Top health industry issues of 2017
A year of uncertainty and opportunity

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Health Research Institute

PwC Health Research Institute’s annual report highlights the forces that will have the most impact on the healthcare industry in 2017.
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Introduction

A year of uncertainty and opportunity

The election of Donald J. Trump will usher in a new era for the US healthcare industry, which has spent years adapting to the Affordable Care Act (ACA). Yet, despite the potential policy changes in Washington, the painstaking and challenging work of shifting to value-based care likely will continue.

President-elect Trump has said he wants to repeal the ACA and replace it with a mix of tax credits, health savings accounts, high-risk pools, state Medicaid block grants and a transference of regulatory control from the federal government to the states. President-elect Trump also has called for reforming the US Food and Drug Administration (FDA) and modernizing Medicare. (For a deeper analysis of President-elect Trump’s campaign proposals for healthcare, please see HRI’s report, President-elect Donald Trump: Turnaround time.)

President-elect Trump’s healthcare mission will sound familiar to anyone working in healthcare today: “...to create a patient-centered healthcare system that promotes choice, quality and affordability.” These goals – patient-centrism, consumer choice, quality, affordability – are hallmarks of the pivot toward value-based care, one of the most powerful forces reshaping the industry. 2017 will be a year dominated by this shift toward value, which has been underway for years, through Democratic administrations and Republican ones.

It is the pursuit of value that led a health system-affiliated institute to open a grocery store in Toledo, Ohio. It is driving drug companies to develop smartphone apps to help customers track symptoms and side effects. It is prompting medical schools to retool their curricula and create positions such as “assistant dean of healthcare value” to help prepare young doctors for work in a value-based world.

This shift to value can be felt in the quest to use emerging technologies – from artificial intelligence to blockchain to virtual reality – to find efficiencies for consumers and business operations. It is fueling development of new armaments for mankind’s war against infectious diseases. The pursuit of value is laced into partnerships between traditional health organizations and new entrants, and in efforts by healthcare providers to modernize payment systems as consumers finance more of their care.

Some of the seeds of this value shift were sown a decade ago, before the Great Recession, at a time when the nation was grappling with relentless and sharply rising healthcare costs. PwC’s Health Research Institute (HRI) forecasted medical cost trend, the projected percentage increase in the cost to treat patients from one year to the next, to be 11.9% for 2007, almost twice what it is today. In 2007, the industry was embarking on its mission to digitize health records, the Centers for Medicare & Medicaid Services (CMS) was starting to tie payments to quality and consumers were first hearing about retail clinics (see figure 1).

This shift to value has been a durable trend with the potential to disrupt many players in the industry. It is a trend that may be magnified by the new administration, as it seeks to reshape the industry with more free market approaches.

Many of the top health industry issues of 2017 highlight how this shift toward value is occurring, and how traditional health organizations and new entrants are responding to it. There are three main tactics that organizations will use to address this shift to value – they will adapt, they will innovate and they will build new programs and approaches to their work. These activities will occur against a backdrop of uncertainty as the new administration’s approach to healthcare takes shape. But the industry also will continue to be rich with opportunity, as forces greater than politics carry on its transformation.
### Top health industry issues of 2007

- **Obesity is the new smoking, with employer incentives considered to push employees to lose weight.**

- **Industry embarks on digitalization with slow electronic health record (EHR) uptake. Less than 9% of hospitals have a basic EHR system.**

- **Volume to value is in early days, as CMS begins its push to tie payments to quality and drive the industry toward greater transparency.**

- **Consumer-directed health plans start to grow. Just three million Americans have consumer-directed plans.**

- **Retail clinics are in their infancy. In 2006, 90 are in operation and about one in 10 consumers have been to one.**

- **Drug prices draw scrutiny as 42 blockbuster products lose their patents in 2007, representing $82 billion in sales.**

### Top health industry issues of 2017

- **Diet-related health issues, including obesity, are addressed by health organizations and employers focusing on nutrition.**

- **Nearly 90% of hospitals have basic EHRs. The question now is how to use emerging technologies such as blockchain, drones and artificial intelligence.**

- **Volume to value is in full swing. CMS and private plans are nudging providers to take on more downside risk.**

- **Millions of Americans are in high-deductible health plans, leading providers to modernize their payments systems to handle the surge in consumer credit card charges.**

- **More than 3,000 retail clinics are in operation. One in three consumers have visited one. This drift to new venues is part of the trend prompting medical schools to rethink how they train young doctors.**

- **Drug prices again are facing public and political attention. Industry moves to regulate itself in response to pressure.**

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**Source:** Top health industry issues of 2007, Top health industry issues of 2017, Surviving seismic change: Winning a piece of the $5 trillion US health ecosystem, Healthcare’s new entrants: Who will be the industry’s Amazon.com?
Adapt for value

The shift to a value-based world is forcing many organizations to adapt, prompting a wave of fine-tuning across the industry.

1. Under a new administration, the fate of the ACA remains unclear
2. Pharma’s new strategic partner? Patients
3. Easing the training wheels off value-based payment
4. Insert your card here for healthcare
President-elect Trump has made repealing and replacing the ACA one of his top priorities. A few weeks after his election, details of his plans were scarce, though he said in interviews that consumers would not experience lapses in coverage should the law be repealed. Some health organizations already are developing models in preparation for policy changes that could have a significant impact on the industry.

A complete repeal of the law, a daunting task due to Republican lawmakers’ slim majority in the Senate, would eliminate the ACA’s health insurance exchanges and reverse the expansion of Medicaid, adding 20 million to the ranks of the uninsured. Hospitals, especially those in states that expanded Medicaid, could experience a dramatic increase in uncompensated care. Meanwhile, insurers likely would lose most of the $1.9 trillion in federal ACA-related subsidies slated to be doled out over the next 10 years. ACA-fueled efforts to push the industry toward value-based care could wither.

A review of Republican efforts to repeal the law since it passed in 2010 shows that any dramatic moves likely would be followed by a transition period for some provisions. For example, in 2015, Republican lawmakers passed a budget reconciliation bill, vetoed by President Barack Obama in January of 2016, that called for a two-year delay in ending ACA provisions such as Medicaid expansion, premium assistance tax credits, reduced cost-sharing and the small employer health insurance tax credit. However, other provisions were to be eliminated immediately, such as the individual mandate, shared responsibility payments by large employers, the annual fee on insurers and excise tax on medical devices.

“This isn’t flipping a switch,” David Merritt, executive vice president of public affairs and strategic initiatives at America’s Health Insurance Plans, told HRI following the election. “You can’t move from one approach to another just by passing legislation. It takes time. Consumers need to be informed in advance. Insurers need to be able to plan for it. That’s why the real question will be what happens in 2018 and beyond.”

President-elect Trump also has indicated he may keep popular parts of the law, including the requirement that insurers cover all comers, also known as guaranteed issue. No longer able to deny individuals coverage based on health status or age, guaranteed issue draws consumers with more serious illnesses and higher costs into the market. This generally causes premium costs – consumers’ most important consideration when choosing a health plan – to climb (see figure 2).

**Implications:**

- **Health systems should scenario plan:** Even if a transition period is included in the new administration’s healthcare plan, insurance gains that would have otherwise been made under the ACA in the next couple of years could be eaten away. For example, South Dakota Gov. Dennis Daugaard already said that he will no longer pursue an expansion of the state’s Medicaid program in 2017. Efforts underway by lawmakers and regulators to shore up the ACA exchanges are likely to be halted. This could lead to higher premium increases on the exchanges during a transition period. Health organizations should map out potential gains and losses of insured consumers around multiple scenarios.

- **Education and advocacy will be critical:** Industry players should educate the new administration on the interplay between premium costs, essential benefits and guaranteed issue. They should explain how certain actions have far-ranging consequences, such as the links between the individual mandate and the size of premiums on the exchanges and between levels of uninsured and the balance sheets of hospitals and health systems.

- **2017 may create strategic opportunities:** According to AHIP’s Merritt, “insurers will continue forward with what they had planned for the year ahead. So far there hasn’t been a significant impact on enrollment.” Heading into open enrollment for 2017, several insurers scaled back their exchange efforts. Exits by Aetna, Humana and UnitedHealthcare put about 1.6 million lives and over $8 billion in premium revenues up for grabs for 2017, according to an analysis by HRI.

**Figure 2: Under any healthcare reform, consumers care most about their premiums**

Consumers pointed to the cost of their monthly premium, coverage of services and medications, and provider network as their most important considerations when choosing a plan from a health insurance company.
Facing increasingly challenging reimbursement and regulatory environments, as well as new trends in consumerism, pharmaceutical companies in 2017 will better engage with patients to justify prices, show value and satisfy calls by regulators who want them to work more closely with the people who use their products.

Amidst these changes and challenges, companies are developing inventive ways to engage with patients, including mobile apps and other services. A mobile app developed by Eli Lilly helps patients remember to take its once-per-week diabetes drug Trulicity at the appropriate times and learn how to use the drug’s injection mechanism correctly.15 Takeda launched a program, iBData, to help patients with inflammatory bowel disease track their symptoms using a smartwatch application.16 These apps and services are being developed as engagement with consumers is written into regulations and contracts. Patient engagement will become a core part of the FDA’s regulatory approvals process as part of the planned reauthorization of the Prescription Drug User Fee Act in 2017.17

Insurers such as Harvard Pilgrim Health Care, Aetna and Cigna are entering into deals with drugmakers to pay for products based on performance.18 19

Consumers, facing higher deductibles, are looking to drug companies for added benefits and assurance that their products are worth the money. They also are looking for personalization, which is only possible with deeper understanding of consumer preferences. For example, when HRI asked consumers ages 25 to 34 whether they would be willing to incorporate a videogame into their treatment if they were diagnosed with a mental health problem, 78% said yes. Older consumers were far less open. Unique needs lend themselves to unique solutions, and companies should be prepared to think creatively. A solution that works for younger patients may need to be reimagined for the elderly.

Implications:

- **Don’t wait to reach out to patients:** Companies can position themselves for post-market success by engaging with patients early and often, says Fran Kochman, director of advocacy and alliance development at GlaxoSmithKline. “Everybody wins when engagement takes place,” Kochman said. “Pharmaceutical companies would learn more about how patients manage their medications, and insurers could appreciate that patients are more likely to be adherent and meet their outcomes. There’s a domino effect.”

- **Engagement for regulatory success:** Government emphasis on patient engagement may increase the value of pharmaceutical companies offering services to providers that help patients collect, analyze and understand their own health data and health conditions. Companies able to identify and meet patients’ needs may have more success with regulators who increasingly are focusing on patient engagement.

- **Build trust for effective engagement:** While consumers are less open to sharing their data with drug companies than with their doctors, there are nuances to their positions (see figure 3). Partnerships, such as with advocacy organizations, may help companies access these data more effectively.

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**Figure 3: Many consumers with chronic health conditions are willing to share data with drug companies**

<table>
<thead>
<tr>
<th>Percentage of consumers who said they would share data with drug companies about how well their treatments are working</th>
<th>Percentage of consumers who said they would share data with drug companies about their daily symptoms and their best and worst days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frail elderly consumers</td>
<td>Consumers with complex chronic disease</td>
</tr>
<tr>
<td>79%</td>
<td>66%</td>
</tr>
</tbody>
</table>

Source: PwC Health Research Institute Consumer Survey, 2016
Easing the training wheels off value-based payment

The march toward paying for value over volume has been a gradual one. Up until this point, new programs and payment models have largely involved upside risk for healthcare providers. But this will begin to change in 2017 as the training wheels for these risk-based arrangements are eased off.

2017 is the first performance year for the Medicare Access and CHIP Reauthorization Act of 2015, the physician payment reform law also known as MACRA, and healthcare providers will be asked to participate in one of two payment tracks, both of which emphasize downside risk. One applies to clinicians participating in traditional Medicare and will put 4% of payments at risk in 2019, an amount that will grow in subsequent years. The size of the payment adjustment – which could be positive, neutral or negative – will partially depend on how much data the clinician submits to CMS and how well they perform on quality metrics in 2017.

The other track targets healthcare providers already bearing downside risk for patients’ outcomes. CMS estimates that 70,000 to 120,000 clinicians will participate in this track in 2017, making them eligible for 5% bonus payments in 2019.

CMS also offers other payment models, such as bundled payments. Under this payment model, hospitals are responsible for cost and quality beyond discharge into post-acute care. CMS’ oncology bundled payment will qualify for MACRA’s 5% bonus in 2017. New bundle programs for cardiac and orthopedic care also launch next year, allowing providers to qualify for bonuses in 2018.

At the same time, CMS is nudging accountable care organizations under its Medicare Shared Savings Program to put more money at risk in exchange for the 5% bonus. HRI found that many of these organizations have left money on the table so far. Analyzing the performance of Medicare Shared Savings Program accountable care organizations in 2015, HRI found that more accountable care organizations would have qualified for bonuses in 2015 had they been subject to downside risk (see figure 4).

Healthcare providers that are best positioned to take on risk have been laying the groundwork for years. For example, Texas Health Resources has been building a network of affiliates and partners across North Texas since the early 2000s to better manage patients along the care continuum. The health system joined forces with University of Texas Southwestern Medical Center to form an accountable care organization under the Medicare Shared Savings Program.

Building on their success, the duo created Southwestern Health Resources in April 2016, an integrated health network. Both systems believe this new entity positions them to participate in risk-based contracts. And – motivated by MACRA – they decided to take on more downside risk and transition their accountable care organization to one of CMS’s more advanced payment models. In 2017, Texas Health Resources also will take the next step into the world of risk-bearing models, launching a health plan that it jointly owns and operates with national health insurer Aetna.

Implications:

- **Know where you stand:** With downside risk on the horizon, physicians must understand where they stand in terms of quality and cost today. “The solution is not at the payer level. It’s not at the government level,” Dr. Daniel Varga, chief clinical officer at Texas Health Resources, told HRI. “The onus is on the providers.”

HRI’s analysis found that providers may be more prepared to commit to downside risk than they realize. Strong actuarial capabilities can help accurately measure performance, while strong leadership to set priorities can accelerate the pace of change.

- **Scale-up infrastructure:** Delivering higher quality, lower cost care requires an analytics-driven approach that segments patient populations and delivers tailored care management solutions based on specific needs. Achieving this requires a robust infrastructure of technology and clinical skills, which will take time to build and operationalize. Providers should consider partnerships and alliances to acquire both.

- **Don’t forget about doctoring:** Physicians spend an average of 785 hours a year dealing with quality measure reporting. Opportunities could arise for companies in the platforms and support market. They are poised to develop remedies for doctors drowning in data. Such solutions can help minimize the administrative burden on doctors, allowing them to do what they’re trained to do – care for patients.

**Figure 4: Many organizations may be more prepared for downside risk than they realize**

An HRI analysis of 2015 CMS data shows that many Medicare Shared Savings Program (MSSP) accountable care organizations (ACOs) would have earned bigger bonuses had they taken on downside risk.

<table>
<thead>
<tr>
<th>Actual performance in 2015</th>
<th>2015 performance had all MSSPs shifted to two-sided risk models</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACOs receiving shared savings bonus: 119</td>
<td>ACOs receiving shared savings bonus: 143</td>
</tr>
<tr>
<td>Average shared savings bonus: $5.4M</td>
<td>Average shared savings bonus: $5.65M</td>
</tr>
<tr>
<td>Program cost for CMS: $216M</td>
<td>Program profit for CMS: $58M</td>
</tr>
</tbody>
</table>

Source: PwC Health Research Institute analysis of CMS MSSP ACO performance year 2015 results
Adapt for value

Insert your card here for healthcare

Consumers are swiping their credit cards at hospitals and health systems now more than ever. With higher deductibles across a broader set of services, they owe more, more often, and they can buy a wide range of products and services, from soy milk lattes to overnight parking to genetic lab testing to prescription drugs. PwC estimates that 5% of healthcare provider revenue today comes through credit card transactions, a percentage that likely will double by 2020.

2017 is the year health systems begin to modernize payments in preparation for creating more consumer-centered experiences. Many consumers hunger for better experiences—one in four consumers in poor or fair health told HRI that their experiences with hospital billing and payment damaged their opinions of the organization.27 But customer experience transformations should be built atop standardized, low-risk, low-complexity, secure and modern payments systems.

The need for modernization is pressing. Most health systems maintain a patchwork of credit card processing devices, systems, vendors and operations, often allowing each business unit and location to choose their own. This issue is compounded as health systems consolidate. The result is a multiplication of financial risk, complexity in complying with industry regulations and opacity in the day-to-day flow of revenues.

At the same time, hackers are targeting health systems more than ever. PwC’s recent survey of global healthcare provider and insurer executives found that phishing topped the list of cyber-incidents (see figure 5). Breaches also have been reported at major American healthcare providers.28

Mayo Clinic sought to address these issues when it embarked on an 18-month plan to modernize its credit card payments system. The institution, which had expanded beyond its original Rochester, Minn.,-based location, maintained hundreds of merchant IDs and dozens of vendors, gateways and processors.

Trying to implement one secure standard across all of the systems required for compliance with new industry standards was a gargantuan task, said Darrell Sandeen, chair of the Mayo Clinic Office of Risk Management. Mayo Clinic’s goal was to reduce merchant account management, mitigate financial risk, simplify payment processing solutions, secure cardholder information and move to a point-to-point encryption solution.

In the end, the project replaced more than 1,400 devices, reduced in-scope requirements for compliance with industry security standards, and involved the successful engagement of hundreds of employees handling credit cards, Sandeen said.

Beyond reducing risk and laying the groundwork for customer-oriented payments, modernizing means financial savings. Operationally, money can be saved by bringing together processes that often are spread across business units and even states. Merchant processing fees, once negotiated piecemeal, can be negotiated with greater leverage. And a modern system offers a clearer view of revenue flow and serves as a solid foundation for consumer-oriented systems.

Implications:

- Modernization is a continuous process, not a once-a-decade renovation: Healthcare providers should plan on creating a dedicated group to keep payment processes up to date once the project is complete. Mayo Clinic created a Credit Card Protection Office with eight full-time employees who manage credit card payment processing, identify new entry into credit card payment markets and comply with industry credit card security requirements. “It’s not one time, and I walk away,” Sandeen said.

- Recognize consumers’ trust in provider security: Consumers feel healthcare providers do as good a job as online and big box retailers, fast food restaurants and utilities in keeping their financial data secure, according to a 2016 HRI survey. A substantial percentage of consumers feel providers do a better job. Consumers also trust providers with their health data more than other organizations. Healthcare providers have the opportunity to use this trust as an asset to leverage in partnerships with new entrants.

- Consider payments to be a key part of the patient experience: Healthcare providers should consider payments as a way to differentiate themselves. Retailers, airlines, restaurants and others have used payments to attract customers and build loyalty. Walmart’s Walmart Pay allows customers to pay seamlessly using the store’s mobile app, which can be linked to credit cards, debit cards and gift cards. Amazon.com features one-click shopping. Providers can do the same, using payments as a way to build consumer trust, loyalty and satisfaction.

Figure 5: Phishing, email compromise and ransomware top list of healthcare security issues

Percentages of payers and providers reporting each type of security incident

Source: PwC The Global State of Information Security Survey 2017
Innovate for value

Health organizations, new and traditional, are addressing the shift toward value through invention and innovation.

5. Paging Dr. Drone: It’s time to prepare for emerging technologies
6. The battle against infectious diseases sparks invention
7. Rx cauliflower: Nutrition moves to population health
The health industry lags behind other industries, such as retail and telecommunications, in the deployment of emerging technologies such as artificial intelligence, drones and virtual reality. Yet these technological innovations loom on the health industry’s horizon with great potential to disrupt. 2017 is the year to prepare for the eventual arrival of these technologies and their impacts on business models, operations, workforce needs and cybersecurity risks (see figure 6).

Careful observers already will have noticed early signs of these technologies’ appearance in the health industry. Eighteen years ago, Align Technology won FDA clearance for its 3D-printed orthodontic system. Since then, the company has treated millions of consumers, generating revenues of $845 million in 2015. 3D printing also is used to customize hearing aids and dental work and even print epilepsy medication.

In Sweden, pharmacy chain Apotek Hjärtat hands some clinic customers stress-busting virtual reality headsets that immerse users into a serene lakeside scene. By staring at objects in the environment, patients can trigger music, or beckon a sea monster.

And next year, Qualcomm Tricorder XPRIZE will name a winner in its $10 million contest to invent a working “Star Trek”-style tricorder. The consumer-friendly device must be able to diagnose 13 health conditions and capture five vital signs without help from a healthcare worker or facility. Six teams have built working tricorders, said Grant Campany, senior director of the contest.

A consumer-operated tricorder could perform work now handled by primary care workers, increasing efficiency. “There is no reason to go to the hospital and spend the first 15 minutes answering questions and getting weighed,” Campany said. “Tricorder technology can already do these things—these devices can be engineered in the near future to integrate existing health technologies in the home and combine various data points to generate actionable information for patients and physicians alike. The physician sees the screen and gets to the heart of the matter, figuring out what to do to make you healthier.”

These technologies also are beginning to revolutionize supply chains, which can help pharmaceutical companies address issues such as increasing regulatory complexity across the globe, tightening competition, rising demand for personalized treatments and the persistence of counterfeits.

A digitized supply chain weaves together people, machines, data and other resources to enable greater efficiency, customization and security throughout the value chain, from planning to sourcing to manufacturing to delivery. For example, a digitized supply chain could slash manufacturing downtime by 30% to 40%, boosting equipment effectiveness. 3D printing could become the backbone of a decentralized supply chain able to produce small, custom batches for personalized treatments.

**Implications:**

- **Consider these technologies together:** Healthcare organizations should avoid making the common mistake of adopting technologies individually, as point solutions, rather than exploring how they work together. The best value for all of these will be when they are applied in coordination with one another, or in coordination with services delivered by human beings. Organizations should develop comprehensive strategic plans that define their roles in a wider digital health ecosystem.

- **Plan for new talent:** As these technologies make their ways into the health industry, organizations will need to hire new talent, or partner with enterprises stocked with these skilled employees. Health organizations should be prepared to compete with technology, financial services and retail companies for workers, such as engineers and designers. Health organizations may find it hard to lure top talent away from the tech world, and also should plan to identify partners that can supply workers with needed skills.

- **Don’t short cybersecurity:** These technologies also are wellsprings of valuable data. But, as the health ecosystem becomes an interconnected web of consumer and medical devices, clinical equipment and more, hackers will find multiplying opportunities to exploit vulnerabilities, physical and virtual. Health organizations should make investments in cybersecurity commensurate with their adoption of emerging technologies to avoid costly breaches and meet regulator expectations. Forty-five percent of healthcare providers and payers are investing in a security strategy for the Internet of Things, according to PwC’s Global State of Information Security Survey 2017.

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**Figure 6: Eight technologies with great potential to disrupt the US health industry over the next decade**

<table>
<thead>
<tr>
<th>#</th>
<th>Technology</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Artificial intelligence (AI)</td>
<td>Software algorithms able to perform tasks normally requiring human intelligence. Digitized supply chain, efficient billing, accelerated R&amp;D.</td>
</tr>
<tr>
<td>2</td>
<td>Augmented reality (AR)</td>
<td>Virtual additions to the physical world to change the user experience. Fitness and wellness gaming apps, guided tours of grocery aisles, surgical guidance.</td>
</tr>
<tr>
<td>3</td>
<td>Blockchain</td>
<td>Distributed electronic ledger that can record and confirm transactions securely. Consumer identity management, Medicaid and Medicare fraud prevention, personal health data protection.</td>
</tr>
<tr>
<td>4</td>
<td>Drones</td>
<td>Pilot-free vehicles and devices. Digitized supply chain, delivery of healthcare goods to consumers, emergency and disaster response.</td>
</tr>
<tr>
<td>5</td>
<td>Internet of Things (IoT)</td>
<td>A connected network of objects that collect and exchange data. Inventory control, care coordination, remote patient monitoring, digital supply chain, digitized operations. (Sample use cases)</td>
</tr>
<tr>
<td>6</td>
<td>Robots</td>
<td>Machines or virtual agents that automate, augment or assist human activities. Digital supply chain, remote patient monitoring and care, digital behavioral health services.</td>
</tr>
<tr>
<td>7</td>
<td>Virtual reality (VR)</td>
<td>Interactive simulation of a 3-D image or complete environment. Patient distraction, stress relief, medical school education tools, consumer and clinician training, scenario planning.</td>
</tr>
<tr>
<td>8</td>
<td>3D printing</td>
<td>Additive manufacturing techniques used to create three-dimensional objects based on digital models by layering or “printing” successive layers of materials. Customized implants, prosthetics and transplants, distributed supply chain, on-demand inventory.</td>
</tr>
</tbody>
</table>

Source: PwC Tech breakthroughs megatrend: How to prepare for its impact, PwC Health Research Institute analysis.
The battle against infectious diseases sparks invention

As the war against infectious disease and antimicrobial resistance expands across borders, public health agencies and private industry in the US and Europe are pouring money into the development of new weapons to fight back. In 2017, millions of dollars will be earmarked for drug and device industry projects aimed at combating the spread of infectious diseases. At the same time, industry and regulators are working together to develop rapid diagnostics aimed at infectious diseases that have grabbed headlines.

Through collaborations, industry is addressing the spread of antibiotic-resistant bacteria, which infect two million Americans a year, and kill 23,000. In June, the Combating Antibiotic-Resistant Bacteria Biopharmaceutical Accelerator (CARB-X) collaboration announced plans to spend $500 million to research and develop antibiotic drugs.

In September, 13 global biopharmaceutical companies signed an “industry roadmap” proposing market entry rewards, among other things, to promote development of antibiotics, diagnostics and vaccines to fight antimicrobial resistance. While a number of new antibiotics are being tested in clinical trials, many more will be needed to successfully prevent the erosion of antibiotic effectiveness (see figure 7).

One of the most persistent and pernicious challenges associated with treating infectious diseases is rapid and effective diagnosis. Public health experts also have noted the need for commercially available consumer tests that could help fight the spread of diseases such as Zika, which has gained a foothold in the southern United States. The Zika virus, for example, is asymptomatic in as much as 80% of the infected population.

The FDA has granted at least 10 Zika diagnostic tools Emergency Use Authorization, which allows unapproved medical products to be used in an emergency to diagnose, treat or prevent life-threatening diseases or conditions. So far, however, none are commercially available for purchase by consumers.

In early August, the US Department of Health and Human Services awarded $9 million to InBios International, Inc., to develop a Zika diagnostic test that returns results in four hours or less, compared with two to three days for existing diagnostic tests. InBios received FDA authorization to market the test three weeks later.

Implications:

- **Partner with public agencies to overcome market barriers**: Millions of dollars are being made available through public agencies to accelerate development of new treatments and diagnostics for infectious disease. Close collaboration with health agencies in the US and Europe, such as HHS’ Biomedical Advanced Research and Development Authority and the European Innovative Medicines Initiative, can help pharmaceutical and device makers secure funding and expedite research and regulatory approval.

- **Use mobile technology to locate and diagnose patients**: Smartphone ownership is growing across the globe, which can help healthcare providers and drug and device makers reach global populations at risk of contracting infectious diseases while better surveilling their spread. Data collected through mobile programs can be shared to help inform public health officials about geographic areas and populations that are experiencing spikes in outbreaks and disease symptoms.

- **Educate medical staff about fighting disease in a global context**: Agricultural practices and over-the-counter availability of antibiotics in global markets can lead to new disease outbreaks and antibiotic resistance. Companies selling drugs and devices that target infectious diseases and antimicrobial resistance should provide strong educational resources for healthcare workers to share with consumers to help prevent the spread of new pathogens and the development of antibiotic resistance.

Figure 7: Public and private sectors are working to boost the antibiotics pipeline

![Antibiotics in development by clinical phase](image)

Antibiotics in development by clinical phase

- **Phase 1**: 11
- **Phase 2**: 13
- **Phase 3**: 13

Most common indications among antibiotics in clinical development

- **Acute bacterial skin and skin structure infections**: 8
- **Complicated urinary tract infections**: 6
- **Bacterial infections**: 6

Source: HRI analysis of Pew Charitable Trusts data, May 2016
The drive toward value-based care is prompting established health organizations and new entrants to focus on nutrition as a way to prevent costly medical problems and improve the overall health of the populations they serve. This growing industry awareness of diet as a key driver of healthcare costs for many Americans is fueling creation of inventive programs and collaborations in 2017.

The statistics are familiar, and yet still alarming. Nearly 40% of American adults are obese.44 Twenty-four percent of all Americans have at least one diet-related medical condition.45 And about 20 million Americans live in so-called “food deserts,” communities lacking access to nutritious foods.46 Most consumers surveyed by HRI said they would like to see a dietitian or nutritionist, and yet 75% said they had not seen one of these professionals in the past year.

And this growing awareness is what led ProMedica, a health system based in Toledo, Ohio, to launch the ProMedica Ebeid Institute with the help of local philanthropist Russell Ebeid. The institute opened a full-service grocery store last December in an area of Toledo that had been a food desert. The grocery store building also houses a demonstration kitchen and multipurpose rooms for nutrition classes and other programs that include job training, financial counseling, as well as health, wellness and other educational programs, said Barbara Petee, ProMedica chief advocacy and government relations officer.

ProMedica also incorporated two screening questions into the intake portion of its electronic medical record system to help identify patients who could benefit from deeper conversations about food insecurity, Petee said. The system also operates two “food pharmacies” that fill prescriptions, good for six months at a time, for nutritious food to patients with diet-related issues as well as their families. In 18 months, the food pharmacies have served almost 10,000 people, she said. “Healthcare has been the missing piece of this conversation,” Petee said.

Nutritional guidance also has become more common at grocery store chains, such as Publix and HEB, which provide access to on-site dietitians and nutrition-related offerings.47 Publix and HEB are not alone. Dietitians serve about 11,000 grocery stores nationwide.48 And, surveys indicate consumers are hungry for these services (see figure 8).

Consumers were asked whether they would take advantage of free advice for weight management or help with diet-related medical conditions from a nutritionist or dietitian from each of these entities. Percentage of respondents answering yes:

- **Doctor**: 79%
- **Pharmacy**: 59%
- **Gym**: 41%
- **Employer**: 38%
- **Grocery Store**: 28%
- **Big Box Store**: 17%

Source: PwC Health Research Institute Consumer Survey, 2016

**Implications:**

- **Understand the market**: Providers, health insurers, and provider-owned health plans should carefully consider the unique diet-related needs of the populations they serve, including prevalent chronic diseases, access to healthy foods, nutritional needs and social factors affecting health.

- **Don’t go it alone**: Traditional health players should look to new entrants as partners in nutrition-related programs. Retailers, tech companies and even entertainment companies can offer unique capabilities that can help address consumers’ diet-related issues. For example, it is not hard to imagine a retailer partnering with a tech company and a health system to bring consumers an augmented reality game revolving around nutrition and marketed to teens at risk of developing Type 2 diabetes.

- **Invest in a nutrition-related workforce**: Primary care teams of the future likely will be comprised of many different professionals, including dietitians and nutritionists. Primary care doctors cite these experts as among those they most want on their teams, and consumers echo their enthusiasm. Investing in talent that brings nutrition knowledge will help organizations, from healthcare providers to new entrants, address diet-related health issues that cannot be solved by the occasional visit to the doctor. Holistic solutions – such as food pharmacies and recipe demonstrations – can help consumers make difficult lifestyle changes that could ultimately prevent expensive health issues down the road.
Build for value

Health organizations are building new solutions to issues raised by the shift to a value-based health ecosystem.

8. Putting the brakes – gently – on drug prices
9. A year of new partnerships and collaborations
10. Preparing medical students for work in a value-based world
Drug companies put the brakes – gently – on prices

Three years of sustained pressure on the biopharmaceutical industry’s drug pricing practices may lead to new pricing restrictions in 2017. But these new rules may not come from regulators, but from the industry trade organizations and the C-suites of pharmaceutical companies themselves.

Public demand for drug pricing accountability, pushback from drug purchasers and the potential for new price control regulations are prompting drug company executives to embrace voluntary codes of conduct to rein in the kinds of pricing practices that have led to congressional shaming, executive resignations and global drug access barriers.

The threat of legislative action is real. Voters in California narrowly rejected a November ballot measure that would have prevented state-run health plans from paying more for medications than the US Department of Veterans Affairs. But 52% percent of surveyed American consumers told HRI that they would support similar laws in their own states.

During his campaign, President-elect Trump unveiled a multi-point plan to overhaul the US healthcare system, aiming to lower the cost of care through market and tax reforms. After the election, the President-elect stated his intention to “reform the Food and Drug Administration, to put a greater focus on the need of patients for new and innovative medical products,” and to “modernize Medicare,” among other healthcare goals.

Pharmaceutical executives are responding. In September, Allergan CEO Brent Saunders published a “social contract with patients,” which includes, among other things, a commitment to limit percent price increases to single digits, once a year. In April, KaloBios Pharmaceuticals Inc. announced a new product pricing model that will limit price increases to no more than the rate of inflation or the Consumer Price Index, no more than once a year. “We have to be thoughtful and engaged about how we explain our position and how we try and make the [pricing] situation work better,” Andrew Witty, CEO of GlaxoSmithKline, told The New York Times in October.

While consumers purchasing medications for conditions such as multiple sclerosis, diabetes or hepatitis C may have experienced sharp out-of-pocket increases due to high-deductible health plans or co-insurance payments, out-of-pocket spending for privately insured patients has trended downward over the last decade, on average (see figure 9). This is largely due to cheap generic alternatives entering the market, cool comfort for consumers filling prescriptions for expensive, branded medications.

Implications:
• Commit to transparent and responsible pricing practices: Industry commitments to refrain from frequent price increases may help to rebuild trust with consumers, physicians and health insurers, and demonstrate goodwill to legislators. Being more transparent about the justifications for drug prices and educating consumers about the other stakeholders that influence drug prices – including employers, insurers, pharmacy benefits managers and pharmacies – may help to put the price of drugs into a deeper context.

• Review financial assistance programs: Investigations into charities offering financial assistance to consumers have revealed questionable funding practices, in some cases. Pharmaceutical companies should use caution in choosing partner organizations, and carefully review financial assistance programs to ensure they are operating appropriately.

• Experiment with cross-sector partnerships: Insurers and health systems are tasked with improving the health of their covered populations while lowering costs. A partnership between drug makers and the Academy of Managed Care Pharmacy, for example, is working to address predictability in drug pricing by sharing prices with insurers up to 12 months prior to launch.

Figure 9: Average out-of-pocket spending on drugs is shrinking for privately insured consumers

Average out-of-pocket prescription drug costs among privately insured individuals, 2005-2014

Mean total spending on prescriptions
Mean out-of-pocket spending on prescription drugs

Source: PwC Health Research Institute analysis of the US Department of Health and Human Services Medical Expenditure Panel Survey data
A year of new partnerships and collaborations

The health industry will continue to consolidate through mergers and acquisitions in 2017, but the new year also likely will bring an uptick in alternative transactions, such as joint ventures, partnerships, strategic alliances and clinical affiliations.

The broad industry shift to pay for value over volume and a growing interest in wellness – the two forces identified by HRI as reshaping the New Health Economy most swiftly – are driving organizations to build new capabilities quickly to stay competitive. Although it sometimes makes sense to buy or sell these capabilities through traditional mergers and acquisitions, increasingly companies are looking to borrow them through alternative transactions. Traditional mergers also have been impacted by challenges by the US Department of Justice and the US Federal Trade Commission. These partnerships often make it possible to scale faster and stay nimble while reducing the potential downside risk of full ownership.

Select Medical, a Mechanicsburg, Pa.-based provider of inpatient rehabilitation, outpatient physical therapy, long term acute care and occupational medicine, saw the writing on the wall. With growing demand on healthcare providers to track their patients across the care continuum, the company recognized an opportunity to partner with hospitals to help them better manage post-acute care. “You can’t be Switzerland,” said David Chernow, Select Medical’s CEO. “You can’t be out there alone and expect to manage patient populations, improve quality and control costs. We know the future of value-based payment will necessitate us to be in the same boat.”

In a little over two years, the company has entered into more than six strategic partnerships and joint ventures with the likes of Ochsner Health System and the Cleveland Clinic. By using a joint venture structure, Select Medical has been able to expand its footprint more quickly, capitalizing on the momentum behind the industrywide transition from volume to value. With a partnership strategy, these hospitals can grow their brands and optimize their core capabilities, while preserving their not-for-profit identities. And perhaps most importantly, they are afforded platforms for exploring new models of care delivery alongside capable partners.

Health systems also are expanding use of joint ventures with real estate investment trusts to free up capital to scale programs focused on the volume to value shift. Last fall, Boston-based Steward Health Care System announced a partnership with Medical Properties Trust Inc. to help fund the expansion of its accountable care organization model. Six other health systems made similar announcements in the first nine months of 2016. These transactions show no signs of abating heading into 2017.

As sector-specific silos crumble and an intertwined health ecosystem emerges, working with partners in other sectors and other industries likely will become the norm. Last fall, national insurer Aetna announced a first-of-its-kind partnership with Apple to provide smartwatches to its nearly 50,000 employees as well as select plan members. While Aetna has analytics and care management functions, it needed a platform to bring them together. If successful, this relationship could be a boon for Apple, helping to cement its place as a platform of choice in the health ecosystem.

Implications:

- Define the partnership’s value proposition: Partnerships can be market differentiators if a compelling value proposition can be articulated to consumers. Unfortunately, this often gets lost in translation. In a recent HRI survey, most consumers failed to see a benefit when health organizations come together (see figure 10). A strong value proposition hinges on first ensuring the deal aligns with overall strategy, defining a governance structure and operating model to support it and considering how the deal’s benefits will be marketed to consumers.
- Engineer for flexibility: Deals should be designed from day one to change with unanticipated dynamics—operational, economic or strategic. Potential levers may include economic terms that are reset upon meeting certain milestones and shared governance models with defined steps to break deadlocks. In addition, clear performance measures should be established with mechanisms to evaluate success and clear exit strategies in place.
- Remember the “4 C’s”: According to Select Medical’s Chernow, alternative transactions are like marriages. “You need the ‘4 C’s’ - communication, collaboration, compassion and compromise,” he said. Without these four elements – coupled with close alignment of vision and values – partnerships could end in divorce.

Figure 10: Most consumers don’t have strong feelings about healthcare mergers

Consumers were asked whether consumers benefit, lose, or neither benefit nor lose when one healthcare organization mergers with another. They also were given the option of answering that they were unsure. Percentage of respondents for each option:

- Consumers benefit when health organizations come together: 56%
- Consumers lose when health organizations come together: 27%
- Consumers neither benefit nor lose, or respondent was unsure of impact: 17%

Source: PwC Health Research Institute Consumer Insights Survey, fall 2016
Medical students who matriculate in 2017 will graduate into a health industry shaped by the shift to value-based care. The value-based payment models of the future will require physicians to be able to work on cross-discipline teams—often as leaders—and to measure and continually improve upon the value, cost, and quality of care. Until recently, this complete toolbox of skills has rarely been offered in medical education. But in 2017, medical schools and residency programs are building innovative training programs to prepare students for a new healthcare landscape.

Working physicians acknowledge that value-based care will likely impact how they practice medicine in the future. According to a 2015 PwC Health Research Institute survey of clinicians, physicians believe they will spend more time on activities such as leading teams and coordinating care in the next 10 years (see figure 11).

Already, the Liaison Committee on Medical Education (LCME) and the Accreditation Council for Graduate Medical Education (ACGME) – the accrediting bodies for medical school education and residency programs, respectively—require these programs to prepare students to function on cross-disciplinary healthcare teams. “There is no single make-up of a team,” Dr. Ken Shine, former executive vice chancellor for health affairs of the University of Texas System, told HRI.

While newer medical schools are able to start from scratch and incorporate these requirements more immediately and holistically, established medical schools across the country have been modifying their curricula as well.

Future physicians also will need to measure and continually improve quality of care while managing costs. The ACGME has introduced cost considerations such as minimizing unnecessary diagnostic and therapeutic tests and risk-benefit analysis to its Common Program Requirements and Internal Medicine Reporting Guidelines. While not as direct and detailed as the ACGME’s considerations, the LCME allows for training in the financing of healthcare through its standards. Education and training programs are following suit by increasing attention on cost-effectiveness when delivering high-quality patient care. And, some leading institutions have programs in process.

For example, some schools have begun to talk about value-based decision-making as a facet of students’ training. Students learn how to measure the effects of interventions on patient outcomes, continuously improve care and lead teams of caregivers. The University of Texas at Austin’s Dell Medical School, which welcomed its first class of students this year, is building its value-based care curriculum from the ground up. The school even created a new position—Assistant Dean of Healthcare Value—to develop a value-based care curriculum and a complementary value improvement program.

Implications:

- **Prepare physician executives:** As Travis Singleton, senior vice president of physician placement firm Merritt Hawkins & Associates, said: “Physician executives, at any level, are becoming one of the most important roles in healthcare.” Innovative programs are preparing students for these roles. At Rowan University’s Cooper Medical School, for example, all first-year medical students become yellow belts in Six Sigma. Taught by Cooper Health System black belts, students learn about topics such as systems engineering, central sterile supply and other non-clinical operations.

- **Model the change:** Medical schools and residency programs should search for the right clinical partners to reinforce these concepts during training and once clinicians have entered the workforce. Programs such as the Association of American Medical Colleges’ Teaching for Quality, which trains faculty in quality and safety improvement, along with other educational opportunities that offer a broader perspective of value-based care, will become increasingly important.

- **Make it stick:** Developers of continuing education programs also should recast appropriate training programs for work in a value-based world. Continuing medical education and post-graduate medical education training, including board certification requirements, should build on these newly-acquired skills and keep physicians up-to-date on industry developments, particularly as state and federal agencies continually issue new requirements and opportunities.

**Figure 11: Clinicians: Primary care docs will spend more time analyzing data, triaging**

HRI asked clinicians whether they believe primary care physicians will spend more or less time on the following activities.

<table>
<thead>
<tr>
<th>Percentage of clinicians who believe that in 10 years primary care physicians will spend...</th>
<th>More time</th>
<th>Less time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using data from apps &amp; wearables</td>
<td>85%</td>
<td>15%</td>
</tr>
<tr>
<td>Triaging patients</td>
<td>67%</td>
<td>33%</td>
</tr>
<tr>
<td>Managing medically-complex patients</td>
<td>65%</td>
<td>35%</td>
</tr>
<tr>
<td>Conducting in-person care</td>
<td>55%</td>
<td>45%</td>
</tr>
</tbody>
</table>

Source: PwC Health Research Institute Workforce Survey, 2015
This annual report discusses the top issues for healthcare providers, health insurers, pharmaceutical and life sciences companies, new entrants and employers. In fall 2016, PwC’s Health Research Institute commissioned an online survey of 1,750 US adults representing a cross-section of the population in terms of insurance status, age, gender, income, and geography. HRI also oversampled to obtain data on specific market segments. The survey collected data on consumers’ perspectives on the healthcare landscape and preferences related to healthcare usage.

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Top health industry issues of 2017


14. HRI analysis of 2016 premium data and anticipated 2017 premium increases.


20. PwC Health Research Institute, “Surviving seismic change: Winning a piece of the $5 trillion US health ecosystem.”


35. Ehrhardt and Behner, “Digitization in pharma: Gaining an edge in operations.”

To have deeper conversations about how this subject may affect your business, please contact:

Kelly Barnes  
Partner, US Health Industries and Global Health Industries Consulting Leader  
214 754 5172  
kelly.a.barnes@pwc.com

Benjamin Isgur  
Health Research Institute Leader  
214 754 5091  
benjamin.isgur@pwc.com

Trine Tsouderos  
Director, Health Research Institute  
312 241 3824  
trine.k.tsouderos@pwc.com