Gauging the Progress of the National Health Information Technology Initiative:
Perspectives from the Field

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by
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About the Author

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About the Foundation

The **California HealthCare Foundation,** based in Oakland, is an independent philanthropy committed to improving California's health care delivery and financing systems. Formed in 1996, our goal is to ensure that all Californians have access to affordable, quality health care. For more information about CHCF, visit us online at www.chcf.org.

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"HHS is focusing on several key actions: harmonizing health information standards; certifying health IT products to assure consistency with standards; addressing variations in privacy and security policies that can hinder interoperability; and, developing an architecture for nationwide sharing of electronic health information."

— DAVID BRAILER

FOUR YEARS AGO, PRESIDENT BUSH OUTLINED A PLAN TO ensure that most Americans have electronic health records within the next ten years. As part of a larger agenda to advance the use of technology, the president told the public that he believed that better health information technology was essential to his vision of a health care system—one that puts the needs of patients first and helps them make clinical and economic decisions in consultation with their physicians. His administration's health information technology (HIT) initiative would address longstanding problems of preventable errors, uneven quality, and rising costs in the nation's health care system.

On April 27, 2004, in announcing the executive order launching the initiative, President Bush called for the majority of Americans to have interoperable electronic health records within ten years. His plan created the new position of National Health Information Technology Coordinator within the office of the Secretary of Health and Human Services. The national coordinator was made responsible for the development and implementation of a strategic plan to guide the nationwide implementation of interoperable health information technology in both the public and private sectors. The plan's goals are to:

- Advance the development, adoption, and implementation of health information technology standards;

- Ensure that key HIT issues are addressed;

- Evaluate the benefits and costs of interoperable HIT;

- Address privacy and security issues;

- Avoid assuming additional federal resources or spending to accomplish adoption of interoperable HIT; and

- Set targets for measuring progress in implementing HIT.

In conjunction with the launch of the federal HIT effort, the President appointed David Brailer, M.D., Ph.D., as national coordinator. Dr. Brailer identified two crucial elements to achieving the President's vision for HIT: interoperability and the secure portability of health information, and electronic health record (EHR) adoption. As he testified before the Senate Subcommittee

Towards a Nationwide Health Information Structure: A Brief History
Under his Health Information Technology Adoption Initiative, President Bush has called for the widespread use of electronic health records (EHRs) by 2014. Among the benefits stemming from the use of EHRs are improved quality of care and greater efficiency. Despite the demonstrated improvements in care delivery, however, studies have found that adoption rates for the technology remain low among physicians, hospitals, and other health care providers. The new initiative is aimed at better characterizing and measuring the state of EHR adoption and determining the effectiveness of policies aimed at accelerating the proliferation of EHRs and achieving interoperability.

Key Components

The initiative calls for:

- Convening an expert consensus panel on HIT and EHRs;

- Conducting an environmental scan of the current state of EHR adoption measurement and making the gaps in adoption measurement data publicly available, along with the known adoption patterns;

- Developing consensus-panel-driven guidelines for EHR adoption measurement and making these guidelines publicly available;

- Designing a set of EHR adoption surveys that use the guidelines to measure adoption in multiple settings of care across diverse populations; and

- Synthesizing multiple EHR adoption measurements into an annual report on the overall state of EHR adoption, synthesizing multiple surveys using the methodologies developed under the HIT Adoption Initiative.

Historical Timeline

APRIL 27, 2004	Health Information Technology Adoption Initiative launched by Executive Order of the President
MAY 6, 2004	David Brailer, M.D., Ph.D., is appointed the first national health information technology coordinator.
JULY 21, 2004	HHS publishes report, *The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care,* prepared by David Brailer, setting out ten-year plan to achieve always-current, always-available electronic health records (EHR) for patients, physicians, and health professionals.
OCTOBER 13, 2004	Grants totaling $139 million to promote the use of health information technology (HIT) are awarded by Health and Human Services announcements through the Agency for Healthcare Research and Quality (AHRQ).
MARCH 15, 2005	The Centers for Disease Control and Prevention (CDC) finds that less than a third of the nation's hospital emergency and outpatient departments use electronic medical records, and even fewer doctors' offices do.
JUNE 6, 2005	A private-public collaboration, the American Health Information Community (AHIC), composed of federal and state executives, company CEOs and representatives of the health care industry, is chartered by Health and Human Services to spur nationwide transition to electronic health records. Also on June 6, 2005, HHS issues a request for proposals to create processes for setting data standards, certification, and architecture for an Internet-based nationwide health information exchange, as well as to assess patient privacy and security policies. HHS says it will spend $86.5 million on health IT in fiscal year 2005, and President Bush requests $125 million for health IT in fiscal year 2006.

Historical Timeline, continued

NOVEMBER 10, 2005	HHS awards contracts totaling $18.6 million to four groups of health care and health information technology organizations to develop prototypes for a Nationwide Health Information Network (NHIN) architecture.
MAY 17, 2006	AHIC approves its first set of 28 recommendations on how to make health records digital and interoperable while protecting patient privacy and the security of those records.
JUNE 28-29, 2006	The first of three (to date) Nationwide Health Information Network Forums is held, with additional forums on October 16–17, 2006, and January 25–26, 2007. These forums highlight the efforts of NHIN consortium members in their health care information technology projects.
AUGUST 1, 2006	Final regulations that support physician adoption of electronic prescribing and electronic health records technology are enacted by the Centers for Medicare & Medicaid Services (CMS). Regulations cover transmission of a prescription electronically, and enable physicians and pharmacies to obtain patients' eligibility and medication history.
FALL, 2006	The first of five annual reports by George Washington University and the Massachusetts General Hospital/Harvard Institute for Health Policy to assess EHR adoption status and set baseline levels is published in the fall of 2006.
APRIL 18, 2007	Robert M. Kolodner, M.D., takes over leadership of the office of the national coordinator (ONC) for health information technology at HHS.
NOVEMBER 11, 2007	Charles P. Friedman, Ph.D., is appointed deputy national coordinator for health IT in Kolodner's office.
NOVEMBER 13, 2007	CMS proposes rules to adopt new standards to advance the use of electronic prescribing (e-prescribing) for formulary and benefit, as well as medication history transactions used under the Medicare prescription drug benefit.

on Technology, Innovation, and Competitiveness in June, 2005:

"To address these challenges, HHS is focusing on several key actions: harmonizing health information standards; certifying health IT products to assure consistency with standards; addressing variations in privacy and security policies that can hinder interoperability; and developing an architecture for nationwide sharing of electronic health information."[1]

These mandates came to be known as the "four cornerstones," the foundational strategy upon which public policies would be built. While America's Health Information Community (AHIC),[2] which was organized at the direction of HHS Secretary Michael Leavitt, and the national coordinators have

pursued other initiatives, the four cornerstones remain fundamental to the federal HIT strategy.

In order to assess how much progress has been made, the California HealthCare Foundation commissioned interviews with nearly two dozen leaders and experts in the HIT community. Individuals were selected from the full spectrum of stakeholder groups, including health care provider organizations, payers, physicians, health information exchanges, consumers, technology vendors, philanthropies, and business associations. Respondents include the current national coordinator, Robert Kolodner, M.D., his predecessor, Dr. Brailer, and the director of the Agency for Healthcare Research and Quality, Carolyn Clancy,

M.D. A complete list of respondents appears in Appendix A.

Research Methodology

The interviews for this report were conducted during the summer of 2007 by telephone, personal interview, and written questions. All interviews were recorded, transcribed, and submitted to the respondents for review. All respondents are identified except in those instances where they requested anonymity.

Findings in Brief

- The President's HIT adoption agenda has raised consciousness about HIT and EHRs. Beyond the laying of a conceptual foundation, however, there is as yet no measurable increase in HIT or EHR adoption.

- The four cornerstones are of more symbolic value than strategic value, with pilot projects failing to evoke a coherent vision.

- Though it represents a worthy goal, the National Health Information Network is impractical and cannot be implemented.

- Creating HIT interoperability standards is a slow process, and implementing them is difficult.

- Certification of EHRs, which was expected to be the hardest step, has turned out to be the easiest.

- State and federal health privacy laws need to be harmonized, possibly requiring a new federal standard that balances ensuring privacy and easing data portability.

- The federal government should exert more influence as a purchaser in encouraging adoption of HIT.

- As in the past, smaller physician practices lag behind larger providers and payers in making HIT investments, given that cost remains a significant impediment.

- The lack of a standard business model and shifting levels of leadership at the state level

mean that data exchanges and regional health information organizations must evolve within new and uncertain frontiers.

- Despite exceptionally strong bipartisan support, Congress has yet to produce enabling legislation.

- The national coordinator should be drumming for more federal involvement, more federal funding and economic incentives, and more federal guidance in developing standards that protect privacy.

- The ten-year goal would be achievable with the right purchasing incentives and regulatory conditions in place. However, this has yet to occur.

II. Findings

Achieving the President's Goal: More Potential than Progress

The question "Where have you seen the greatest progress toward the President's goal?" elicited widespread agreement. Respondents singled out the effective use of the bully pulpit by the president and his administration in raising the quality of discourse and the level of expectations among policymakers, the health care community, and consumers.

As Carol Diamond, M.D., managing director of the Markle Foundation, said, "When the President made his announcement and other federal leaders, members of the executive branch, and Congress started talking about the importance of HIT to the overall improvement of health care [and] health care quality, safety, [and] efficiency, that was a real turning point." Or, as Janet Marchibroda, chief executive officer of the eHealth Initiative, put it, "The most progress has been made around general awareness." Added John Glaser, vice president and chief information officer of Partners HealthCare System, "The IT discussion in the boardroom of provider organizations or plans or life sciences is a much more prominent conversation within a larger number of organizations and associations devoting energy and time to accelerating the effective implementation of this technology. There's more discussion, there's more focus, there's more energy surrounding it today then there was four or five years ago."

Federal efforts to encourage the adoption of HIT were perceived to have had an impact on the physician community, particularly in larger practices. Said John Tooker, M.D., executive vice president and chief executive officer of the American College of Physicians and president of the eHealth Initiative, "Some of the progress is obvious and quantifiable, and other progress much more subtle… What is quantifiable is that physicians are acquiring EHRs." Installing an EHR, however, does not guarantee its adoption, and it is difficult to tell how physicians are actually using EHRs once they are acquired.

"Physicians really are talking seriously about the need and opportunity for electronic medical records," noted Donald L. Holmquist,. M.D., J.D., chief executive officer of the California

Regional Health Information Organization. However, while larger physician groups are increasingly using HIT, the vast majority of practicing physicians, those who practice alone or in small groups, are no closer to using HIT now than they were three years ago.

Vendors, employers, and providers have also embraced the Bush administration's HIT initiative. "The number one thing is the attitude of the vendors and the attitude of the industry to actually collaborate to make this happen," said Kevin Hutchinson, chief executive officer of SureScripts and an AHIC member.

Added Ned McCulloch, J.D., manager of government and congressional relations for IBM, "The biggest progress has been in the private sector by employers acting on their own to try to deal with their own employees' health care quality and costs."

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— KEVIN HUTCHINSON

The president's move has created a sense of inevitability. "The greatest progress is that there is an acceptance by health care providers and facilities that we are going to be moving toward an electronic medical record. It's not a question of 'will we?' but [of] 'when?'" said Helga Rippen, M.D., vice president of clinical informatics and analytics, Hospital Corporation of America.

None of the HIT leaders interviewed for this report could point to substantial, real advances in the adoption and utilization of HIT since the president launched his initiative. John Rother, group executive officer of policy and strategy at AARP, said, "There's been some progress in a few large systems such as

the Veterans [Health] Administration, Geisinger [Health System], and to some degree, the Kaiser [Permanente] system. Beyond that, the progress is spotty."

At least, as national coordinator Kolodner noted, "We have laid the foundation for making progress."

The Four Cornerstones: A Conceptual Foundation

The four cornerstones—the proposed foundation for a digitized health care system—envision not only not only the proliferation of EHR systems, but the efficient use and access to the data that they contain. The cornerstones are designed so that EHR data could be captured, shared, communicated, used, and relied upon by clinicians, patients and appropriate others. The four cornerstones are:

- **Create a Nationwide Health Information Network (NHIN).** Make grants to four information technology companies and their partners to demonstrate different approaches to the operation of an NHIN;

- **Adopt interoperability standards.** Develop a process under the banner of the Healthcare Information Technology Standards Panel (HITSP) by which various technological and informatics standards could be identified, assessed, and recommended for adoption by HHS as necessary for permitting interoperability of competing HIT systems and platforms;

- **Certify EHRs.** Identify a mechanism by which EHRs and, over time, other HITs, could be certified as being functional and interoperable (applying the standards adopted by HHS based on HITSP recommendations); and

- **Reconcile laws.** Uncover impediments to the free flow of digital health data created by varying state and federal medical privacy statutes and a means by which those laws can be harmonized while protecting personal health information.

So, what do HIT leaders and experts think about the cornerstones and the various projects that were launched to implement them? Areas of concern included the specific projects as well as the appropriateness of the cornerstone approach.

Projects flowing from the cornerstones lack a comprehensive approach to the challenge of systemic reform, said the Markle Foundation's Diamond, "The way I see it, it would be more logical to take those four pieces and talk about them as a whole first… I think it plays out tremendously when you start to talk about a health information sharing environment that enables information to move for the care of patients, between doctors to patients, what have you. Our view is that you can't uncouple those pieces. Policies that define how information is used and handled and shared are as important as the standards for the network definition." The pilot projects might be viewed as standing alone, unconnected to the others, and lacking shared context or vision.

For many HIT experts and leaders, the cornerstones are of symbolic—not practical—value. "Clearly they [the cornerstone projects] are good things to have done and the industry will be a better place because they were done, even if we're not quite sure yet what the permanent contributions of those things are to the industry… I think they have practical value as a portfolio. They also have symbolic value as a portfolio, which is above and beyond rhetoric… For a lot of the movement, it was more the symbolic value of those [projects] than the actual

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— JOHN GLASER

practical value which helped to accelerate certain investments," said Glaser. The idea of the projects is encouraging to HIT proponents, but as yet they do not represent any significant achievement.

The Nationwide Health Information Network: Mixed Feelings

HIT leaders and experts are mixed in their assessments of the value of the Nationwide Health Information Network, its execution, and its lessons. Most had little praise for the project, characterizing it as either ill conceived or poorly executed.

"NHIN was a disaster from the beginning because there was no integration. It was four companies each pulling together a consortium, going off and doing their thing and then coming back with four different answers," said William R. Braithwaite, M.D., Ph.D., the treasurer of HL7 (Health Level Seven) and vice chair of the Healthcare Information Technology Standards Panel.

Glaser added, "I'm of two minds on this thing. One is, as a practical matter, that [NHIN] is unsustainable and is unlikely to get past demonstrations in the next multiple years, and so I don't think what one is seeing is the first phase of a multi-phase effort to build this out, because I just don't think it will fly. On the other hand, it had a lot of symbolic value. Real work has gone on and it's taught us a lot about how to deal with identification issues and authentication issues and how one might put systems together… So, we have learned a lot technically about how to have interoperability between organizations even if the use of that interoperability for the next multiple years is likely between trading partners—and highly unlikely to be a national infrastructure."

Glaser continued, "I think NHIN probably is the one [cornerstone] where most would agree you have not seen the amount of progress seen"… in the other areas. "I think it's primarily because the other three… actually feed into NHIN."

Reflecting on Dr. Brailer's statements to Congress, Hutchinson said, "…really what NHIN is, is policies, standards, security requirements, a lot of the necessary things needed to build…a sound structure. But unless you take the local market into account within that structure, it will fail."

Perhaps the most positive conclusion mentioned by respondents was the idea that barriers to the NHIN are not technological but political and organizational. Said McCulloch, "I think there has been some progress on the NHIN. The prototypes… all worked and I think there's something to be said from that. I think that was helpful because it demonstrated that it wasn't a technical problem, it was a will problem."

Dr. Kolodner, Dr. Brailer's successor as national coordinator, argued that the lessons learned from the NHIN projects will benefit local and regional health information exchanges (HIEs). "We succeeded in the first step that we wanted to accomplish, which was to develop the NHIN prototype architectures. This strategy allowed us to draw upon the creativity and innovation in the private sector to rapidly advance this effort. The four consortia we funded came up with different enough solutions, but with similar enough end points, that we were able to identify critical elements from these deliverables.

"In conjunction with NCVHS [National Committee on Vital and Health Statistics] activities that we requested, this allowed us to extract the functionality needed for future NHIN phases," Kolodner continued. "The prototypes demonstrated that there were technical solutions compatible with a network that met our functional requirements for patients to have control and input as to how their data flowed over the NHIN. We had said from the beginning of the four contracts that we were not intending to find a single solution to move forward; [the idea] was to learn from all of the consortia.

"We did that, and we're now going to Phase Two," Kolodner continued. "Very shortly we will be

releasing an RFP calling for trial implementations. The focus will not be on the technology companies but on the health information exchange entities, including RHIOs [Regional Health Information Organizations]. Instead of giving the money to the technology companies, it will be given to the users. We want to help those users work with the technology companies to provide working solutions for the health information exchange within real communities. Now we have the technology companies competing for the business in the funded communities, and we've also provided the companies the criteria that they need to adhere to for functionality and interoperability. These capabilities will need to be delivered by those technology suppliers to the communities participating in the trial implementations."[3]

While respondents were doubtful that lessons learned from the NHIN projects can be applied in community level HIE activities, most saw the development of standards for interoperability, an essential criteria for HIEs to succeed, as painful, slow, and limited.

Interoperability Standards: Easier Said than Done

If EHRs and the other cornerstones of HIT are to be capable of sharing health data reliably and efficiently, a host of technical and clinical standards must be identified, assessed, tested, adopted, and used—either as a result of regulation, or of market forces. Without standards to assure systemic interoperability, the benefits of sharing health care data through HIEs and other avenues will be unobtainable—whether for research, biosurveillance, ready access to relevant patient data, or otherwise. The national coordinator created the Healthcare Information Technology Standards Panel to develop and execute a process which ultimately recommends standards for adoption by the secretary of HHS (the standards are then incorporated into the certification process, discussed below).

While the panel has made progress in recommending standards, the speed of the process has been frustrating and limited. As Braithwaite said, "It's going slowly. Getting consensus across an industry about a particular standard for a particular use case is very, very difficult for a whole bunch of different reasons. But, let's say there are two major reasons right now: one is that, in this country, it's done totally by volunteers. Nobody's paid to do that… It takes a very, very long time to reach consensus on what the right answer is or you end up with what we've done for the last 20 years: a "standard" that is so loose that everybody can continue doing what they've been doing, or something very close to it, and you end up with non-interoperable, non-computable data exchanges. It only works point-to-point because those two people really want to exchange data and they get together and figure out all the little decisions that have to be made before that data transfer could be meaningful. But, you can't do that across a hundred thousand actors. You've got to set a standard that's detailed enough that everybody can write to the same standard."

Said Linda Kloss, chief executive officer of the American Health Information Management Association, "I think that's been a painful launch. Not that they [HITSP] haven't done it as well as they could, it's just the difficulty of the mission of bringing together organizations that have worked independently and competitively to work harmoniously." Added Mark Leavitt, M.D., chair of the Certification Commission for Healthcare Information Technology, "HITSP has such a hard job—to harmonize the standards while focusing on the use cases. That fills their plate."

Members of Congress also acknowledge the slow pace of the standard-setting process. As Michael Zamore, J.D., policy advisor to Rep. Patrick Kennedy (D-RI), said, "From where we sit as non-technology people, it just seems like we should be able to get this done and just decide, come up with some standards and just decide. I understand that it's obviously more complicated than that. I ask this question of a lot of people, every time I meet with a health IT person, 'How are we doing on standards? Is HITSP doing what it needs to do? Are we making progress? Is the process what it needs to be?' I think that probably there could be some tweaks to the process. I think that we could have an ongoing approach to standards development and maintenance and updating that is perhaps a little bit more transparent, that is better isolated from politics, and that hopefully is a little bit quicker to fruition. But by and large it seems like we're making some headway."

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— MICHAEL ZAMORE

While agreeing on interoperability standards is one thing, implementation is another. Said Glaser, "They've done a nice job of taking what appear to be zillions of standards and narrowing it down significantly, and of creating a process by which various [standards development organizations] get together and hammer out some form of consensus. The step that needs to happen now is that the market embraces and insists on those [standards] so people like me who buy [HIT] can require [vendor] conformance to those [standards]."

Certifying EHRs: An Early Success

The consequence of certification—one of the cornerstones—has had important implications for the HIT market. Nonetheless, there is broad agreement that the certification process has been a success. That process was developed and is now being implemented by the Certification Commission for Healthcare Information Technology (CCHIT), the only certification body recognized by the HHS secretary.

HIT industry leaders were uniformly positive about the progress made in the certification of EHR systems. Certification "would have been the thing that would have been the hardest one [of the cornerstones] to do and the slowest to do but it surprisingly has probably been the one with the most progress," said Hutchinson.

Another leader described the HIT certification process as "laudable. The real spirit of certification is to allow the health care delivery organization to know that that business is at least technologically, if not financially, stable. And the certification process in principle allows that to be done. The certification process adds a certain amount of leverage and consensus to purchasing decisions that's very healthy. The challenge for the certification process is you can have a vendor that's certified, and have older versions of the vendor software out there that are not certified, and that's a bit of a problem, but a minor one. The broader issue, though, is to restrain the impulse to certify everything. I think most recently this notion of certifying personal health records is an example of perhaps trying to certify something before we even understand what it [is]."

The certification process requires extreme vigilance, said one leader. "The only problem is can we, on the certification side, keep up with all the changes. The pace of change that's occurring in technology is going so rapidly that it's outstripping the ability of certification programs to keep pace. I pay attention to this stuff, and I'm having a hard time keeping up," said Kevin Fickenscher, M.D., chief medical officer and executive vice president of health care transformation for Perot Systems.

CCHIT's Leavitt reflected on his organization's achievements around certification. "I am proud of what [CCHIT has] accomplished. That these people from all walks of health care came together, had the debates, and came up with a reasonably balanced set of requirements that we could rigorously attest to and decrease the risk of buying the systems, decrease the risks that they wouldn't be interoperable, and

decrease the risks that they would steal information. And I'm now starting to see actual financial and regulatory relief incentives that tilt to certification."

Some in the HIT community worried that the certification process and its costs would pose a disadvantage to smaller and newer EHR companies. While it is essential that certification assure compliance with interoperability standards, the certification process might raise barriers to the kind of innovation that is critical if HIT is to become more common and inviting. To this, Leavitt replied, "Well, it's a fair question. And we were worried about it ourselves as we got started. But we said, 'Let's look at the data as it emerges rather than listen to people complaining about something.' And after a year of certification of ambulatory EHRs, CCHIT certified 87 products. We surveyed the vendors, [their] annual revenues, and what size practices they serve. It turns out that three quarters of [all] vendors have revenues of $10 million a year or less. And, in fact, 16 percent have revenues of $1 million or less. That is a garage kind of shop. Only a fourth were the large vendors with $10 million or more, and some of them were huge companies. So that data laid to rest this concern that it was going to squeeze out small vendors. It actually seems to have done the opposite. It's created a level playing field."

One respondent suggested streamlining the process. "If there's anything I would recommend it's probably creating one continuum that goes from standards development through to certification in a highly coordinated, tightly coupled kind of way, and that's not what we have currently," said Charles Kennedy, M.D., vice president of health information technology for Wellpoint, Inc.

Reconciling State and Federal Privacy Laws

Regulatory impediments must be lowered if health care data is to flow freely between EHRs and other HIT applications. On the other hand, privacy must be protected and data secured if EHRs and other HITs are to enjoy the trust of consumers and

clinicians. The HIPAA privacy standards were a first attempt to strike a balance between these objectives. HIPAA established minimum federal privacy standards, allowing more stringent state laws to preempt the federal standards. Many believe that the resulting series of state and federal privacy policies hinders the flow of personal health information. In response, the national coordinator launched a process intended to harmonize individual states' policies, and state and federal policies. The initial phase of that process, recently completed, identified those policies which create impediments to efficient sharing of health information data.

The interviews included discussion about these conflicting imperatives: protecting privacy, and allowing free flow of sensitive health data. Each of the respondents was invited to comment on the difficulty of harmonizing these objectives and whether progress was being made toward that end.

Rother said, "It is unlikely that a state-by-state effort will address the regulatory barriers that currently exist." Instead, he said, a federal standard will be necessary if health care privacy regulations are not to impede the flow of patient medical information.

Added Jeffrey Kang, M.D., chief medical officer for Cigna, "Typically, [the federal authorities] set a minimum and then states can go higher. On this one, in order for the free flow of information to improve quality, you actually want to set a maximum which states can't go above because you want to be able to guarantee some level of free flow."

Incongruities between state and federal privacy laws must be carefully assessed to resolve the privacy issue. Kloss said, "Well, I think we're at a really pivotal point on the [state privacy law] analysis. The solution set is really now just beginning to be looked at. I think it was also pretty important to go out to the communities to look at this issue. It was quite a complicated project in getting all these groups convened in all these states and doing all these reports and machinations, but I think

they all learned a lot and actually, you've had that experience when you've talked to those who've been part of those planning groups. It's been a real eye-opening experience. That grass-roots learning will pay dividends down the road. Coming to some conclusions that we can really get lawmakers and others to rally around…could be the backbreaker."

It's not likely that state and federal policy on data flow can be harmonized without addressing issues of privacy. Lawmakers at all levels and the public at large oppose the loss of personal privacy. If this policy disconnect is to be addressed, a much broader public discussion must occur. Otherwise, clinicians and researchers will have difficulty gaining access to data they need to advance medical care.

A Larger Role for the Federal Government

When asked whether the federal government is doing enough to achieve the president's objectives, most respondents said that it could throw more weight as a payer and purchaser. "No surprise, but I think that payment reform is the primary issue that needs to be addressed… We're seeing lots of experiments and interest and policy stuff floating around changes in payment policy. I think that is the most important thing that could happen now," said Marchibroda.

As the big spender in health care, the federal government could exert more influence, said McCulloch. "The government is responsible for buying the bulk of the health care in the country. People will respond to whatever incentives that they send out and right now they're asking people to provide high-volume, low-quality products and so that's what people are providing. We've done some thinking, we've done some test deployments, and none of that would have happened without the government's involvement. And it's now going to be up to either this Congress, more likely the next president, to decide whether they're going to move to product deployment. And I don't see anything happening unless they make that change."

Kennedy offered a similar perspective. "The federal government needs to continue to push very strongly as a purchaser of health care for the deployment of these types of tools. I think that you don't have to have language yet that mandates these types of solutions, but the federal government needs to be continually sending the signal [that] this is the direction the industry should be moving and there will come a day [when] if you don't have these kinds of solutions in place you won't be able to play with Medicare [or] Medicaid, or you're going to miss out on revenue increases."

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— NED MCCULLOCH

Relying on the federal government's purchasing power alone to create a market for HIT will not achieve the president's vision. Nor will simply putting information technology tools in the hands of clinicians and their patients. How practitioners use those tools and how the business of health care evolves will be more important.

As Kennedy said, "Once you have this infrastructure out there, you're going to have better data, but you need to know what to do with the data. [So you must make] sure that protocols are in place to allow use of the data for research purposes. And I'm speaking now of clinical data, not traditional claim[s] data. I'm thinking of research in terms of [the] variety of care paths that are used to take care of an [individual]. What type of [clinical] management approaches work well and how do you, once you define an appropriate or an effective way

of taking care of people in the real world, how does health information technology allow you to then disseminate that practice? Those are the kind of real world or outcomes-based research. It's all types of things that are researched around how care is actually delivered in the real world."

The federal government may have missed an opportunity to foster innovation, but that chance is coming again, said Fickenscher. "I think where we made a mistake…is that we didn't foster the laboratories of democracy over the last four or five years. I actually think that we have the opportunity over the next three or four years to do the same thing. Because I think the environment is even more right today than it was three or four years ago. Now we have the opportunity [to] be very intentional. Let's foster experimentation, but then from the experimentation, let's take the best ideas and cultivate [them] and say that at the end of four or five or six or seven years we're going to take that knowledge and apply it at the federal level."

HIT's Price Tag: Not So Affordable

While large health care providers are increasing their HIT investments, small physician practices are not, posing the risk that a digitized health care system will never be fully realized. Understanding why some make the investment and others don't is critical to expanding the presence and use of HIT.

One reason is competitive market pressures on large systems, which include the linking of reimbursement and quality of care. "One [of the drivers of large systems] is the steady drumbeat over the years by organizations like [the] Leapfrog [Group] and people like Don Berwick [M.D.], who have pointed out how screwed up the care process is and how IT can be an answer," said Glaser. "There's also the uneven but progressive movement to various pay-for-performance contracts where quality is exposed and poor quality is increasingly penalized. So, those have had environmental pressure saying that, particularly large health systems, that they'll increasingly be visible and there will be financial penalties unless

they clean up their act, and IT is being seen as an important part of that. There's also a form of herd mentality. When I talk to my colleagues who are a part of large health systems, Baylor [Health Care System], BJC [HealthCare], Mayo [Health System], Trinity [Health], they're all in a cohort and they watch each other to see what the others are doing. There's now clearly a critical mass of them that are making big-time investments. Hence, if you're a CEO and you go to a meeting of your colleagues and all your colleagues are out betting big bucks you're sitting there wondering, 'geez, what's wrong with me, maybe we should be doing that too.' So, it's very clear to me… that the larger health systems… are really ramping up their investments big time."

Not everyone believes the federal initiative has had much influence over large systems. Said Carolyn Clancy, M.D., director of the Agency for Healthcare Research and Quality at the U.S. Department of Health and Human Services, "I'd love to say [HIT investment by large systems] is a response to the bully pulpit but at the end of the day, I don't really believe that. I think in tightly organized systems, there's been a lot of movement because the technology is ready or more ready than it's been to actually be deployed on a grand scale. If there was a tipping point here, my guess is it was probably Kaiser [Permanente] turning to Epic [Systems Corporation]. I think what a lot of people are beginning to see is that these investments can actually change the nature of health care to a series of transactions that are far more proactive, that can happen right now even without payment reform."

While insurers and large provider systems are spending heavily on HIT, the typical physician practice is not. Speaking anonymously, one physician leader described the challenge of increasing HIT utilization by small physician groups: "There are lots of barriers to adoption, including cost and changing practice culture. Larger, integrated health systems like Kaiser are systems with the scale and culture to facilitate adoption—many physicians enjoy working in such an integrated system. That

said, most physicians practice in and most patients get their care in small group and solo practices, a different and independent culture of practice. If you have a three or four person practice, you're likely to have physicians who are recently entering the practice, and others who have been in the practice for many years. Culturally transforming the way that you do business by incorporation of electronic health records, after you've been practicing without EHRs for a long time, is a big transition. With an integrated health system, such as Kaiser, physicians join knowing and agreeing to participate in the culture and mission, including around change such as EHR adoption."

Its harder for independent physician practices to pay for HIT investments than it is for other providers. "Physicians working for an integrated health system are likely salaried, with incentives. [That's] very different than a three-person practice in which the capital investment for the electronic health record infrastructure is not coming from the retained earnings of a corporation but rather from the savings from your practice, your personal retirement," said Tooker. "How well can your personal income and practice tolerate initial decreases in productivity with EHR adoption as well as the capital outlay? In the end, if you can recover your costs and make the practice more efficient and certainly much more enjoyable professionally, the effort was worthwhile."

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Another barrier to implementation of HIT by small practices is the absence of needed data. As Mark Frisse, M.D., director of MidSouth eHealth Alliance, explained, "One of the reasons that community physicians don't use information technology as much is because the information they would really need and want—information from hospitalizations, information about your health, your medication history—just simply hasn't been available until very recently. It's rather foolish to require a physician, for example, to use a health care information system when it's not integrated with the billing, when you can't get the medications. It's not efficient. It's not a matter of physician resistance, it's a matter of [having] no critical map for the community providers. Then, there is the issue of financing. I share [the] view that every other small businessman in the country has got to afford their information technology and that any practitioner in their right mind ought to be doing the same. I think they will, as soon as there's enough to hook it to make it worthwhile for them and their patients."

In the years just after World War II, Congress addressed the shortage of hospitals and nursing homes by passing the Hill-Burton act, giving health facilities grants and loans for construction and modernization in exchange for providing a reasonable volume of services to persons unable to pay and to make their services available to all persons residing in the facility's area. Is such an initiative program needed for physician-practice HIT? Rother thinks so. "With regard to the problem of encouraging small physician practices to obtain and use electronic medical records, there needs to be a Hill-Burton type program. In particular, it must be recognized that while small physicians are key to a successful health care information system, small physicians are least able to afford the costs of such a system, are least likely to realize significant benefit from the use of electronic medical records, beyond clinical benefits, and that those entities most likely to realize significant benefits, in particular insurers and other payers, should be bearing the largest burden of the economic cost of health care IT systems."

Data Exchanges Face an Uncertain Future

From the earliest days of the federal HIT initiative, the national coordinator encouraged the development of regional health information organizations (RHIOs), or data exchanges. A small amount of funding was provided and grants were made for the provision of technical support. Yet, over time, there has been inconsistent emphasis on the role of RHIOs, insufficient funding, and an uneven track record of RHIO development. Thus, the role of RHIOs seems uncertain and unsettled.

Kolodner believes the role of RHIOs will emerge over time. "We still believe that the majority of health care activity occurs at the local, regional, and state levels, and that's where the sharing has to begin. To make this happen, multiple stakeholders at the local and regional level will have to come together, and a balance among their differing desires and needs will have to be found. But this is something that's never been done before, and if you push it too fast when you do something that's not been done before, you're going to have lots of failures. What we need to do is proceed in a deliberate, stepwise fashion and discover the good ideas—which are the things that work, and which things don't work, or at least, don't work in those settings and done in that way. And we need to make sure there are sound communication processes in place. That's another suite of activities that we have to address, both with the health information exchanges and drawing out their best practices, as well as fostering a dialogue across the various RHIOs or health information exchanges—entities that cluster together for business purposes. We also have state-level activities such as the State Alliance for e-Health where state governors, legislators, attorneys general, and health commissioners meet together to identify and formulate solutions for interstate health IT barriers. We've created an environment that has been able to foster discussion across the boundaries, so good ideas get shared."

For many of those interviewed, the viability and role of RHIOs remains unclear. As Dr. Kennedy observed, "The problem with RHIOs is no one has figured out how to specifically connect them to the existing business model of health care. So they're kind of this entity that's hanging out there that doesn't really have a role in what we would call the value chain. Meaning, member to employer to health plan to medical group to physician to ancillary providers of care. Where exactly does a RHIO fit in there? I'm not sure the approach really works."

Another question is, how do RHIOs fit in the larger national HIT system? Frisse said, "I've never viewed a RHIO as an organizational engineering entity. I viewed a RHIO as an environment in a region that would look at the underlying issues that overlapped long-term care of individuals across various settings and fundamental policy and information management issues. So in other words, whether it's a RHIO or something else, there are some core problems like identification, merging, consent, technology standards, that we have to take on simply to take care of us. I'm looking at what is the role of the community and the role of the community as a trust broker… There's no argument that many of these standards should be federal standards. So there are some things that are federal, there are some things that are regional and there are some things that are organizational… There needs to be greater federal support for collaboration."

The role of RHIOs may even be at odds with the rest of the HIT infrastructure. Speaking anonymously, one respondent said, "I see [RHIOs] becoming apparatuses of state health leadership as opposed to a federal network… There's no business model for what they do. They can figure some out on the margin but in terms of the core mainstream, high-octane business model, there is none because the value they create is adverse to the financial interests in the industry. I expect a lot of them to face a lot of economic trouble and I think it'll force, frankly, the question that we've been trying to force [on] people who pay for health care, which is 'are

you willing to be so recalcitrant in your view of health care finance that you're willing to see all this great work and energy go to its death?' And I think that will pose a lot of dilemmas for people as part of a broader question about where is health care going."

In recent months there have been several highly visible failures of RHIOs. At the same time, new RHIO efforts are underway, and some federal funding has gone to RHIO development. The question remains: Where do RHIOs fit into HIT?

Is Congress Doing Its Part?

While much of the action and attention on HIT and EHR initiatives has been focused on the executive branch, there are two issues which only Congress can address. It can make the office of the national coordinator an official part of the federal structure (it now exists by executive order), and it could create incentives to accelerate HIT deployment and utilization.

"The big challenge for health IT so far has been that it's everybody's second issue."

— MICHAEL ZAMORE

Although there appears to be bipartisan enthusiasm for HIT, significant HIT legislation has yet to be adopted. Congressional staffer Zamore explained, "The big challenge for health IT so far has been that it's everybody's second issue. And you've got all the groups talking about health IT as so important and they've got their white papers, but when they come up here and they're sitting down with a member of Congress with their membership, or with the president or whoever it is at whatever level, for doctors they're talking about how much Medicare is going to pay them. If they're hospitals they're talking about, you know, how much Medicare is going to pay them. If they are patient groups they're talking about [National Institutes of Health]

funding… Everybody's got their own thing and IT is not the second one on the list or the third one on the list and it's not the first one on the list for almost anybody other than the IT vendors… So, the politics on health IT are at once great because the general impression by far is in agreement, it's kind of mom and apple pie… So on the one hand it's great, but on the other hand things move when they're demanded to move and nobody is demanding that this go. A couple of years ago, [during] the first year of ONCHIT, the appropriations process was so instructive because the president requested this money and everybody thought 'oh great, health IT is on its way' and then nothing. It was zeroed. And that was sort of a wake-up call. I don't think a lot's changed."

Rother, one of Washington's most experienced consumer advocates, reinforced this view. "With regard to the politics of health care information technology one need only look at last year's legislation," he said. "Significant HIT legislation was introduced by heavyweight sponsors. Nothing happened. This indicates that health care IT is not a high priority for Congress. This is in part a result of the congressional budget office not scoring health care IT as resulting in savings, the concerns of providers for the cost of health care IT, and that other issues are competing for congressional attention like the state child health insurance program, SCHIP."

Advice for the National Coordinator: Be Pushy and Spend More

When those interviewed were asked to stand in the shoes of the national coordinator and share their thoughts on what they would do to accelerate the deployment of HIT, two major themes emerged. First, the national coordinator should make better use of the federal government's power, both as purchaser and regulator, to accelerate nationwide HIT adoption. Second, increased federal funding is needed, and reimbursement reform could be an incentive to advance the HIT initiative.

About the first theme, Hutchinson said, "I would finally put some meat behind what the secretary has been saying for a year and a half [about] his intention to use the size of Medicare to drive change and adoption of health IT… I would make sure that there is a timeline and there are concrete recommendations…that will make sure that those plans and programs are, in fact, happening."

About the second theme, Tooker said, "While I agree that the market and the business community are key players, I think that there is a role, including a funding role, in the public interest for the federal government, including the development of infrastructure across the land for health information technology and quality improvement. This would require reform of the current payment system to optimize physician participation."

Respondents contended that additional issues requiring the national coordinator's attention include the adequacy of the HIT workforce, additional work needed on standards, more public displays of success, the slow rate of HIT adoption by physicians in small groups, and concerns about financing.

Kloss suggested that everyone take a breather. "There's been a lot achieved in a very short time… It's classic change management… We need to go on and update the vision because we're all getting weary and we need to be re-energized. I'd take the rest of this year to re-energize and then I'd roll out this new governance mechanism and use 2008 to get it in place In the meantime, I'd find some way to get Congress to put some real money on the table on this, and buy ourselves the time we need to get this organized so that it's a sustainable structure. There are issues like workforce that haven't been attended to yet, there's a lot of nuts and bolts stuff like vocabularies and classifications and data content standards that are really essential for interoperability. Nobody's really getting to it yet because it's so hard. So, I'd do some change management, and celebrate. I'd figure out a campaign for this public and get them behind this."

Glaser suggested that the national coordinator worry more about incentives and demonstrations of success, and less about interoperability. "I'd keep HITSP and CCHIT alive and I'd let the privacy stuff continue and I might continue to futz around with demonstrations of technology and assessing the successful RHIOs… I would focus on getting the adoption up and getting people making these investments and making them effectively and thoughtfully. I'd get to work on how to help the small doc, small hospital, make these investments and have good partnerships along the way. I'd continue to work with the payer community and purchasers… to start moving them towards incentive structures which will drive people to make these kinds of investments and feel like there's an economic upside or an economic downside if they don't. And I would also—and I realize that this is the tough beast—really work on the federal government both on CMS payment structures and also the OPM [Office of Personnel Management, which administers the health care benefit system for federal employees and retirees] structures to get the federal government to put its money where its mouth is. But I'd be worried much less about interoperability; I'd be much more worried about getting adoption up and pressing the two levers of incentives and support for the small guy."

HIT leaders and experts regularly raised the issue of finances, both the basic issue of the costs of HIT, and the use of reimbursements and economic incentives to propel HIT adoption to improve delivery. One respondent predicted that by creating a market demand for a high-performing, data-driven health care system, the technologic challenges would solve themselves.

"I'd spend a fair portion of my time on the road out there with hospitals, doctors' associations, patient associations, and sectors of the industry like the laboratories, talking and listening," said Leavitt. "It will get figured out if you had a business driver. So you'd first say how do we reimburse for spending the extra few minutes to gather the information on a patient? If you did that, then those who gather the information would be willing to pay something to those who stored it, and those who stored it would say, 'Oh, you'll pay me to store it and give it to you,' and you've got the economy there. And then you could tackle this question of [whether re-use of data could] help support it, and what are the ethics of that, and the policies. You'd have to do that first, and then literally the technology problems would solve themselves. I think there's been a little too much emphasis on technology, because it doesn't bite back. But the more brain power you put on it, the better you get at technology, whereas the business issues and the financial issues and the ethical issues, it takes more than just being smart. You've got to go out and convince people and talk it through."

The need to engage patients in issues of standards and privacy was also raised.

As Zamore said, "I [would] continue to focus on the standards stuff. I think that that kind of plumbing behind all of this needs to happen… I think you open up a privacy debate [that is] much more freewheeling, a lot more aggressive… I think that I'd like to see more efforts at engaging consumers. I think there's a tremendous potential in unleashing consumer demand for IT as a part of their health care experience. It's not clear to me [what] the nexus [is] between personal health records and RHIOs or NHIN [or] how those things fit together. But I think that there's been a tremendous focus on docs and hospitals and other providers and infrastructure, and people are leaving the patients out of the conversation."

EHRs, the Perpetually Emerging Technology

While those interviewed believed that most Americans would have an EHR by 2014, there was less agreement about what that means. Perhaps the lack of clear consensus is due partially to the ambiguity of the president's stated objective. Did the president mean an electronic medical record, or did he mean a personal health record? Did he mean

an EHR that was part of a larger, fully deployed national health data exchange, or did he mean a stand-alone EHR? The diversity of views on the prospects for nationwide EHR adoption reflects the range of interests, challenges, perspectives, and communities that are involved in the HIT effort.

As Kolodner said, "We're well along with product certification; more and more standards are getting in place; communities are working together; and conversations are underway regarding the [American Health Information Community] AHIC successor. While nothing is absolutely certain, I think we have an extremely good chance, and I put my money on the side that we will achieve the 2014 goal."

Speaking anonymously, another respondent was equally enthusiastic. "I do believe they will [meet the goal]. And the reason is because my mental calculation is how far down the gradient towards size of practice will we get until the doctors who care for half the American public will have it. To cover half the American public you only need to go down to about 35 percent from the top. I think it would take a massive step-back in the rate of adoption increase for it not to happen."

Marchibroda advised that expectations be tempered. "We took a survey at one of our conferences, and mostly everyone said 'no'… In seven more years, we'll probably see about 20, 25 markets wired. And we'll see, with this group of national networks that are interoperating with those markets, probably about 50 percent of our docs wired. But there will be a big chunk that won't be yet because they'll be in rural areas or, for whatever reason, they'll be left behind."

Not everyone believes that the federal government's initiative will be the primary influence in EHR adoption. McCulloch said, "I think that chances are pretty good that a fair number of people will have an electronic medical record and I think the chances are pretty good that it will have nothing to do with anything the government did…because employers

and insurers are doing it on their own. And I haven't seen the government provide any of the beneficiaries in any of the programs yet.[4] I think it's moved along pretty quickly and I think the government could really help a lot of folks were they to do it. By the way, just as a global statement, it's actually moving faster in a number of other countries than it is here in the United States."

> *"I think that chances are pretty good that a fair number of people will have an electronic medical record and I think the chances are pretty good that it will have nothing to do with anything the government did."*
>
> — NED MCCULLOCH

As for the likelihood of nationwide EHRs in ten years, Frisse said, "I'm going to say yes, but it's not going to be because it was the president's idea or your idea or my idea. It's because increasingly it's making sense to everyone… People don't adopt your idea. They make your idea their idea and then they adopt that. I think there is going to be a growing trust, despite what's going on now in the digital world, there's going to be an expectation for management; the aging population, the kids, what they're doing with cell phones and the like. I think we're going to be pretty far along the way and I don't think it's going to be because of the reasons we think it is. I think it's going to be the law of unintended consequences and funny surrogates for this stuff. What we're going to have in 2014 may be radically different than [what] we think is going to happen today."

The challenges of bringing HIT to small physician practices; reforming reimbursement to encourage HIT; harmonizing the interests of payers, providers, and vendors; and other challenges facing the nation all suggest that achieving the president's vision will

be unlikely. As is often observed, a real EHR has been merely five years away for almost thirty years.

Glaser indicated he didn't think the U.S. was moving fast enough for most Americans to have EHRs by 2014, unless the pace of change "...accelerates dramatically. But if you said 'Well, what would cause it to accelerate dramatically?' one [cause might be] very significant movement to reimbursement, and nobody's moving that fast, they're all big talk. I don't blame them. They're being thoughtful and careful because the worst thing in the world from the purchaser's perspective is that they've put a lot of money into this and nothing's any different… If I believe, and I do, that [the important thing is] payment, and support for the small guys, I'm not seeing enough progress to believe that [a] tipping point will occur in the next seven years… The other reason is, and this could be incorrect, 80 percent of the outpatient care that Americans receive is received in the practice of a solo practitioner, or a two-person group… [You] can have all the big guys off doing terrifically on this stuff and you would've solved fifteen percent or twenty percent, tops, of this thing. So where most of the care is occurring is in the place that is struggling the [most]."

A Snapshot of EHR Adoption

A key component of President Bush's HIT initiative is the synthesis of EHR adoption measurements into an annual report on the overall state of EHR adoption. In October, 2006, the first of these reports was produced by a team of researchers at the Institute for Health Policy at Massachusetts General Hospital, and the School of Public Health and Health Services at George Washington University. The report evaluated the latest information on the state of EHR adoption in the U.S. health care system.

The report was built on a review of existing surveys, with a focus on four questions:

- What is the current level of EHR adoption among key provider groups; especially physicians in small groups or solo practice, large physician groups, and hospitals?

- What predicts whether or not a physician or hospital will adopt an EHR?

- Where are the gaps in adoption? Does adoption depend (and if so, how much) on location, organization type, specialty, involvement with vulnerable populations, or EHR capabilities?

- How can precise, timely data on EHR adoption best be collected?

All available surveys of EHR adoption were included. Of 36 surveys identified, the researchers were able to gather enough information to rate the quality of both the methodology and the content of 22 surveys. Only ten surveys received a high rating for methodology. The methodological ratings were based on the survey's accuracy in representing the population in question, the proportion of those surveyed who returned questionnaires, the questionnaire development process, and sample size. Surveys were rated on five areas of inquiry:

- Whether the practice had an EHR;

- The nature of the EHR's capabilities;

- Measures of incentives for EHR adoption;

- Measures of barriers to EHR adoption; and

- The ability to identify disparities in adoption among different vulnerable populations.

No survey was rated high in all five content areas. Only three physician or physician group surveys and one hospital survey were rated as having high quality content in at least three of five content areas. Only two surveys achieved a high quality

A Snapshot of EHR Adoption, continued

rating for both methodology and at least three of five content areas.

After one year of examination of the qualifying studies, a report was published with the following key findings:

- **EHR adoption is not occurring as rapidly as hoped.** The report estimated that 17 to 24 percent (closer to 24 percent) of physicians in ambulatory care settings use EHRs to some extent, and 4 to 24 percent (closer to 4 percent) of hospitals have adopted computerized physician order entry (CPOE), the best proxy in existing surveys for EHR adoption in these settings.

- **There is uncertainty about the availability of EHRs to physicians who serve vulnerable populations.** The data show that 8.6 percent of the nation's approximately one thousand community health centers and public hospitals have a full EHR and an additional 15.9 percent report have a partial EHR system. Providers who derive a smaller proportion of their practice revenue from Medicaid are more likely to report using EHRs than providers with a larger share of Medicaid patients.

- **Four factors drive EHR adoption.** These are financial incentives and barriers, laws and regulations, the state of the technology, and organization influences. *Financial barriers* include the high cost of EHR systems and providers' uncertainty about the return on investment. *Legal barriers* include concerns about newly created potential legal liabilities, privacy and other factors. *Technology-related barriers* include ease of use and obsolescence. *Organizational barriers* include size of practice or hospital, payer mix, level of integration of the care system, and organizational leadership.

The report found that approaches to measuring the adoption of EHRs could be greatly improved through developing a standardized, widely accepted definition of an EHR and of the adoption process, and through using generally accepted survey methodologies in collecting data on EHR adoption.

III. Conclusion

Implications

The leaders and experts interviewed for this report concur that the past four years have been valuable in focusing attention on the need to create a health care system that routinely uses HIT to achieve improved patient care and administrative efficiencies. Some of this progress is manifest in public discourse. There are more HIT policies, conferences, chat-rooms, associations, online newsletters, editorials, and op-ed pieces. The expectations of the health care industry and its consumers are rising.

Yet, it cannot be said that the nation is substantially closer to a ubiquitous, interconnected, interoperable HIT system now then when the president called for action in April 2004. For those who have been part of the HIT world for a while, hope for a nationwide EHR remains an unfulfilled goal, still beyond our collective grasp.

How many Americans have a true electronic medical record of up-to-date, reliable information that is used by our clinicians in the provision of care? How many physicians could electronically access critical health care information in the event of a catastrophic health care emergency? How many emergency rooms can electronically access essential health care data regarding critically ill or injured patients? How many communities are sharing data among providers to facilitate the efficient provision of care? Those who grapple daily with such questions say the truth is that improvements in these and other HIT areas since 2004 have been minimal.

Recommendations

At the end of the day, government has two tools to implement public policy: regulation and purchasing power. The bully pulpit, leadership by example, and other implements of moral persuasion are useful. But in this case, moral persuasion has made the case but has not delivered results. At the launch of HHS's ten-year plan on July 21, 2004, some 1,800 people participated. Attendees found the event energizing, visionary, and community building. To a reporter's question, "Does HIT have critical mass?" the response was "Critical momentum, not critical mass." Three years later, HIT continues to have momentum, but it has not achieved critical mass.

Aside from its attention to building blocks, the federal government has failed to use its clout to drive widespread implementation and use of HIT. The administration has focused on a few important issues, but has not followed through with action. Those pursuing its HIT agenda are left to wonder: Why not require that, as of a particular date, no federal funds will be spent on any HIT system that is not certified to be interoperable? Why not adopt reimbursement policies that reward physicians who use HIT for electronically prescribing? Why not move federal health care programs to performance-based reimbursement (which requires the digital collection, reporting and analysis of care data)?

HIT leaders and experts have similar questions for Congress: Why has no meaningful HIT legislation been enacted? Why has Congress only funded ONC at a fraction of what is requested or what would be useful? Why isn't Congress pressing the executive branch to more rapidly advance the use of HIT in achieving better administrative efficiencies and improved clinical performance?

Absent the willing and intelligent use of regulatory or purchasing power, it is not likely that all or even most Americans will benefit from a digital health care system by 2014. Americans may be offered personal health records by insurers and HIT vendors but it is unlikely that any clinician will be willing to use them. Or some may have an EHR, so long as it is with a particular physician who is part of a particular health system's network. And others may have a smart card or memory device that stores some personal health data but which cannot be accessed by all clinicians or providers.

The goal of an HIT system that allows clinicians and their patients to reliably, immediately, and transparently gain access to our individual health data by 2014 is achievable, but only if government uses its power to achieve HIT's critical mass.

Appendix A: Respondents and their Professional Categories

Foundations/Consumer Organizations

Carol Diamond, M.D., managing director, the Markle Foundation

John Rother, group executive officer of policy and strategy, AARP

Government

Carolyn Clancy, M.D., director, Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services

Robert Kolodner. M.D, national coordinator of health care information technology, U.S. Department of Health and Human Services

Michael Zamore, J.D., policy advisor to Rep. Patrick Kennedy (D-RI)

Health Plans

Jeffrey Kang, M.D., chief medical officer, Cigna

Charles Kennedy, M.D., vice president of health information technology, Wellpoint, Inc.

Health Providers

John Glaser, vice president and chief information officer, Partners HealthCare System

John Halamka, M.D., chief information officer, Harvard Medical School; chief information officer, CareGroup Health System; chair, Healthcare Information Technology Standards Panel

Helga Rippen, M.D., vice president of clinical informatics and analytics; medical director of technology transformation, Hospital Corporation of America

Private Sector (Vendor, Consultant)

David Brailer, M.D., Ph.D., chief executive officer, Health Evolution Partners; former national coordinator for health care information technology, U.S. Department of Health and Human Services

Kevin Fickenscher, M.D., chief medical officer and executive vice president of health care transformation, Perot Systems

Kevin Hutchinson, chief executive officer, SureScripts; member, American Health Information Community

Ned McCulloch, J.D., manager, government and congressional relations, IBM

Professional/Industry Association

William R. Braithwaite, M.D., Ph.D., treasurer, HL7 (Health Level Seven); vice chair, Healthcare Information Technology Standards Panel

Charles N. Kahn III, president, Federation of American Hospitals; member, American Health Information Community

Linda Kloss, chief executive officer, American Health Information Management Association

Mark Leavitt, M.D., chair, Certification Commission for Healthcare Information Technology

Janet Marchibroda, chief executive officer, eHealth Initiative

John Tooker, M.D., executive vice president and chief executive officer, American College of Physicians; president, eHealth Initiative

RHIOs/HIEs

Mark Frisse, M.D., professor of biomedical informatics, Vanderbilt University; director, MidSouth eHealth Alliance

Donald L. Holmquist,. M.D., J.D., chief executive officer, California Regional Health Information Organization

Endnotes

1. Testimony of D. Brailer before The Committee on Commerce, Science, and Transportation Subcommittee on Technology, Innovation, and Competitiveness United States Senate, June 30, 2005.

2. See: www.hhs.gov/healthit/community/background.

3. A request for proposals for trial implementations was posted in June, 2007, and contracts were awarded to nine health information exchanges (HIEs) to begin trial implementations of the NHIN on September 28, 2007. The trials' purpose is to further specify the common interfaces that the national HIEs need to interoperate. Awardees are to demonstrate real time information exchange based upon the new specifications by September, 2008.

4. Subsequent to this interview, on June 20, 2007, CMS announced a pilot project to provide PHR [Personal Health Records] to beneficiaries enrolled in certain Medicare Advantage and Part D plans.