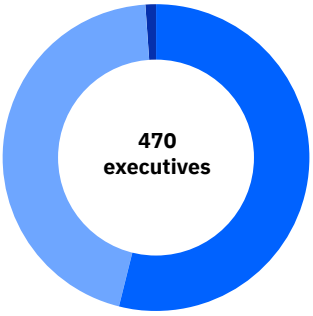
Payer organizations



88% Commercial Health Payer
12% Non-Commercial Health Payer

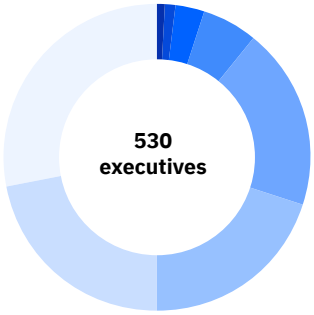
Provider organizations

Global respondent's role
2% CEO
3% CHRO
6% CQO
9% COO
11% CFO
13% CIO/CTO
13% Senior Executive
42% CMO/CNO

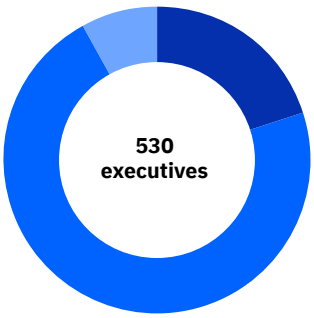


Global population served
1% < 1 million
54% 1 million - 50 million
45% 50 million - 100 million

Payer organizations



Global respondent's role
1% CEO
1% CMO/CNO
3% CQO
6% CHRO
19% CIO/CTO
20% COO
22% CFO
28% Senior Executive



Global population served
20% < 1 million
72% 1 million - 50 million
8% 50 million - 100 million

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For more information

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