FINAL REPORT

Key Challenges to Enabling Health Information Exchange and How States Can Help

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Abstract

There is widespread consensus that Health Information Exchange (HIE), the electronic sharing of patients' clinical data between delivery settings, is critical to improving the quality and efficiency of the healthcare system. Although the U.S. has had limited success to date establishing broad-based HIE, new federal policy initiatives place states in a central role to advance HIE. We examine the experiences in five states to provide early insights into the range of strategies states are adopting, the challenges they face, and their early successes. We conclude with policy recommendations to help states increase the electronic flow of clinical data.

Introduction

A central component of the US strategy to improve the quality and efficiency of healthcare is to enable the electronic exchange of health information (HIE) across care settings.[1] As a rapidly increasing number of health care providers adopt electronic health records (EHRs), the benefits that can be realized from these systems is substantially greater when patient data is not trapped within individual institutions. The timely sharing of electronic health information can improve health care quality, efficiency, and safety by ensuring that healthcare providers have access to comprehensive clinical information.[2,3,4] It also vastly expands the volume and quality of health-related data for secondary aims, such as public health programs and clinical research.[5]

While efforts to promote HIE have existed for nearly two decades, we have made slow progress towards nationwide exchange due to an array of barriers facing HIE efforts, such as those related to technology, stakeholder engagement, and an uncertain business case for the financial investment.[6,7] In response, the Office of the National Coordinator for Health Information Technology (ONC) allocated funding from the Health Information Technology for Economic and Clinical Health (HITECH) Act to promote state engagement through the State Health Information Exchange Cooperative Agreement Program. States are being asked to implement approaches to encourage, develop, and sustain HIE.[8] In this paper, we describe a range of approaches currently underway in five states and use these case studies to identify both early successes and challenges. The case studies offer key lessons that will inform policymakers and others working to realize the vision of sustainable nationwide HIE.

Policy Context

The State HIE Cooperative Agreement Program ("the Program") provides $560 million to the 56 states and territories to advance secure, statewide HIE.[9] Under this four-year program, states or entities qualified by the state (state designated entities) are charged with creating the necessary governance, policies, technical services, business operations, and financing mechanisms to advance HIE. The motivation for a state-level program was to enable tailored strategies to address state-specific needs, as well as to use a variety of policy and legislative levers to enable HIE.

The Program is closely coordinated with the centerpieces of the HITECH Act: the Medicare and Medicaid EHR Incentive Program and meaningful use requirements, which describe the ways in which EHRs must be used for providers to qualify for incentive payments. The initial set of meaningful use

criteria established basic objectives for HIE in a somewhat narrow set of areas: exchange of laboratory results, clinical care summaries, and public health data as well as electronic prescribing.[10] The first stage of meaningful use requirements for HIE were limited because of widespread consensus that the nation lacked adequate infrastructure to support broad-based HIE. Therefore, the central motivation for the State Cooperative Program was to create options for providers to engage in HIE such that future stages of meaningful use can ask more of providers in this area. Stage 2 meaningful use, which commences in 2014, markedly expands requirements for HIE between providers to improve care coordination and care quality, and reduce inefficiencies such as duplicative testing. Therefore, the success of states under the Program is critical to achieving the core goals of HITECH in general and meaningful use in particular.

Methods

We selected five states to serve as case studies that reflect the spectrum of different approaches to enable HIE that are currently being pursued under the Program. The five states—Florida, Indiana, Maryland, Montana, and Oregon—vary across an array of demographic dimensions: population size, region, urban/rural makeup, and maturity of HIE at the beginning of the Program. These dimensions, in turn, shape the HIE technical models and strategic approaches states pursue.

In each state, we conducted semi-structured, phone-based interviews with a diverse range of stakeholders identified with the assistance of each state's health IT coordinator. They included hospitals, physician organizations, community health centers, and local/state government, such as public health departments and Medicaid. We also spoke with national and local laboratories, consumer groups, and EHR and HIE vendors. Forty-five stakeholders were interviewed across the five states between September 2011 and December 2011. Interviews were transcribed and then used to capture four key elements unique to each state: maturity of HIE prior to the Program, strategies to expand HIE adopted under the Program, and successes as well as challenges to expanding HIE. Transcripts were also used to identify crosscutting enablers and barriers to expanding HIE (see Exhibit 1).

Results

Overview of the Five States

Florida

Maturity of HIE Prior to HITECH. Prior to the Program, Florida had several HIE initiatives. From 2005 to 2008, a state program provided grants to local/regional health information organizations (HIOs) for planning, implementation, and training, which led to the establishment of five operational HIOs providing HIE coverage in a limited number of the states' 67 counties. A second program, ePrescribe Florida, started in 2006 as a statewide initiative focused on achieving widespread adoption of ePrescribing (eRx) tools.

State Strategy. Florida's state Medicaid agency, the Agency for Health Care Administration (AHCA) was awarded $20.7 million in Program funds.[11] AHCA decided to increase the level of HIE by enabling services that support both existing HIOs and newly emerging efforts to build interconnected networks (known as a network-of-networks model). For example, some state money will go towards establishing a record sharing hub that initially will enable exchange of lab results and clinical care summaries between providers participating in different HIOs. For providers who are not connected to HIOs, the state is investing in Direct, a public/private initiative to facilitate point-to-point transport of health information through a secure, internet-based connection.

Notable Successes to Date. Strong collaboration between state governmental organizations to promote HIE is perceived positively by stakeholders. In particular, the Florida HIE and the state public health department are working closely to enable the submission of reportable laboratory results to the public health department and immunization data to the state immunization registry. Stakeholders perceive that these activities will make a clear case for the value of expanded HIE.

Primary Challenge to Date. The state's approach has not effectively addressed barriers to EHR adoption and connectivity that facilitate HIE. These barriers affect much of rural Florida and are driven by the many small, independent practices with poor internet access (dial-up or no access) and financial constraints. Therefore, even the use of Direct will not enable these providers to engage in HIE.

Indiana

Maturity of HIE Prior to HITECH. Indiana had robust HIE prior to the Program with five functioning HIOs, each covering a different state region with an urban center. The five HIOs (operational from 5 to

15 years) contain more than 12 million patient records and have approximately 12,000 participating physicians.[12]

State Strategy. The state sought a limited role in directly enabling HIE to occur and therefore a state designated entity was awarded the $10.3 million in Program funds. The SDE uses funds to bolster existing HIOs and fills the gaps by issuing grants to rural and underserved providers, rural hospitals, critical access hospitals, and community health centers to assist them in connecting to an HIO. It is also funding the HIOs to connect to one another to ensure that providers only need to connect to a single HIO in order to participate in statewide exchange.

Notable Successes to Date. By funding rural providers to connect to existing HIOs, Indiana is decreasing the divide between rural and urban HIE rates. This approach also avoids building centralized infrastructure that stakeholders may not want to maintain after Program funding ends.

Primary Challenge to Date. Though the five local HIOs agree on the notion of collaborating to enable statewide HIE, there is inherent competition among them to sign up new providers. Combined with uncertainty about the business case to establish and sustain HIO-to-HIO connectivity, the HIOs are more focused on ensuring their individual success than success of state-level HIE.

Maryland

Maturity of HIE Prior to HITECH. HIE efforts in the state of Maryland are relatively new. Legislation that passed just prior to HITECH in 2009 created a statewide exchange program and allocated $10 million in funding though Maryland's all-payer hospital payment system. This initial funding was intended to establish the technical infrastructure and help offset participant costs in the early years of the statewide HIE. The statewide HIE is run by the Chesapeake Regional Information System for Our Patients (CRISP).

State Strategy. The state is using their more than $9 million in Program funds to garner broader participation of hospitals and national labs in CRISP. Hospitals are mandated to submit Admissions, Discharge, and Transfer (ADT) data through CRISP, and the hope is that hospitals will feel that it is valuable to pay for their affiliated ambulatory practices to connect to CRISP so that they can access this data. The state will use ADT data to measure hospital-specific performance on readmissions and enhance financial incentives linked with performance.

Notable Successes to Date. Stakeholders perceive the 2009 state legislation as critical to creating a supportive environment for HIE, freeing up Program funds to accelerate progress already underway in the

state. Legislation provided initial funding for developing the state-provided HIE infrastructure, prohibited the sale or transfer of data, created protections for data privacy and security, and issued the mandate for hospitals to connect to CRISP.[13] These laws have ensured widespread participation both by mandate and by addressing key concerns of stakeholders (i.e., funding, privacy, and security).

Primary Challenge to Date. While the state felt that hospitals would see sufficient value in ADT data sharing and performance reporting to justify subscription fees that support ongoing exchange, hospitals would like additional use cases that make a more compelling business case for their participation. CRISP reports ongoing challenges trying to connect to ambulatory doctors directly due to lack of technical resources and infrastructure on the part of providers as well as an idiosyncratic processes of establishing provider office connectivity.

Oregon

Maturity of HIE Prior to HITECH. Approximately 65 percent of private providers and 60 percent of community health centers in Oregon were using EHRs with HIE capability prior to the inception of the Program, many of them through Epic's Care Everywhere software.[14,15] In addition, there were several HIOs and many large labs that electronically exchanged results with providers.

State Strategy. Due to the robust array of HIE services in Oregon, the state's strategy is to work in concert with HIOs and to offer solutions outside of Epic. With their $8.5 million in Program funds,[9] the state is establishing Direct exchange capabilities to connect existing HIOs and providers who do not use Epic.

Notable Successes to Date. Stakeholders feel that focusing on Direct exchange, which requires relatively little infrastructure and investment, complements the local exchange environment. A more robust and expensive state-level exchange would compete with local exchange efforts and not be viable in the long-run.

Primary Challenge to Date. Despite support for a complementary state-level approach, there is concern about whether there is a sufficient subscriber base that will be willing to pay for state-offered services in the long term. Stakeholders feel that, for the markets with demand for HIE, exchange is already taking place, with services that meet current needs.

Montana

Maturity of HIE Prior to HITECH. Prior to the Program, Montana's HIE activities were very limited. The Health Information Exchange of Montana (HIEM) was Montana's only HIO facilitating electronic messaging between five unaffiliated hospitals and two community health centers.

State Strategy. Because there is very limited existing HIE and a need to provide solutions quickly to enable providers to meet meaningful use, Montana is using their $5.8 million in Program funds to enable rapid facilitation of Direct exchange capabilities and related services.[16,17] Funding is also going to critical access hospitals in the form of grants to support participation. The state plans to establish a central repository to facilitate quality improvement initiatives and clinical decision support activities, as well as a range of secondary uses, such as comparative effectiveness research.

Notable Successes to Date. Grant funding for critical access hospitals support an HIE needs assessment, guidance from IT professional in purchasing and installing hardware, and funds to cover both the cost of installing the EHR vendor interface and the first year of maintenance. These grants are perceived as ensuring the participation of providers who could not otherwise afford to engage in HIE.[18]

Primary Challenge to Date. There is a lack of stakeholder buy-in for the state's secondary use of data. Some organizations see the state data repository as a necessity, but have qualms about releasing the data for use by third parties. Some providers support using the data to examine best practices and to improve quality, but want these activities to remain at a local level.

Common Enablers

Beyond the successes and challenges that stood out in each state, a set of enablers and challenges were raised by stakeholders in multiple states. Three common enablers included: 1) effective use of legislation; 2) effective use of policy levers, such as grants, incentives, and executive orders; and 3) strategic leveraging of existing investments in HIE.

Effective Use of Legislation. States have effectively used legislation to ensure strong privacy and security rules that provide assurances around data ownership and use, a persistent concern among providers and patients. Of particular concern are data breaches and unauthorized access to data.[19] In response, states have passed new legislation. For example, Maryland's legislation strengthens privacy and security regulations overall with specific provisions for protected health information held by an HIO.

States have also effectively used broader health reform legislation to bolster HIE. For example, some states are putting in place legislation to support the development of accountable care organizations (ACOs), which is having an indirect effect of increasing demand for HIE. In Oregon, stakeholders report that a bill to implement a statewide system for coordinated care organizations similar to ACOs is leading to greater interest in HIE.

Effective Use of Non-legislative Policy Levers. States are successfully using other policy levers to promote HIE. These levers include establishing incentives and favorable procurement rules, as well as sub-grant programs to priority providers, such as critical access hospitals and health centers. Indiana and Montana are directly subsidizing HIE. Other states, such as Maryland, are funding HIE indirectly by expanding EHR incentive programs that cross-subsidize HIE.[20]

Strategically Leveraging Existing Investments in HIE to Enable Statewide Exchange. There is broad recognition that HIE needs to conform to local market conditions in order for it to be sustainable. States, such as Indiana and Oregon, have embraced existing HIE networks and trading relationships, and focus on complementary activities. For example, Indiana is facilitating HIO-to-HIO connectivity by specifying and requiring adherence to exchange standards and policies in order to receive grant funding.

Common Challenges

From stakeholder discussions, we also identified a set of cross-cutting challenges: 1) limited demand for HIE; 2) sustainability; and 3) HIE integration into provider workflow.

Limited Demand for HIE. A fundamental challenge is the pervasive sentiment among providers that HIE is valuable but not essential. Compared to the many priorities competing for provider attention, HIE falls towards the bottom of the list. Stakeholders revealed that while meaningful use has been a strong driver for providers to adopt EHRs, it has not translated to greater focus on HIE, largely because the initial HIE requirements for meaningful use only require that providers have the capability for HIE, not that they actually engage in exchange.[21] Without strong demand or incentives for HIE, states are struggling to garner sufficient support for expanding exchange capabilities.

Sustainability. Across states, sustainability models for HIE remain in the nascent stages. With the exception of Indiana, which is relying on each of the five local HIOs to develop their own sustainability plans, financial sustainability is a major concern raised by stakeholders in all other states. They indicated that it is not clear which types of providers, or whether any providers, will be willing to pay for state-

offered services once Program funding ends in 2014. HIE sustainability presents a "chicken and egg" problem: providers with limited options and/or funds for HIE are reluctant to use state-offered services because it remains unclear whether these services will be available in the long term, which in turn threatens the long term viability of state services.

Clinician Workflow Issues. Representatives from provider organizations across states report that when information is exchanged electronically between different entities, the data is not effectively integrated into existing patient records and workflows. As a consequence, providers cannot realize the benefits of HIE. However, integrating electronically exchanged data at the point-of-care is fraught with issues, such as poor usability design of EHR systems and inconsistent use of available technical standards for the exchange of clinical care summaries. While these issues do not fall specifically under the purview of the Program, they are universal concerns that must be addressed in order to garner the provider support necessary for HIE efforts to succeed.

Discussion

We interviewed a range of stakeholders in five states in order to understand how they are working to establish broad-based, sustainable HIE under the State HIE Cooperative Agreement Program. We found that states are pursuing varied approaches, which are heavily shaped by HIE maturity at the outset of the program. The ability to customize approaches was perceived as highly valuable, supporting federal policymakers' decision to design a state-level program. We also found a substantial degree of common ground in both the successes and challenges to date. Tackling barriers to HIE using policy and legislation was viewed as critically important. However, even lowering barriers was not sufficient to overcome the lack of demand for HIE. Until stakeholders perceive HIE as core to their business model, sustainable, broad-based HIE will be difficult to achieve.

In order for HIE to succeed, a wide array of barriers must be addressed, spanning legal, workflow, competitive, and financial territory. None are easy. A key role for government is to create the conditions in which HIE can be successful by helping to tackle these barriers. With Program support, states have been able to address certain barriers by enacting legislation and policies. Policies in the area of privacy and security, specifically around data ownership and use, are viewed with particular favor, suggesting that states who have not yet done so may want to consider pursuing such policies. Although it is beyond the purview of the Program, given that provider workflow remains a pervasive challenge, it is a domain in which new policy efforts could be tremendously helpful. To this end, Stage 2 meaningful use EHR certification criteria require inclusion of the Direct standard and usability standards to address provider

workflow issues.[22] At the state level, HIE leadership could engage Regional Extensions Centers to develop strategies to support providers in incorporating exchanged data into their workflow.

Even if these and other barriers to HIE are successfully addressed, there is still the importance of overcoming competitive issues. Healthcare organizations often view patient data as a strategic asset that is not in their business interests to share.[23] Furthermore, providers are being asked to shoulder the cost of engaging in HIE, but feel that the benefits do not accrue to them personally. However, none of the other stakeholders felt they benefited sufficiently from HIE to be willing to pay for it. This creates lukewarm support for state-led efforts to promote greater connectivity and makes it challenging for states to find a sustainable business model unless they designate HIE as a public good that requires ongoing public funding.

Creating demand for HIE is therefore the key challenge that states have yet to tackle. Once they do, sustainability will follow. Meaningful use is a force designed to create provider demand for HIE, but it is following an incremental approach that may not move quickly enough for demand to reach a tipping point before the Program funding period ends. Stage 2 meaningful use requirements will help by introducing new thresholds for exchange and use of health information (e.g., requiring an electronic summary of care record for 10 percent of transitions/referrals and secure messaging with patients). However, the criteria focus on improving access to information and not on how data can be used to change care processes and improve patient outcomes, which is the focus of Stage 3 meaningful use requirements and where the majority of value for providers will be realized.[24]

States may therefore want to consider additional policies to increase demand for HIE in the near-term. At one extreme, mandating HIE would accomplish this. However, the efforts in Maryland suggest that mandates without clear perceived value may not be sufficient and are likely to raise concern among stakeholders. States could also consider additional incentives for HIE participation, such as Maryland's strategy of working with private payers to establish its own EHR incentive program. Such efforts are likely to be received more positively than mandates, but require resources that many states may not have. A third option would be to increase demand indirectly through policies that promote models of care with HIE at their center. ACO-related demonstration programs like Oregon's serve as one example. At a minimum, states should develop contingency plans in order to ensure that the significant state and federal investments in HIE can continue to be leveraged beyond the Program period.

Conclusion

The case studies suggest that HITECH, and the State HIE Cooperative Agreement Program in particular, have served as a strong catalyst for building interest and awareness in HIE. States are taking varied approaches that are shaped by their local healthcare markets, provider needs, and prior investments in HIE. Often, these approaches coordinate with broader health reform efforts and new models of care delivery in which HIE can play a central role. However, we are far from achieving broad-based HIE and creating the perceived need for HIE that is essential to sustaining State HIE after the end of the Program. Our early findings highlight important areas where state and federal policy-makers can intervene to help ensure that this occurs.

Exhibit 1. Summary of State Characteristics

Classification	Florida	Indiana	Maryland	Montana	Oregon
Funding Amount	$20,738,582	$10,300,000	$9,313,924	$5,767,926	$8,579,992
Size of State Population*	18,801,310	6,483,802	5,773,552	989,415	3,831,074
Existing HIE	Grants to local and regional HIOs; ePrescribing initiative	Local HIOs; Indiana State HIE	Privacy and security legislation; mandate for hospitals to connect to state services	Regional network	Local HIOs; high EHR adoption
Primary Success to Date	Collaboration between state agencies and programs like Cooperative Agreement Program and the State Medicaid EHR Incentive Program	Dispersing HIE funds as grants to rural providers to connect to HIOs	Creating a supportive legislative environment	Connecting critical access hospitals to State HIE services	Forging connections among established HIOs
Primary Challenge to Date	Lack of stakeholder buy-in related to costs and sustainability; rural areas lack the resources and basic technologies to participate	Competition among 5 hospital-owned HIOs inhibits strategy to build connections between them	Demonstrating value to hospitals	Lack of stakeholder buy-in related to data use and analytics	Lack of stakeholder buy-in related to use cases

*U.S. Census Bureau 2010, Resident Population Data.

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