



What's Ahead for EHRs: Experts Weigh In

Introduction

Technology broke new ground in 1982: The first artificial heart was implanted in a human, Sony released the first compact disc player, and the Commodore 64 took the computer world by storm.

That same year, Mark Leavitt, MD, PhD, retired chair of the Certification Commission for Health Information Technology, began writing software on an Apple II Plus to automate patient records in his internal medicine practice. He was among the early adopters of electronic health records (EHRs), which allowed for the input of progress notes, problems lists and medications, laboratory data, and physician orders. Over the following decades, EHR platforms have moved from stand-alone terminals to mobile devices and tablets, but their basic functionality has evolved little since those early days.

Nevertheless, provider adoption of EHRs is increasing quickly, spurred in part by the federal Meaningful Use Incentive Program, enacted in 2009 to encourage “meaningful use” of health information technology by professionals and hospitals (see sidebar). With widespread adoption, many believe that EHRs could potentially enable vast improvements in health care quality by increasing workflow efficiencies and patient safety; offering medical providers complete, accurate, and timely information; and empowering patients to be more active participants in their own health. It is less clear to what extent EHRs are on track to meet these expectations and what barriers might stand in the way.

Meaningful Use of EHRs

The Meaningful Use Incentive Program establishes criteria for evaluating whether EHRs improve health care quality, creates incentives for widespread implementation, and outlines a framework for measuring how EHRs are used.

The program is part of the Health Information Technology for Economic and Clinical Health (HITECH) Act, enacted as part of the American Recovery and Reinvestment Act of 2009. The meaningful use program is intended to unfold in three stages with escalating requirements over five years. Stage 1 regulations were released in July 2010.

A year later, more than 90,000 eligible professionals and hospitals had enrolled in the EHR incentive program, and more than \$650 million in payments had been distributed by the Centers for Medicare and Medicaid Services (CMS). The number of physicians who reported having a basic system increased 36% since 2010, and has nearly doubled since 2008 (rising from 17% to 34%).¹ Criteria for a basic system include patient history and demographics, patient problem list, physician clinical notes, comprehensive list of patient’s medications and allergies, computerized orders for prescriptions, and ability to view laboratory results electronically.

To gain insight on the future EHR landscape and the role of meaningful use, Booz Allen Hamilton conducted interviews with industry experts across the health care and informatics communities. (See Appendix A for a list of interviewees.)

Overall, the interviews revealed that meaningful use has spurred adoption of EHRs across the

provider community, but that there have been unintended effects. Interviewees also cited limited incentives for providers to electronically exchange information outside of their existing closed systems, and a lack of incentives for vendors selling EHR systems to facilitate the exchange of information with other systems. Asked to provide their vision for EHRs over the next five years and beyond, they predicted that the next generation of EHRs will offer:

- Further integration with mobile technologies;
- Greater affordability and personalization for providers;
- More accessibility and interoperability with other systems; and
- Greater emphasis on patient-centeredness to encourage patient engagement in care decisions and communication with providers.

The experts differed in their opinions about whether the government should continue to take a leading role in influencing the marketplace for these technologies.

All of these findings are discussed in more detail below.

EHR Roots in Coding

To understand current challenges, the research looked at the history of the EHR. Prior to meaningful use, many EHRs were designed primarily to create the clinical note as a way to ensure that providers were paid appropriately by insurance companies. Peter Basch, MD, medical director of e-Health for MedStar Health, indicated that most providers who made a successful business case for EHR deployment tended to focus on downsizing staff, eliminating or reducing transcriptions, and “upcoding” to maximize payments. With the focus on coding, EHRs tended to pay for themselves fairly quickly, but excessive documentation was needed to justify the code level billed. In a May 2011 article in *The New England Journal of Medicine*, Basch and co-authors described how the focus on extensive documentation of patients’ histories and physical examinations to justify coding and satisfy auditors had the effect of diverting EHR vendors from focusing on enhancements to improve quality and efficiency of care. Rather than developing elements to improve workflow design or clinical decision support, vendors’ time, attention, and creativity were focused on automating documentation methods.

Project Methodology

The goal of this project was to examine the past, current, and future development of EHRs through interviews with a diverse set of experts in health care, health IT, and technology. To identify experts for interviews, the researchers requested referrals and suggestions from internal subject matter experts at the California HealthCare Foundation and Booz Allen Hamilton. Using a formal interview guide, the project team sought input from experts on three overarching subjects: (1) the history and development of EHRs; (2) the influence of the Meaningful Use Incentive Program on the current EHR environment; and (3) visions and expectations for the next-generation EHR. Two members of the project team conducted each interview, completing a total of 14 interviews. The project team reviewed the information gathered, outlined the themes that emerged from the interviews, and organized the themes for publication. The team also conducted secondary research to quantify some statements provided by the interviewees.



Many experts view EHRs' initial focus on documentation and billing as the primary contributor in delaying EHR optimization. Ian Morrison, PhD, founding partner of Strategic Health Perspectives, has worked with EHRs for more than 30 years and has monitored the system's slow evolution. "It's taken a long time to get not particularly far," Morrison said. At their origin, EHRs were static, passive recipients of information, and even today, many EHRs are unable to provide real-time feedback to providers and offer only limited data-gathering options. Until recently, most EHR systems closely resembled personal computers prior to the popularization of the Internet; providers could organize and store information on their own systems, but the data could not be shared. "From a value perspective," said Charles Kennedy, MD, CEO of aligned care solutions for Aetna, "you were getting an electronic filing cabinet."

Kennedy noted that the intricacies of health care decisions have made effective EHR design challenging. "The complexity of physician decisionmaking within a 10-minute visit is almost unimaginable. One inherent challenge in EHR design is engineering data and decision support that can allow for this level of complexity, yet be user friendly," he said. John Glaser, PhD, CEO of the Health Services Business Unit for Siemens, compared it to hiding the complexity of an automobile's inner workings from the driver; an effective next-generation EHR would allow the user to determine "what's wrong with Mrs. Smith" without requiring the user to read through 200 notes. "That's really, really hard to do," Glaser said.

A further problem is that many EHRs are not designed for health information exchange. Several interviewees noted that, although meaningful use timelines will require greater interoperability, the majority of EHR systems operate on closed networks that do not easily connect or communicate with other systems. Making connections between providers' EHR systems can be expensive, and such connections occur on a one-to-one basis. Due to this fragmented approach, closed systems have become

Obstacles to the Evolution of EHRs

Interviewees cited several contributing factors to EHRs' slow evolution:

- **Initial Focus on Coding, Billing, and Documentation.** Vendors had few incentives to focus on enabling EHRs to improve the quality and efficiency of care.
- **Complexity of Health Care.** It is challenging for EHRs to facilitate clinical decisionmaking while remaining user-friendly.
- **Limited Focus on Information Exchange.** Vendors have few incentives to move past closed systems.
- **Fee-for-Service Payment Structures.** EHRs operate within the confines of the current system.
- **Prohibitive Costs.** EHR implementation is financially out of reach for some providers.

lucrative for vendors, which can charge customers for additional services each time they wish to connect with another system or partner.

Without efforts from health industry leadership to change incentives within the market, vendors will have little motivation to evolve. Even for providers with the funds to pay for interoperability, there is a law of diminishing returns. Patients typically move in limited geographic areas, and hospitals and provider groups channel interoperability toward high-volume relationships. For example, a provider group will gain a larger return on investment by having connectivity with a local hospital where it frequently refers patients, rather than with a competing provider group or hospital in another town.

Fee-for-service payment — which is deeply entrenched in the health care system — is another constraining factor in the evolution of EHRs. The fee-for-service culture — in which providers receive additional payments for additional services — is changing very slowly. Coding structures and patient visit volume still determine payment; therefore, providers are incentivized to provide more expensive or more frequent care.

Finally, the cost of EHR adoption is too high for some providers. The business case has been difficult to make for small practices that tend to operate on slim margins. In addition to the direct cost, EHR adoption requires radical change to the practice environment; initially slows down established care and administrative processes; and provides only modest financial benefits. Further, small provider offices — which serve a vast majority of US patients — have little funding or information technology staff to assist them in implementation. In great part, these are the central challenges that the federal meaningful use program was designed to address.

Concerns and Unintended Consequences of Meaningful Use

Most interviewed experts agreed that meaningful use incentives have succeeded in creating the first “tipping point” for EHR deployment. Providers are now less likely to wonder why they should implement an EHR within their practices and are more likely to consider when and how they will adopt the technology. “Meaningful use has provided a guiding force for small and start-up vendors” in building their products, said Indu Subaiya, MD, MBA, co-founder of Health 2.0. Vendors are now including capabilities and functionalities that they might not have prioritized without the influence of meaningful use incentives, including considerations for patient-centeredness.

However, some interviewees had concerns regarding several aspects of the incentive program, including the following:

Usability. The HITECH Act established the criteria necessary to designate EHR technology as certified to support the achievement of meaningful use stage 1, but these criteria do not include any requirements for usability. L. Gordon Moore, MD, director of clinical transformation for Treo Solutions and president of Ideal Medical Practices, described a community health center that selected an EHR system based on the vendor’s

description of its many capabilities; but once the system was installed, the staff realized that even apparently straightforward tasks were beyond their abilities. “The steps they had to go through to run reports were so complex that they just couldn’t do it,” Moore said.

The Office of the National Coordinator for Health Information Technology (ONC) has recognized this gap and is working with the Agency for Healthcare Research and Quality and the National Institute of Standards and Technology to develop guidelines for technical evaluation, testing, and validation of usability.²

Costs. For some providers, the cost of implementing an EHR system is prohibitive, even with meaningful use incentive payments. For an average five-physician practice, implementation can cost as much as \$162,000, with up to \$85,500 in maintenance expenses during the first year. Additionally, end users — physicians, other clinical staff, and non-clinical staff — need an average of 134 hours of training per person to effectively use a typical record system in clinical encounters.³

Innovation. Meaningful use may have had the unintended effect of slowing innovation, according to some interviewees. When the Health Information Technology Policy Council (HITPC) defined the components necessary for an EHR system to be meaningful-use certified, it diverted limited financial and personnel resources that might otherwise have been used for innovative leaps forward. Developers initially focused solely on the stage 1 components; they are now planning for stages 2 and 3, which are still in draft form. Leavitt characterized such vendor response as an unfortunate, but common, “checklist” mentality. “When people are paid by the government to do something specific, then you’ve taken away the incentive for them to do something more,” said Leavitt.

Patient-centeredness. Some components of meaningful use call for patient-centered capabilities, such as the stage

1 requirement to provide patients with an electronic copy of their health information, discharge instructions, or clinical summaries upon request. Stage 1 also requires providers to give patients health information or literature as part of their visit. “We’re now seeing more patient engagement than ever before,” Subaiya said, noting that the meaningful use requirement for after-visit summaries for example, has already increased patient involvement beyond what was typical two years ago (prior to stage 1 implementation). Some of the experts suggested that more aspects of stage 1 should have been patient-centered, and that patients should play a bigger role in conversations concerning the components of meaningful use stages 2 and 3. Current EHR systems are built around practices or hospitals, not patients. As a result patient information is scattered across the health care system, thereby inhibiting a holistic view of the patient’s health.

Interoperability. Many of the interviewees cited interoperability as a chief concern. Beyond e-prescribing requirements, stage 1 meaningful use requires providers to be able to share key clinical information among appropriate providers. However, there are requirements for sharing clinical information outside the providers’ own health system. Specifically, stage 1 requires the ability to “perform a test of health information exchange (HIE),” and stage 2 proposes to eliminate the HIE test “in favor of objectives that use HIE.”⁴ (See Appendix B.) As a result, vendors have little incentive to facilitate information sharing outside of closed systems, and most EHR-enabled health systems operate in silos. Technological concerns also remain an issue, particularly in the standards arena. For example, EHR vendors and their customers may not adhere to existing standards on transmission and receipt of patient data, and coded vocabularies are often implemented differently in different systems.

When providers choose to invest in interoperability with other providers and systems, they typically elect to connect with those whom they interact most frequently,

which can result in limited exchange. This is a business decision to maximize investments with systems that will yield the greatest return, but some experts stated that providers should not have to choose between capabilities and interoperability. Although proposed language for stages 2 and 3 of meaningful use includes a greater emphasis on interoperability, some interviewees pointed to the limited requirements for interoperability under stage 1 as a missed opportunity and contributor to an industry standard that prioritizes capabilities over interoperability.

Poised for Innovation

Despite a history of slow evolution, EHRs are poised for significant change over the next decade due to developments in the policy, regulatory, and technology environments.

The Patient Protection and Affordable Care Act (ACA), passed in 2010, signaled a shift away from fee-for-service reimbursement toward payment models that reward quality of care, rather than volume alone. Several experts stated that payment and care delivery reform will have a revolutionary effect on the health care system. “I frankly think that curing cancer would have less of an impact on the US health care system than payment reform will have,” Siemens’ Glaser said. In recent decades, payers and employers have spearheaded efforts to control health spending by promoting integrated care delivery and rewarding performance. Momentum has been building for collaborative care models, such as patient-centered medical homes (PCMHs) and accountable care organizations (ACOs), which leverage technology to improve quality and control costs.

The ACA significantly increased attention to ACOs through the Medicare Shared Savings Program (MSSP), designed to financially reward provider groups who collectively bear risk for the full continuum of care for Medicare beneficiaries and demonstrate savings by providing high-quality and well-coordinated care.

Notably, the most-heavily weighted quality criterion for the MSSP is the ACO's use of an EHR system.⁵ ACOs are commonly expected to require EHRs and HIE capabilities, as well as additional tools to manage population risk, including analytics and business intelligence, revenue cycle management, personal health records, and member engagement tools.

Patient-centered medical homes will require technological tools that exceed the capabilities of today's EHRs in order to facilitate technology-enabled care coordination across distributed and diverse care teams. For example, the Special Care Clinic (SCC) in Atlantic City, New Jersey, a recognized innovator in primary care and chronic illness management, uses non-clinical health coaches to work with patients — in person, by phone, and by email — to help them manage their health. Although SCC uses an EHR system as a foundational technology, the center's leadership has been vocal about the shortfalls of currently available systems and has identified specific opportunities where EHRs must evolve or converge with other technologies to address the needs of medical home practices.⁶

Private insurers are also prioritizing use of health IT as the traditional business of health insurance erodes and as firms diversify into services and care delivery. Health plans have developed significant capabilities in health management based largely on claims data. The potential value of clinical data for integrated health analytics, as well as more direct intervention in support of care management, has fueled investment in EHRs, HIE, and patient communication technologies. Ted Eytan, MD, a director at The Permanente Federation, explained that integrated health systems encompassing both insurance plans and provider groups, such as Kaiser Permanente, Geisinger, and Health Partners, use EHRs to improve care and reduce costs by viewing patients and their care in a more comprehensive manner. "Models like ours have pushed the development of EHRs to be more human-centered," Eytan said.

The interviewees noted that EHR systems will need to more effectively support population health management and patient engagement in virtually integrated systems of care. In addition to established providers and insurers, a new generation of doctors is creating a demand for effective, innovative health IT. Morrison observed that many newly graduating physicians "won't go anywhere without an electronic [health record] system," and that both patients and providers seek more convenient interactions outside of office visits. The evolution of companies such as athenahealth, American Well, and RelayHealth is representative of the growing need for more patient-provider communication.⁷ In the future, these sites may look more like social networks. In one example, Hello Health has taken social networking and EHR practice management capabilities and combined them into one Web-based system, enabling better patient-provider communication.

Many providers also use mainstream social media tools to communicate with their patients. Nearly 1,200 US hospitals use some form of social media to interact with their patients, including Facebook, LinkedIn, Twitter, and Foursquare.⁸ Social networking allows patients to contact their providers via a medium that is familiar to them. Patients can also create circles of health care that include their providers and loved ones, and they can communicate via a multitude of communications tools, including email, text messaging, and voicemail. As these types of communications become more mainstream, and as a younger generation of doctors becomes integrated into the workforce, patients will likely come to expect to communicate with their providers in these ways.

Finally, new technologies to improve patient care are more promising when combined with EHRs. Matthew Holt, co-founder of Health 2.0, described a growing number of tracking tools and sensors that can be used to more continuously monitor clinical and behavioral indicators, such as blood pressure or eating habits. Another tracker combines an inhaler with a Global Positioning System

(GPS) for asthmatics to identify regions more likely to induce an attack. When integrated into EHRs, the data collected by such devices can provide physicians with a more integrated view of their patients' health, particularly for those with chronic conditions that require close monitoring.

Eventually, a wave of genomic data will add even greater depth and diversity to the information providers and patients can use to manage health in a more continuous and personalized way. These trends collectively suggest that EHRs, and the larger IT environment, are on the verge of greater change and improvement.

The Next Generation of EHRs

The promise of EHRs was further defined by the experts' visions for the future. The interviewees said that they expect EHRs to play a larger role over time in providing high-quality, low-cost care.

Financial incentives for EHR adoption and resulting competition among vendors have already begun to drive down the cost of EHRs. Overarching trends toward more loosely coupled technical architectures and distributed data sources will favor cost-constrained adopters, such as small provider groups, which may be able to use pared-down interfaces for simple data needs on inexpensive and easy-to-use devices such as iPads.

Providers are already using mobile health applications for functions including educating patients, aiding in diagnosis and treatment, and collecting data remotely. More than 10,000 mobile health applications are already available, with some 6,000 on iTunes, and the data from these applications can be integrated into EHRs.⁹ Researchers at Children's Hospital Boston and Harvard Medical School are taking these trends a step further by investigating and creating prototype approaches to achieve an "iPhone-like" health IT platform model, through a grant provided by ONC's Strategic Health IT Advanced Research Projects (SHARP) program. The platform architecture will

provide core services and support extensively networked data from across the health system, as well as facilitate substitutable applications, similar to iPhone "apps."¹⁰

To realize the full potential of EHRs, however, the next generation of systems must allow for data to be accessible and usable by appropriate parties. The most realistic scenario for the near future seems to be local or regional systems uniting providers that have significantly overlapping patient communities. Meaningful use stages 2 and 3 may help bring this scenario closer to reality.

In the distant future, health records could become completely interoperable and independent of vendor, provider, and format. Stakeholders across the health care community derive greater benefits when health information flows freely, the experts noted. In a September 2009 paper titled "Toward Health Information Liquidity: Realization of Better, More Efficient Care from the Free Flow of Health Information," Booz Allen's Kristine Martin Anderson and co-authors pointed to increasing evidence that free-flowing patient data from pharmacies, laboratories, and medical imaging improves health care access, safety, convenience, efficiency, and outcomes. The paper asserted that free-flowing information, when combined with a concerted focus on the patient, can be particularly effective in opening the door to innovation.

Many of the experts interviewed said they believe the future of health care should be rooted in patient-centeredness, and that EHR systems could go far beyond the mandates of meaningful use in promoting patient-centeredness. From a patient perspective, the desired health care practice or system would promote proactive care and accountability, offer convenient access, help patients deal with their conditions and treatment options, assist them in making good choices, offer the best of science, and treat them with dignity and respect. Many of these attributes can be realized through a highly functioning EHR system that accommodates patient

access and participation in an innovative, forward-thinking way.

EHRs can foster proactive care by enabling patient and provider to create a shared agenda. For example, EHRs can create alerts for screenings and chronic care management that can be discussed while the patient is in the physician's office for a different reason. From a practical standpoint, Basch said, providers should pay attention to the patient's chief complaint, but avoid having it become a "chief distraction" that gets in the way of addressing other care opportunities. Scheduling further care should be possible with a few clicks.

Outside of office visits, patients should be able to securely communicate with their providers directly via email, social networking, or other online tool that augments the EHR capabilities without creating additional data silos or isolated communication channels. Enabling patients to communicate electronically with health care providers and gain access to medical records may also improve physician-patient relationships and help motivate patients to play an active role in managing their chronic conditions. Initiatives aimed at patient activation are emerging from diverse sources.

The Department of Veterans Affairs (VA) is focusing on a patient-centered model in its Virtual Lifetime Electronic Record initiative, said Peter L. Levin, PhD, senior advisor to the secretary and chief technology officer for the VA. "By applying some relatively ordinary tools and methods from computer science, IT, and clinical practice," Levin said, "we learned that there were tremendously impactful things we could do quickly" to improve EHRs and patient access to them. (Patients may opt out if they are uncomfortable with electronic records.) A cornerstone of that effort has been the Blue Button project, which enables veterans, service members, and Medicare beneficiaries to download their personal health record as a readable file. Being patient-centered is critical, Levin said, because he predicts a "tectonic shift" toward patients

engaging more in their own health care and holding providers accountable for quality.

Kaiser Permanente offers a patient portal intended to not only provide patients with access to their EHRs, but also to remind them of upcoming care needs. Upon signing in to the portal, patients receive alerts for information, check-ups, updates on lab results, and simple steps and recommendations for health improvement. Kaiser Permanente's success demonstrates that future EHRs must go far beyond their roots in documentation and billing. The next generation of systems will not only advance in the capture and integration of clinical data, but also represent a key point of engagement for providers or health coaches to help "activate" patients.

Such initiatives build on market and technology trends already evident: the increasing use of communication tools, the proliferation of mobile devices, advances in sensor technologies, and a growing wave of online health tools. All of these increase patients' abilities to be their own best advocates and play a role in their own care.

Next Steps: Regulations vs. Free Market

Most of the experts agreed that meaningful use regulations have contributed to the increase in widespread EHR adoption, but they disagreed on which forces should drive continued EHR development. Some promoted further government involvement and intervention, while others believed EHRs would advance more quickly if market forces were left to drive innovation.

A Regulated Market View

Several interviewees suggested that meaningful use should be expanded to include more robust requirements for data-sharing and interoperability. Large and small vendors could be required to share information in a meaningful way, such as developing notification systems to alert relevant providers that a patient within a given community has been admitted to the emergency room. Morrison took this idea a step further by suggesting that

the federal government should “make it illegal for systems to operate in fiefdoms” — perhaps monitoring the field in the same way that antitrust regulations are enforced. Moore noted that data-sharing requirements should also be accompanied by legislated firewalls to assure patients that their personal data would not be accessible through any data-mining efforts by the Internal Revenue Service and the Department of Homeland Security.

Some interviewees suggested that vendors be required, under meaningful use or other means, to make data interoperable with other systems. While vendors asserted that this would be extremely difficult, some experts said vendors may be overstating the challenge. Leavitt noted similarities to the cellular phone industry’s objections to recent Federal Communications Commission (FCC) rules to allow customers to keep their phone numbers when switching service providers.¹¹ Several interviewees suggested that meaningful use certification could require that data be made interoperable so that providers are not bound to one vendor or system indefinitely (or incur significant costs to change systems). This requirement could increase vendors’ focus on customer service and usability because of the new risk that providers may take their business elsewhere.

Given the current financial climate and the capital risk associated with innovation, some suggested the federal government should assume a leading role in spurring innovation in health IT. One such example is ONC’s SHARP program, mentioned above, which is designed to support innovative research that addresses well-documented problems impeding the adoption of health IT.¹² ONC also leads the Investing in Innovations (i2) Initiative, a program that leverages competition and awards to spur health IT innovations.¹³ While these efforts are still in their nascent stages, they demonstrate the federal government’s growing role in incentivizing innovation.

The federal government also fosters HIE through the State Health Information Exchange Cooperative Agreement Program (State HIE) and the Beacon Community Program. Through the State HIE Program, ONC has granted 56 awards totaling \$548 million to promote innovative approaches to the secure exchange of health information within and across states and to ensure that providers and hospitals meet national standards and meaningful use requirements.¹⁴ Launched in 2010, the Beacon Community Cooperative Agreement Program has provided a total of \$220 million to 17 selected communities throughout the US. The objective is to focus on specific and measurable improvement goals in the three vital areas for health systems improvement (quality, cost-efficiency, and population health) and to demonstrate the ability of health IT to transform local health care systems.¹⁵

In addition to funding innovation and information exchange efforts, the federal government can spur the creation of a robust IT infrastructure that is standardized and interoperable. Given the extensive federal investment to promote the adoption of individual EHR systems, many interviewees indicated that the government has an equally important role in laying the groundwork for a nationwide network of exchange and interoperability. The federal government has taken steps in this direction through the Nationwide Health Information Network, and future efforts can build on this work. As Levin explained, “the greatest power for change lies in the ability to share information with anyone who needs it, regardless of their EHR system.”

Interviewees generally agreed that physicians and patients should have greater input into future EHR-related legislation and regulations. Before the government endorses a vision for the next-generation EHR, consumers and end-users could be included on a design team to determine what the future should look like. In this way, the federal government and EHR vendors could follow the lead of consumer product companies, which

have become increasingly advanced in their abilities to listen and respond to consumers' wants and needs. Interviewees also suggested that evaluation of any government-sponsored adoption of EHRs or similar health IT initiatives should include patient perceptions and feedback as a primary source of input through surveys, focus groups, or other means. Considerations of the patient experience with EHRs should include whether care is timely, needs are met, and communication with physicians is satisfactory.

A Free Market View

Alternatively, some experts suggested the federal government should forgo future involvement in advancing EHRs because of their perception that regulations can hamper innovation. Assuming ACA legislation remains in place, market-driven innovation in health IT and EHRs is likely to occur as providers seek tools for improving quality and reducing costs through care coordination. Vendors will need to go beyond certification to prove their worth to providers, and providers will assume a greater role in sharing information about their experiences using various systems.

Interviewees explained that existing user forums and satisfaction surveys for EHRs have limitations, and providers may seek avenues for real-time or anonymous feedback. This approach may mimic the social networking-inspired rating systems and sites for other products and services, such as Zagat ratings and Yelp. In a Yelp-type service for EHRs, providers could evaluate, document, and categorize their experiences with various systems and the finances required to adopt and implement the system. This increased transparency would create more confident purchasers and raise the expectations for EHR systems' quality, functionality, usability, and customer service.

Once the issue of federal government certification is in the past, vendors may take the opportunity to capitalize on simpler, less expensive EHR systems that meet the needs of small practices. For example, some individual providers or small practices may be able to improve workflow, coordinate care, and collect patient data through limited-capacity EHR systems that would not necessarily have met the meaningful use certification criteria. Post-meaningful use, vendors will likely need to be more innovative in creating diverse products with a range of capabilities to meet the needs of various practices and health systems. Simple systems could be enabled to connect with larger systems' networks for data analytics and population-level reporting. These shared capabilities could allow providers of all sizes to reap the benefits of health IT by allowing them to purchase and integrate the systems with the functionality most relevant for them.

There are indications that the private sector is already advancing EHR optimization and HIE. A group of seven states and 11 health IT vendors recently collaborated on a set of technical specifications to standardize health data sharing among providers, health information exchanges, and other parties. The specifications leverage existing interoperability standards from ONC and are the result of a workgroup launched in 2011 by the New York eHealth Collaborative. The specifications enable two important HIE capabilities: (1) patient record look-up, which allows clinicians to query an HIE for relevant data on a specific patient, and (2) point-to-point data sharing, which allows encrypted health information to be transmitted point-to-point over the Internet.¹⁶ This effort is indicative of a growing market force that may spur innovation and advancement in EHRs and health IT — with or without federal government intervention.

Conclusion

Despite decades of slow evolution and limited implementation, meaningful use has created a tipping point for EHR adoption. Although experts debate whether meaningful use has hampered innovation, most agree that EHRs are poised for significant change in the coming decade due to recent changes in technology and the health system, provided that EHRs' evolution continues beyond the lifespan of meaningful use incentives. The experts agreed that EHRs must become more user-friendly, accessible for patients, and interoperable to enable information sharing across the health care community.

The next generation of EHRs will also represent a key point of engagement for new types of data and communications as patients and providers interact in ways that are more continuous, virtual, and personalized. Patients will expect to be able to schedule appointments online and will become frustrated with providers that require them to repeatedly fill out medical history forms. They will seek integrated systems that can assure their information will be appropriately shared during emergency situations. Providers and hospitals that do not share data or allow patients to readily access their information will face a loss of market share or risk decreased payments.

Insurers, for their part, will likely require providers within their networks to implement EHRs as a standard practice of good medicine. In many cases, insurers may become either an information service provider or partner in leveraging EHR technology to manage risk. Some experts suggested insurers may even provide incentives, such as a reduced copayment, for patients to choose providers with payer-approved EHR systems.

Regardless of government intervention, more effective use of EHRs has the potential to transform every aspect of health care in the US, and most experts believe the future is promising.

AUTHORS

Timathie Leslie, Vice President

Megan Doscher, Lead Associate

Brynnan Toner, Associate

Booz Allen Hamilton

ABOUT THE FOUNDATION

The California HealthCare Foundation works as a catalyst to fulfill the promise of better health care for all Californians.

We support ideas and innovations that improve quality, increase efficiency, and lower the costs of care. For more information, visit us online at www.chcf.org.

Appendix A: Expert Interviews

Kristine Martin Anderson
Senior Vice President
Booz Allen Hamilton

Tim Andrews
Vice President
Booz Allen Hamilton

Peter Basch, MD
Medical Director, Ambulatory EHR and Health IT Policy
MedStar Health

Ted Eytan, MD
Director, The Permanente Federation, LLC
Kaiser Permanente

John Glaser, PhD
CEO, Health Services Business Unit
Siemens

Yael Harris, PhD
Director of the Office of Health IT & Quality
Health Resources and Services Administration

Matthew Holt
Co-Founder
Health 2.0

Charles Kennedy, MD
CEO of Aligned Care Solutions
Aetna

Mark Leavitt, MD, PhD
Retired Chair
Certification Commission for Healthcare Information Technology

Peter L. Levin, PhD
Senior Advisor to the Secretary and Chief Technology Officer
Department of Veterans Affairs

L. Gordon Moore, MD
Director of Clinical Transformation, Treo Solutions
President, Ideal Medical Practices

Ian Morrison, PhD
Founding Partner
Strategic Health Perspectives

Jeremy Nobel, MD
Medical Director
Northeast Business Group on Health

Indu Subaiya, MD, MBA
Co-Founder
Health 2.0

Appendix B: Summary of Stage 2 and Stage 3 of Meaningful Use

According to CMS, the optional objectives under the EHR incentive program stage 1 will be required under stage 2, and thresholds and exclusions will be re-evaluated for all measures.^{17,18} Final stage 2 requirements are anticipated in mid-2012 and implementation in 2013.

The stage 2 recommendations are based on the five domains, or priorities, created in stage 1, including: (1) improve quality, safety, efficiency, and reduce health disparities; (2) engage patients and families in their care; (3) improve care coordination; (4) improve population and public health; and (5) ensure adequate privacy and security protections for personal health information.¹⁹

The same process for developing stage 1 and 2 will be used to develop stage 3 criteria, including heavy reliance on public comments.²⁰ The stage 3 requirements are expected to focus on enabling specialists to potentially qualify for meaningful use incentive payments, and on ensuring that meaningful use measurements align with other federal programs, such as the Medicare Shared Savings Program and the National Strategy for Quality Improvement in Health Care. Stage 3 implementation is expected in 2015.

ENDNOTES

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