Health Research Institute
Spotlight

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EHRs in the New Health Economy: Essential but insufficient

Electronic health records (EHRs) were once billed as the lynchpin to moving the US health system into the digital age. Now they are commonplace; 96 percent of nonfederal hospitals[1] and 87 percent of office-based physicians use them.[2] But the largely swift adoption of these systems may have slowed the industry's transition to the New Health Economy, a digitally enabled, consumer-focused environment that rewards healthcare providers who improve outcomes and reduce costs.

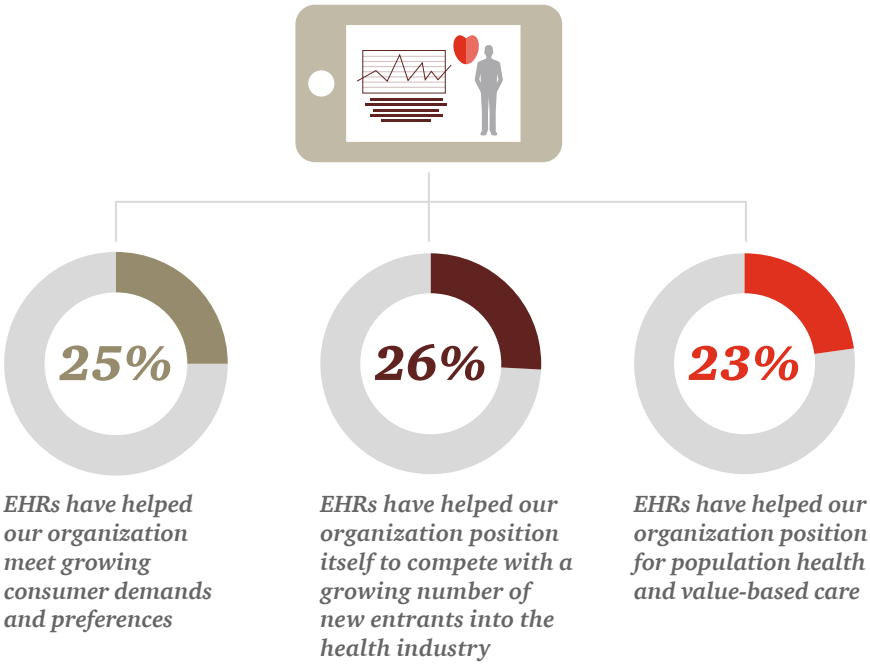
While all executives interviewed by PwC's Health Research Institute (HRI) agreed that EHRs are essential to digitizing care, only 25 percent of provider executives agree wholeheartedly that EHRs have helped position their organizations to meet the demands of population health or consumer expectations, or to compete against a growing number of new health industry entrants (see Figure 1). Some providers are investing in additional technologies to help fill perceived gaps, reduce reliance on EHR vendors and increase flexibility.

In a race to win a share of $36 billion in federal incentives for the "meaningful use" of EHRs, many providers installed them but have so far failed to extract valuable insights to help them realize a return on investment. EHRs are largely used for billing and payment today. Eighty-three percent of provider executives surveyed by HRI said getting more value out of health information technology is important to their organizations' success over the next five years.

For this research, HRI conducted in-depth interviews with 15 executives from healthcare delivery systems across the US. The analysis also includes data from HRI clinician, consumer and provider executive surveys conducted in 2017. HRI found that providers have many chances to maximize uses of their EHRs and the data within them but need additional technologies to help fill gaps. HRI also found lessons that can be learned from the 31 percent of provider executives who said their organization made the move to EHRs as part of a broader business strategy, compared with the 69 percent who said they did so to meet CMS "meaningful use" requirements. The "strategic implementers" are further along in many respects (see Figure 2 on page 2).

Figure 1: Few provider executives strongly agree that their EHR has helped position their organization for the New Health Economy

Executives strongly agreeing with the following statements regarding their EHR



Source: PwC Health Research Institute provider executive survey, 2017

Figure 2: Organizations that made the move to EHRs as part of a broader business strategy are further along in using EHRs

Comparison of providers who adopted their EHR to meet meaningful use requirements and those who created it to address broader business issues

Percentage of providers who...

	Meaningful Use EHR Implementers n = 215 (69%)	Strategic EHR Implementers n = 98 (31%)
Strategy		
Have had EHR in place for less than 5 years	39%	64%
Identify "revamp the patient experience" as a strategic priority	41%	65%
Identify "community health improvement" as a strategic priority	55%	76%
Use EHR for clinical documentation	63%	84%
Use EHR for provider-to-patient communication	43%	74%
Use EHR for provider-to-provider communication	27%	40%
Use EHR for care coordination	29%	47%
Investment		
Invested in technology to electronically share data for coordinating a patient's care	34%	55%
Invested in technology to enhance the patient experience	44%	76%
Implemented a web-enabled platform to streamline patients' interactions with the organization	25%	44%
Implemented clinical data analytics capabilities	16%	27%
Implemented artificial intelligence to improve patient experience and care protocols	38%	46%
Implemented real-time data availability at point of interaction with patients	37%	57%
Implemented customer relationship management (CRM) software	29%	39%
Plan to invest in technology in the next year to transition EHR to the cloud	8%	22%
Plan to invest in technology in the next year to electronically share data for care coordination	23%	34%
Plan to invest in technology in the next year to enhance the patient experience	28%	38%
Plan to invest in technology in the next year to support research and clinical trials recruitment	15%	25%
Performance		
Agree EHR has met expectations for communicating more effectively with patients	76%	92%
Face an inability to extract meaningful data from the EHR as a barrier to maximizing its benefits	30%	18%
Report operating margins of 5% or greater for the last fiscal year	39%	47%

0-20% 21-40% 41-60% 61-80% 81-100%

Source: PwC Health Research Institute provider executive survey, 2017

EHRs' core functions may be stalling care standardization and decision support

In treatment rooms and offices, many physicians haven't seen the payoff for the portion of their day spent navigating scroll-down menus and clicking on boxes to feed EHRs. Data entry exhaustion has set in from lack of standardization or inability to automate data capture that works poorly with clinician workflows. Providers HRI surveyed most frequently cited operational efficiencies as being the largest opportunity for their EHRs over the next year.

EHR vendors have focused heavily on developing core functions such as clinical documentation and clinical workflow management that connect nicely with the systems that manage the revenue cycle. "The care processes are too heavily impacted by what we have to do to get the billing right," said Alex Rodriguez, chief information officer at Northern Kentucky-based St. Elizabeth Medical Center, which serves the greater Cincinnati region.

Reducing variation in the way care is delivered is critical to achieving better, more predictable outcomes for patients, but HRI found that many providers struggle with this. "There are a lot of workarounds done in EHRs that make the data not very useful," health IT expert Jessica Cornelius told HRI. "'Let's just put it in a comments field' doesn't help when we are trying to compare physicians and look at variations in practice." And only 5 percent of hospitals and 10 percent of ambulatory providers have fully eliminated paper charts, according to the Health Information Management Systems Society.[3] Some documentation, such as anesthesia notes or medication reconciliation, is still done on paper.

Strategic implementers appear to be further along on digitizing clinical documentation. Eighty-four percent said they are using the EHR for clinical documentation, compared with 63 percent of other providers. "If you want to drive out variation, make money and improve care, hold the line with standards," said Becky Sykes, senior vice

president of resource management and chief information officer at Mercy Health in Cincinnati.

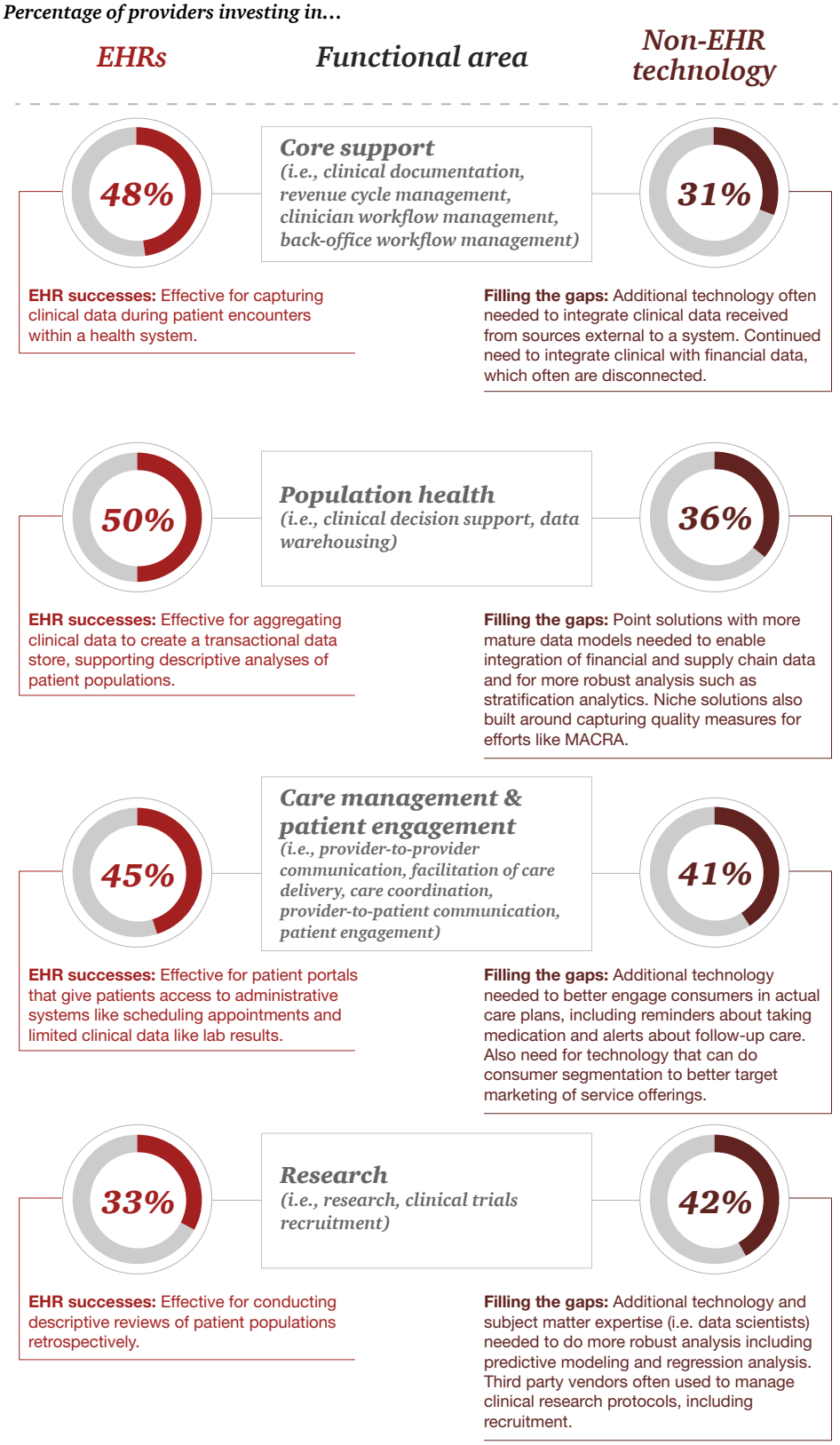
Mercy Health now has implemented more than 450 order sets covering 80 percent of the care delivered within the system using algorithms.[4] The system—which uses a single instance of EHR technology enterprise-wide—also has saved $78 million over nine years from standardizing the pharmaceutical formulary. Quality scores have also improved, Sykes told HRI, and Mercy has received $11 million in savings as a participant in the CMS Medicare Shared Savings Program, an accountable care model that puts provider payments at risk based on how providers perform on quality, cost and experience measures when caring for Medicare beneficiaries.

The University of Texas Southwestern Medical Center in Dallas received a first-place innovation award from the Healthcare Informatics Institute in 2016 for developing a standardized data architecture that is used by 2,200 doctors in all of the center's 40 specialties to ensure that EHR data can be accurately analyzed and easily shared.[5] The initiative has resulted in 58 patient registries with more than 16,000 patients.[6] These registries are the building blocks for comparative effectiveness research on care plans and treatments. Findings from this kind of research can help clinicians deliver more customized care.

Delivering population health requires more than the EHR can offer

EHRs are effective as a repository for clinical data but don't have the tools yet to fully support providers' population health efforts (see Figure 3). Only 36 percent of providers are using their EHRs for population health management, and just 13 percent strongly agree that EHRs have met their expectations for it. More mature data models are needed to integrate other data—such as financial and supply chain systems data—to be able to perform patient stratification, which is critical to managing risk in population health

Figure 3: Provider organizations anticipate relying on non-EHR technology – as well as EHRs – in the next three to five years



Source: PwC Health Research Institute provider executive survey, 2017
Does not include respondents who answered "Don't know" or won't be using new technology.

programs. Strategic implementers appear to recognize this and are more likely than other providers to say they will be using non-EHR technologies for population health in the next three years.

"The EHR by itself is insufficient for population health analytics because patients cross systems," Dr. David Chin, distinguished scholar at the Johns Hopkins Bloomberg School of Public Health and Johns Hopkins School of Medicine, told HRI. Chin said a key analytics component would be a health information exchange (HIE) that allows providers to share patient data and access patients' health histories regardless of where they received care. HIEs not only can help doctors make more informed treatment decisions—such as knowing the lab tests and results a patient has received to prevent redundant testing—but they are critical for public health analysis and research.

Chin believes the industry will get a glimpse of this from global payment demonstrations taking place in Maryland, Vermont and rural Pennsylvania.[7] The Tulsa, Okla.-based My Health Access Network, a statewide data exchange, is an example of how cross-EHR data sharing can be effective even without payment model changes.

New health industry entrants have found relevance in this space. In July, CVS Health and the Cleveland Clinic announced they are expanding their EHR data-sharing partnership to tackle high rates of chronic disease.[8] "We are using the EHR throughout our organization—not just in our MinuteClinics—but we've moved it to our important chronic disease management company, our specialty pharmacies and now we're integrating it into our pharmacy benefit manager chronic disease program," said Troy Brennan, executive vice president and chief medical officer of CVS Health.

Succeeding on the population health front also will require that providers understand patients' lifestyles and the social determinants affecting their health, including employment status, income, education and living conditions. A recent study published in The New England Journal of Medicine found that social factors and environmental exposure—such as to air pollution—account for 20 percent of premature deaths.[9] The EHR generally is not poised to capture this type of information, and most clinicians do not collect it. "The EHR is only the center pole of the tent," said Jonathan Weiner, director of the Center for Population Health IT at Johns Hopkins University. "When it comes to a person's health and well-being, all the data in a provider's EHR only account for one-third of what is needed." These data likely will flow from other sources, such as community databases or customer relationship management systems, and will require providers to integrate them with clinical, claims, financial, marketing and other data in a data warehouse.

Almost all providers surveyed by HRI said they have an enterprise data warehouse strategy. Forty-four percent of providers are using their EHRs to warehouse their data even though EHRs are not effectively built for doing so. EHRs struggle to handle the unstructured data that is collected in clinicians' notes and to integrate data from other systems. Strategic implementers appeared to recognize these limitations. They were less likely to use the EHR for data warehousing or plan to do so.

EHRs have improved communication, fallen short on patient engagement

Overall, consumers appear to like EHRs. Eighty-seven percent of consumers surveyed by HRI said that EHRs made it easier for them to communicate with their doctors (see Figure 4 on page 5). But 55 percent of providers said that moving to EHRs has interfered with face-to-face care. Some clinicians and consumers have made the shift to EHRs together, reviewing blood pressure readings and test results side by side during appointments.

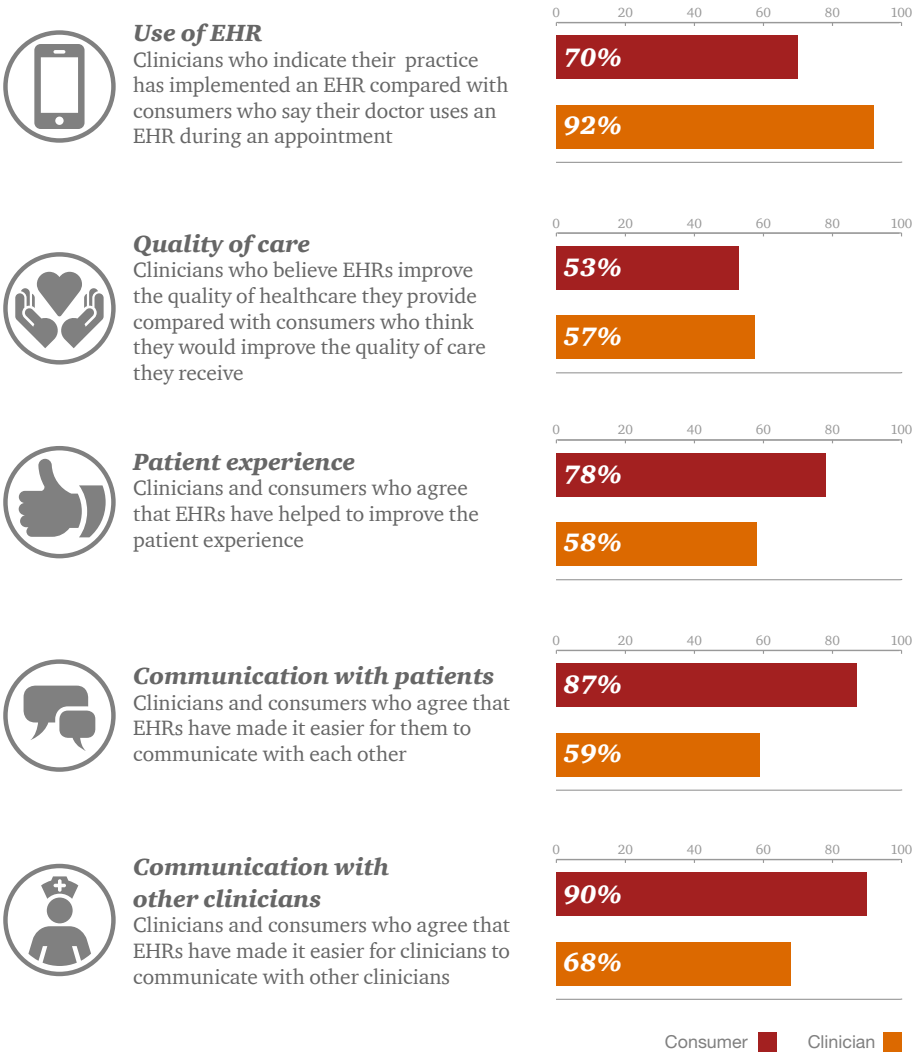
Similarly, many clinicians have not embraced the significant potential of their EHR's patient portal. Few clinicians give their patients access to their portals. Even clinicians who do give such access often don't encourage their patients to log in, HRI's survey showed. These portals largely have been used to help patients schedule appointments or manage bills.

"The patient engagement portal of today will have to accelerate at a much faster pace," said Rodriguez of St. Elizabeth. "You just can't manage your care in it right now." Portals that integrate care plans can provide patients with medication reminders, instructional physical therapy videos, and a way to track medication dosing and timing. They also can help patients manage pain effectively, as the Carolinas HealthCare System has shown with the interactive online patient assessment it has embedded in its MyCarolinas portal.

Strategic implementers are more likely to already be using their EHRs to enhance patient-provider communication; 59 percent told HRI they plan to use their EHR system more to improve patient engagement in the next three to five years. Just 39 percent of other providers said they had similar plans.

Figure 4: Overall, consumers are more positive than clinicians about the impact EHRs have had on care delivery and the patient experience

How clinicians and consumers view EHRs



Source: PwC Health Research Institute clinician survey 2017 and consumer survey winter 2017

Strategic implementers also recognize that the EHR alone may not be enough to meet patient expectations and encourage them to become more engaged in their care. More strategic implementers than other providers are using customer relationship management software to ensure that services such as diabetes management programs or smoking cessation groups reach the patients who would benefit from them the most. And more of them—27 percent versus 16 percent—have invested in artificial intelligence to improve the patient experience and care protocols.

Strategic EHR planners also appear to be better at care coordination. They cited fewer obstacles to data sharing, were more likely to make real-time data available to clinicians during patient interactions, and are using the EHR more for communications between providers during care transitions.

EHRs have largely gone untapped for research

Other than academic medical centers, many providers have not prioritized using EHRs to support practice-based research. This could be because of EHRs' limitations. Though they often are effective for descriptive, retrospective reviews of patient populations—such as identifying all patients with a particular condition in a given period—they lack the capacity to do more robust analyses, such as predictive modeling, which can help providers uncover a patient population's future needs.

As a result, 42 percent of providers surveyed by HRI said they will focus on non-EHR technologies for research and clinical trials recruitment over the next three to five years. Many will end up using a patchwork of solutions that allow them to source data out of their EHR and analyze it using statistical software packages and data scientists' expertise.

Recommendations

View the EHR as a strategic asset versus merely the cost of doing business. Strategic EHR implementers are ahead of other providers in many respects because they took time to assess what they needed from their EHR to deliver on their current strategic plans and to help create new strategies. "ROI has always been associated with financial metrics," Cornelius said. "We need to define success factors—readmissions, sepsis, how are we measuring it. It's not necessarily financial. The guiding principle is safety and quality of care patients want and deserve."

Tighten up data governance. Many organizations either don't have anyone responsible for enterprise analytics, or they assign it to a clinical leader who isn't familiar with the organization's breadth of data sources. Many other industries now have chief data analytics officers who oversee all of an organization's data. Providers also should track how data is being used. "Extracting the data is not an issue for us," said Rodriguez of St. Elizabeth's. "The issue is once researchers have the data in their hands, they are going to want to send it to a biostatistician at some point; we don't have these in the system, so they find someone at a university. This is where we need strengthened processes: tracking our de-identified data and where it's going."

Don't be too quick to build it yourself. Consider buying or acquiring data and data models through partnerships. Some providers have hired data scientists to build home-grown analytics and data models, but they recognize they can't compete with the big EHR vendors. "I think we will get used to using 40-50 predictive models from vendors that bolt on to the data in our EHRs, and then internally develop four or five," said Robert K. Eardley, senior vice president and chief information officer at Houston Methodist. "We'll need to be comfortable with being known for those four or five predictive models, and they have to be solid." Others are entering the market with deep insights. Recently CNBC revealed that Amazon has launched an experimental lab named 1492 to research how to extract data from legacy EHRs and make it available to patients and clinicians.[10]

Use proprietary data as a new revenue source. Providers might consider packaging and selling the insights they generate from EHR data, something that renowned academic medical centers—such as Cleveland Clinic, Mayo Clinic and MD Anderson—already do, to their benefit. Just as retailers suggest products and services to shoppers based on their buying patterns, providers should invest in predictive models that can suggest products and services to help consumers manage their health, creating another potential revenue source. This could ease their transition from fee-for-service to value-based payments by serving as a revenue cushion while they experiment with increasing levels of risk.

Endnotes

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About this research

In August and September of 2017, PwC's Health Research Institute (HRI) commissioned a telephone survey of 300 healthcare provider executives – ranging from vice president to C-suite – working at for-profit, not-for-profit and government-owned healthcare facilities, including healthcare systems; academic medical centers; stand-alone, specialty and children's hospitals; integrated delivery networks; and long-term care and skilled nursing centers. Executives represented different functional areas including operations, information technology, strategy, clinical and finance, and organizations of varying sizes and annual revenues. Respondents were asked about their experience with implementing and using electronic health records; future plans to invest in digital technologies and the patient experience; challenges with value-based care; overall strategies for the future and the potential for policy changes under the Trump administration. In addition, HRI conducted phone interviews with healthcare leaders and subject matter experts at leading healthcare, research, and academic institutions across the US.

This report is also based on insights from a winter 2017 HRI consumer survey of 1,500 US adults representing a cross-section of the population in age, gender, income and geography; a summer 2017 survey of 1,000 healthcare clinicians representing a cross-section of provider types, ages, gender and geography; and a review of recent literature on electronic health record implementations and data-sharing practices.

About the PwC Health Research Institute

PwC's Health Research Institute (HRI) provides new intelligence, perspectives and analysis on trends affecting all health related industries. The Health Research Institute helps executive decision makers navigate change through primary research and collaborative exchange. Our views are shaped by a network of professionals with executive and day-to-day experience in the health industry. HRI research is independent and not sponsored by businesses, government or other institutions.

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Becky Sykes, Senior Vice President Resource Management and Chief Information Officer, Mercy Health

Joey Sudomir, Senior Vice President and Chief Information Officer, Texas Health Resources

Jonathan Weiner, Founding Director, Center for Population Health Information Technology, Johns Hopkins Center for Population Health IT

HRI Advisory Team

Chris Van Pelt, Principal
Anwesha Dutta, Director
Derek Gaasch, Director
Deepak Goyal, Principal
Sreekumar Krishnamony, Director
John Rich, Director

PwC Health Research Institute

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

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

Sarah Haflett
Director
sarah.e.haflett@pwc.com

Trine Tsouderos
Director, HRI Regulatory Center Leader
trine.k.tsouderos@pwc.com

Benjamin Comer
Senior Manager
benjamin.comer@pwc.com

Alexander Gaffney
Senior Manager, Regulatory
alexander.r.gaffney@pwc.com

Laura McLaughlin
Senior Manager
laura.r.mclaughlin@pwc.com

Jason Ranville
Senior Manager, Regulatory
jason.ranville@pwc.com

Jason Brehm
Research Analyst
jason.brehm@pwc.com

Yana Cohen
Research Analyst
yana.cohen@pwc.com

Stacey Lee
Research Analyst
stacey.c.lee@pwc.com

Pritha Vijay
Research Analyst
pritha.vijay@pwc.com

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

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

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

Chris Van Pelt
Principal, US Health Industries
chris.vanpelt@pwc.com
513 768 6493

www.pwc.com/us/hri
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