

# Evaluation of the State Health Information Exchange Cooperative Agreement Program:

## Case Study Synthesis: Experiences from Five States in Enabling HIE

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**Prepared for:**  
The Office of the National Coordinator for Health Information Technology  
U.S. Department of Health and Human Services  
Washington, D.C.

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*at the* UNIVERSITY of CHICAGO

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### Abstract

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NORC at the University of Chicago interviewed a variety of stakeholders in five states to assess state progress in enabling health information exchange (HIE). We found that states enable technical and governance structures based on the needs of their local markets. Stakeholders have a variety of priorities and strategies to exchange data electronically, both to meet meaningful use (MU) and to best serve their patients. Experience with and existing HIE infrastructure benefit states, but these are not necessary conditions for successful HIE, while factors such as cost, provider awareness, large health system participation, and interoperability are important concerns across all states.

### Introduction

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The enactment of the American Recovery and Reinvestment Act (ARRA) and the Health Information Technology for Economic and Clinical Health (HITECH) Act in 2009 created unprecedented opportunities to enable widespread use of electronic health records (EHRs) and health information exchange (HIE) by providing guidance and financial incentives. In 2009, the Office of the National Coordinator for Health Information Technology (ONC) created the State HIE Cooperative Agreement Program, announcing the availability of \$564 million for states and territories to enable HIE.<sup>1</sup> Since the State HIE Cooperative Agreement commenced, several additional initiatives have been announced that further align federal priorities in support of HIE. For example, the Centers for Medicare & Medicaid Services (CMS) released its final rule on Stage 1 MU requirements in July 2010, which announced the availability of incentive payments for providers and hospitals for the meaningful use of certified EHR technology.<sup>2</sup> In 2010, ONC launched the Direct Project, providing a set of standards, policies, and services to transport health information point-to-point through a secure, fast, and inexpensive “push” model, thereby creating an additional method for HIE.<sup>3</sup> ONC also funded the Challenge Program in December 2010 to encourage development and innovation to address other persistent barriers in HIE, for example, transitions to long-term and post-acute care, and consumer-mediated exchange.<sup>4</sup>

The purpose of the State HIE Cooperative Agreement Program, authorized by section 3013 of the Public Health Services Act and amended by the HITECH Act, is to “facilitate and expand the secure, electronic movement and use of health information among organizations according to nationally recognized standards.”<sup>5</sup> The foundational notion behind the program is that the timely sharing of electronic health information can improve health care quality, efficiency, and safety. It does so by ensuring health providers have access to comprehensive clinical information that allows them to provide better patient care. It also vastly expands the amount and quality of health-related data, which can improve public health programs and clinical research, and support quality, efficiency, and safety improvements.<sup>6</sup> ONC is at the helm of this project, establishing the policies and standards to facilitate the data exchange, query, and aggregation necessary to achieve the secure movement and use of health information.<sup>7</sup>

To understand the effects of the State HIE Cooperative Agreement Program on the progress of HIE, ONC contracted with NORC at the University of Chicago (NORC) to conduct a multi-year evaluation of the program. As one prong of the State HIE Program evaluation we conducted in depth case studies of five states. These states, Maine, Nebraska, Texas, Washington, and Wisconsin, are pursuing diverse strategies and have made progress in enabling HIE.

This report presents a brief overview and a cross-cutting synthesis of key findings from the five states two years since the inception of the program. By focusing on these states, our hope is to identify potential lessons for other states as they move forward on establishing a range of HIE services.

**Methods**

The primary objectives of this study are to: 1) Assess the experience of states in establishing governance structures and technical services to enable health information exchange, and implementing privacy and security frameworks; 2) Assess stakeholder priorities, current use, and anticipated need for information exchange; 3) Identify common enablers, barriers, and challenges states encounter during implementation; and 4) Collect and characterize lessons learned during implementation.

NORC identified these five states based on level of progress in enabling statewide HIE using different methods in diverse local environments. The five chosen states varied in population size, geographic makeup (i.e., rural versus urban areas), HIE technical models, and adopted governance structures. Between November 29, 2011 and March 21, 2012, we conducted a qualitative, in-depth examination consisting of site visits, semi-structured discussions, and focus groups with larger and small practice physicians. We held discussions with a variety of stakeholders, as shown below in Table 1.

**Table 1.** Case Study Interview Respondents by Stakeholder Type

Respondent Type	Total
Large health systems representatives ambulatory-care providers	22
Provider Associations	15
State Designated Entity (SDE) Directors and support staff	15
State Health Information Technology (HIT) Coordinators and support staff	11
Other respondents as relevant for the state (Quality Organizations, Indian Health Service, Employer Organizations, Advisory Board Members)	8
Medicaid personnel	6
Regional Extension Center leads	6
State Public Health Office personnel	6
Health Information Organization representatives	5
Vendors (EHR, HIE, Health Information Service Provider (HISP) for Direct)	5
Consumer advocates	4
Lab representatives	2
<b>Total Respondents</b>	<b>105</b>

## Key Findings

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This report highlights the key factors that affect each state's planning and implementation experience. The individual case studies describe the governance, technical, and consent models established to instantiate the state plans. The case study synthesis brief is intended to provide context for state approaches, describing how certain factors influence the baseline, development, and implementation of HIE activities.

### The Effects and Importance of Pre-HITECH Initiatives

All five states had health IT initiatives underway prior to receiving ONC funding, a fact that contributed substantially to the states' readiness and their subsequent implementation progress. In some cases, these initiatives consisted of pilot and demonstration projects, while in others policy levers paved the way for state-led services. Stakeholders report that previous HIE efforts in their states facilitated collaboration and established trust between state officials and other stakeholders, which has been integral to states' success. It also created a knowledge base and a "culture" receptive to state-led HIE activities.

For example, prior to the State HIE Cooperative Agreement Program, Maine pursued several initiatives to promote exchange. Most notably, the 2008 Maine Health Information Network Technology demonstration project initiated efforts to enable exchange among the state's large health care systems. By mid-2010, 56 percent of the population was part of the exchange system and that number continues to grow.<sup>8</sup> This pilot led to both the formation of the state's lead technical entity, HealthInfoNet (HIN), and provided proof of concept for state-led HIE activities. HIN was designated by the state as the lead entity responsible for enabling HIE services in 2010. Maine also has a long history of engaging with consumers, dating back to 2005, when HIN convened a consumer stakeholder group, consisting of consumers, consumer advocates, and others, to develop a vision for how Maine citizens would benefit from electronic clinical information sharing. This committee was instrumental in developing the opt-out consent policy later adopted by the state. In addition to the opt-out consent policy, in 2011, Maine passed legislation, LD 1331 (An Act to Increase Health Care Quality through the Promotion of Health Information Exchange and the Protection of Patient Privacy, 2011),<sup>9</sup> that allows patients to opt-in for the electronic exchange of sensitive data.

Nebraska's lead entity, the Nebraska Health Information Initiative (NeHII), began in 2005 as a result of collaboration among health organization representatives interested in establishing a statewide EHR system. The state was not able to establish a common EHR; however, NeHII remained active and, in 2007, began collaborating with state leadership on strategic planning for statewide HIE. These activities resulted in a pilot project that securely connected the Omaha health community and, in doing so, demonstrated the feasibility and value of HIE, and secured the support of local stakeholders.<sup>10</sup> By the end of 2009, NeHII reportedly covered 35 percent of Nebraska's hospital beds.<sup>11</sup> Other Nebraska HIE initiatives that predate HITECH include the Electronic Health Behavioral Health Information Network (eBHIN), the first network of its kind supporting the exchange of behavioral health information, and the Nebraska Statewide Telehealth Network that connects all state hospitals and public health departments.

In 2007, state legislation established the Texas Health Services Authority (THSA), a public-private nonprofit corporation, to promote and coordinate health IT and HIE efforts. THSA worked out of the governor's office as an advisory committee until 2010, when the Texas Health and Human Services Commission (HHSC) received State HIE Program funds and allocated them to THSA. As the state designated organization, THSA was able to capitalize on three years of relationships and intimate

knowledge of the local market, in particular the importance of health information organizations (HIOs), to operationalize the state plan.

Efforts to develop HIE in Washington date back to the 1990s, when the state’s goal was widespread investment in HIE solutions. The results included a variety of private exchanges, HIOs, and data repositories, as well as relationships forged between the eventual leaders of the State HIE Program. In 2009, the state legislature responded to ARRA and HITECH by passing Substitute Senate Bill 5501 to initiate Washington’s HIE project. The bill designated the Health Care Authority (HCA) as the program’s governing organization, and empowered it to select a lead technical organization and convene other groups to advance HIE activities in the state. Past relationships and widespread enthusiasm for HIE facilitated a 14-month development in which HCA selected OneHealthPort as the SDE and Axway as the technology vendor, and formed an oversight board of stakeholders. Shortly thereafter OneHealthPort began enabling its hub and technical services.

“I think because we had an existing environment of collaboration and partnership, prior to these things coming along, we all worked together closely. So, it’s no surprise that the founding organizations are who they are.” –*Wisconsin hospital representative*

In Wisconsin, in 2005, the eHealth Care Quality and Patient Safety Board was founded to guide legislative and regulatory actions, coordinate private and public stakeholders, and maximize federal financial opportunities. Among their subsequent efforts were the Health Information Security and Privacy Collaboration (HISPC) grant project and the formation of the Wisconsin Health Information Exchange (WHIE), a regional HIO. A provision in the 2007 Wisconsin Act 20 created a tax credit for providers who purchase software or hardware used to maintain medical records in electronic form. Providers could claim up to 50 percent of the amount expended. However, state funding was deferred until 2012. The state also initiated several independent projects to connect state public health systems with EHRs to other clinical systems, including linking the Wisconsin Immunization Registry data to EHRs and supporting electronic laboratory reporting for public health conditions, giving Wisconsin a head start on HIE initiatives.

### Health Care Market Characteristics

The characteristics of a state’s local health care market indelibly shape its implementation strategy, as well as its primary use cases for HIE. Table 2 arrays some of these factors that propel states towards particular technical models and planned use cases. Among them, geographical and population characteristics are notable determinants of state needs and strategy. For example, urban centers tend to have greater patient volume and greater need for electronic exchange and record keeping from an administrative management and care coordination perspective. In urban environments like cities in Washington and Wisconsin, providers often describe working at multiple locations—in different hospitals or at multiple offices of the same practice—and seeing patients with providers and specialists at different locations and not necessarily in the same health systems. As such, providers across states identify a shared need to connect with community records and with in- and out-of-system providers in order to obtain accurate and complete patient health histories. In this environment, exchange of health information tends to occur in a more decentralized way that leverages mechanisms offered by local providers.

The pressures and needs in urban areas are in contrast to those of primarily rural states whose population centers draw patients from long distances to procure health care. Patients in rural states often rely on small regional care centers for primary care and must travel to see multiple providers for major health concerns, which can make proper care coordination a challenge. In this environment, exchange of health information and data storage in a central repository can allow providers to collect otherwise diffuse health records to provide better care and coordination, as illustrated by the approaches taken in Nebraska and Maine. In contrast, by virtue of its geographical size and dispersed population, Texas has opted for a decentralized approach by assisting existing regional networks and supporting new ones to eliminate “white space” areas that are lacking HIE services. This approach allows local stakeholders to determine and provide services based on the precise needs of their target users while leveraging existing HIE services and/or HIOs instead of building redundant or competing systems. Relatedly, in general, the existence of large hospital systems, integrated delivery networks (IDNs), regional HIOs, and other non-state exchange creates a market for HIE. In some cases, these state alternatives increase collaboration and in others they create competition, but in either case the greater the presence of HIE, the more awareness and potential interest.

Another important market factor is the role of large health systems. Large health systems influence HIE in several ways: 1) They have the technical infrastructure to support EHRs and HIE; 2) They often deliver the bulk of health services in a local market, which may create competitive pressures in favor of HIE; and 3) They appear to be supporting non-state led options for HIE, including private networks and affiliations with providers in their community. Although the literature is limited on this subject, one study found that less competitive marketplaces tend to have greater hospital participation in regional HIOs (and by extension HIE activities).<sup>12</sup> The same study found that hospitals with a large market share, as well as non-profit versus for-profit hospitals, are more likely to participate in regional HIOs. This is true in Maine, where approximately 70 percent of primary care providers are owned or affiliated with large health care delivery systems or IDNs that are exploring alternatives to state-led HIE services. In addition, there are four major health systems that provide approximately 40 percent of the acute care beds. With such a significant stake in the market, the decision of a health system to pursue private or public HIE undoubtedly influences the market. These health systems are pursuing private HIE because it allows them greater control of the information and how it is exchanged versus the control they would have in a public or state-enabled HIO. According to a 2011 KLAS performance report, between 2010 and 2011 the number of live public HIOs in the country grew from 37 to 67 HIOs, while the number of private HIE initiatives increased from 52 to 160.<sup>13</sup>

Another important market factor is the presence of small versus large practices, and independent versus health system-owned and affiliated providers. In large practices, patient volume means that administrative and clinical management is simplified by conversion to electronic files and the larger practices have greater resources to invest in EHRs and HIE. Moreover, when practices are part of a larger corporate entity they have options to exchange information by leveraging the infrastructure of the corporate entity, which allows the practice a lower cost of entry. Large physician practices often drive EHR adoption and HIE in a similar way as large health systems: their size and affiliations necessitate adoption and they have enough members for their decisions (e.g., in vendors, service types, and whether to enable state-led or private HIE) to influence the market. In Wisconsin, approximately 74 percent of practicing physicians are in a group practice of 50 or more, and 67 percent are in practices of 100 or more. An estimated 76 percent of practices have implemented EHRs. Greater EHR penetration among these large practices creates technological savvy that, by extension, increases demand for technological solutions and is unique to certain states and markets. Provider practices generally seem to be opting for private HIE options, in some cases as a natural consequence of being affiliated with a



larger hospital system or an independent physician association, and in other cases because they are already using EHR products that offer HIE capabilities.

One final important market factor is the existence and influence of technology vendors. The services that vendors offer in a local marketplace inevitably influence the evolution of that marketplace. The individual reports will address these issues in greater detail and describe the constellation of factors operating within each state. In brief, EHR vendors currently offer a range of HIE solutions that give providers options outside of local/regional HIOs or state-led services. In others, states are focusing on services that fill gaps in the vendors’ offerings.

**Table 2.** Characteristics of the Health Care Markets by State

	Maine	Nebraska	Texas	Washington	Wisconsin
Population Size <sup>i</sup>	1,328,361	1,826,341	25,145,561	6,724,540	5,686,986
Population Density per Square Mile <sup>ii</sup>	43.1	23.8	96.3	101.2	105.0
Percent Urban Population <sup>ii</sup>	38.7	73.1	84.7	84.1	70.2
Primary Care Physicians per 100,000 <sup>iii</sup>	103.6-249	77.3-84.5	63.5-77.2	95.4-103.5	95.4-103.5
Presence and Impact of Large Health Systems	✓	✓	✓	✓	✓
Physician Practice Size	Large networks: 70% of primary care providers are owned or affiliated with large health care delivery systems or IDNs	Mixed: large practices in major cities, small practices in rural areas	Small: typically consisting of practices of 5 or fewer physicians; approximately 75% of physicians are in small practices	Mixed: large and small practices	Large; 74% of physicians are in practices larger than 50; 67% are in practices > 100

i. Population estimates, physician practice sizes, and IDNs from state plans submitted to ONC.

ii. Population density and percent urban population from U.S. Census Bureau (Release date: February, 2011).

iii. Physician data from the AMA Physician Masterfile (December 31, 2010).

### State Approaches to HIE and Implementation Experiences

In August 2009, ONC issued a funding opportunity announcement (FOA) intended to assist states in developing a framework to facilitate HIE. In particular, initial activities were to focus on “developing statewide policy, governance, technical infrastructure and business practices needed to support the delivery of HIE services.” ONC required states to submit strategic and operational plans that outlined their approaches and allowed states latitude in determining the most appropriate approaches based on their individual needs. Here we will describe not only the plans put forward by the states to address issues like governance, technical, and consent, but also the services they went on to implement.



### Leadership and Governance Models: Decoupling of Policy and Technology Roles

Prior to the State HIE Cooperative Agreement Program, many HIE initiatives were led by a single entity that controlled both policy and technology. A single lead entity was also the dominant model in early statewide HIE efforts, such as the Delaware Health Information Network (DHIN), the first statewide HIO.<sup>14</sup> Under the current program, different entities often play governance and/or technical operator roles, and the roles of these entities are likely to evolve over time, decoupling the policy and technology roles. This decoupling is far from universal (e.g., in South Carolina and South Dakota the state is responsible for both the governance and technical architecture of statewide HIE). But the five states profiled in this report all chose to decouple governance and technical functions in their governance approaches, which stakeholders in these states generally regard as an effective strategy. Table 3 provides details on governance models, lead organizations, and funding by state.

**Table 3.** State Planning, Leadership, and Funding Characteristics

Classification	Maine	Nebraska	Texas	Washington	Wisconsin
<b>Funding Amount</b>	\$6,599,401	\$6,837,180	\$28,810,208	\$11,300,000	\$9,441,000
<b>Recipient of State Funds</b>	State of Maine/ Maine Centers for Disease Control and Prevention, Office of the State Coordinator for HIT	State of Nebraska, The Nebraska Information Technology Commission's eHealth Council	Texas Health and Human Services Commission (HHSC)	Healthcare Authority (HCA)	State of Wisconsin
<b>State Designated Entity (Lead Organization)</b>	HealthInfoNet	Nebraska Health Information Initiative	Texas Health Service Authority	OneHealthPort	Wisconsin Statewide Health Information Network
<b>Strategic Approach*</b>	Public Utility	Orchestrator, Public Utility	Capacity Builder, Orchestrator	Orchestrator, Public Utility	Elevator, Orchestrator
<b>Strategic/Operational Plan Approved</b>	8/16/2010	11/15/2010	11/3/2010	12/10/2010	12/21/2010

\*Strategic approach refers to the ONC strategic model classification scheme, which is comprised of four models: the elevator, capacity-builder, orchestrator, and public utility models. The elevator model involves a “rapid facilitation of directed exchange capabilities to support Stage 1 meaningful use.” The capacity-builder model features “bolstering of sub-state exchanges through financial and technical support, tied to performance goals.” The orchestrator model is a “thin-layer state-level network to connect existing sub-state exchanges.” Finally, states using the public utility model “are providing a wide spectrum of HIE services directly to end-users and to sub-state exchanges where they exist.”<sup>15</sup>

Empowering a non-state lead organization to procure and manage the HIE technical infrastructure benefits both the state and the HIE Program. For example, in times of financial hardship when states are experiencing budget cuts, a non-governmental lead technical organization may pursue other business lines for revenue to maintain operations. The decoupling of governance and technical leadership roles also allows entities to “play to their strengths.” Using this approach, the state provides guidance based on the policy and legislative environment, while an SDE provides technical expertise and market savvy,

and has the ability as a private entity to make decisions more swiftly than the state. In Washington State, for example, both the state and SDE see this arrangement as a boon for statewide HIE. In some states like Texas, a state or SDE establishes policies and acts as a neutral convener for the entities involved, while the technical operations are performed by the local/regional HIOs. There are other instances in which the SDE provides technical leadership and engages a third party, such as an oversight board, to act as a neutral convener to balance the interests of all stakeholders. The third party oversight board has met with great success in Washington State. As part of their response to the ONC funding opportunity, Washington State Health Care Authority and their lead organization, OneHealthPort, formed an independent seven-person board of stakeholders called the Foundation for Health Care Quality to provide oversight for state activities, and ensure transparency, accountability, and community engagement. This strategy has proven successful for gaining trust among diverse stakeholders and securing community support for state-led HIE activities.

Given the relative infancy of the State HIE Program, states have yet to encounter significant challenges associated with the decoupling of governance and technical models, and they have not been able to assess the model's long-term utility. States' ability to enable HIE without, in many cases, having direct control of the organizations responsible for delivering on this charge, may create a novel set of challenges; however, the established models have garnered stakeholder satisfaction thus far.

### Technical Approaches Leverage Existing Infrastructure

In general, state approaches and HIE services are strongly influenced by the particular use cases a local market demands or that the state believes their local market will support (see Table 4). In most states, these needs are a combination of information exchange that allows providers to improve patient care and coordination, its quality, and its efficiency, while also complying with MU requirements. In general, states have focused on lab exchange, e-prescribing, and exchanging clinical care documents to accomplish these goals, although they have pursued different approaches to doing so. In terms of infrastructure, in some cases, the state or SDE has opted to build HIE services (e.g., Wisconsin, Maine, Washington State, and Nebraska). In other cases, the state has opted to leverage existing HIO activities within the state, as evidenced by the model adopted by Texas.

The five states in these case studies selected one of two technical models: a "thin layer" model with services based on light infrastructure (Texas, Washington and Wisconsin), or a heavy infrastructure model (Nebraska and Maine) with features such as a central repository. There is no formal definition for a thin layer service, but in general the thin layer model refers to light infrastructure that primarily supports messaging and directories, but lacks a central data repository. States pursuing this approach may offer other services such as translation services, a master patient index, or record locator service. Our conversations with stakeholders identified several advantages to the thin layer approach. One advantage is the cost savings that stems from the lack of a central repository, which can be expensive and time consuming to build and maintain. Relatedly, in the absence of a repository, data is not stored centrally for access by multiple users; therefore, there are fewer privacy concerns associated with providing HIE services. According to stakeholders in states using thin layer models, having minimal technical hardware and cost savings associated with thin layer services vastly reduces the time required to enable these services, allowing providers to improve patient care more immediately.

From a market standpoint, stakeholders believe that light infrastructure creates more flexibility so that states and SDEs can respond quickly to market changes. This is particularly important, given the ongoing evolution of the health care market place. Light infrastructure can be tailored to meet the needs of different organizations, it can be altered based on market demands, and it can be dismantled without

catastrophic loss of investment. Furthermore, stakeholders perceive this approach as a way to more effectively leverage existing exchange infrastructure, including both private and community-based HIOs. In Washington State, OneHealthPort has established their exchange hub to facilitate connecting with multiple organizations through one connection via “aggregator organizations.” Aggregators connect multiple partner organizations to each other and then connect to the hub developed by OneHealthPort. As such, provider organizations are able to access the hub through a variety of different connection options based on their needs and without additional cost or loss of existing relationships with non-state trading partners.

States that invest in heavy infrastructure centralize the storage of their state data and, in doing so, may create a rich data source for analysis. Centralized records can help highlight existing gaps in public health, quality, and outcomes data, which may be useful for identifying trends and for launching or informing statewide improvement initiatives. For example, Maine’s initial strategy is to provide data aggregation and analytic capabilities by populating a central repository as a value-added service to HIE stakeholders who want improved access to patient records or data for trend analysis. Nebraska is pursuing a similar approach. The cost of investment in heavy infrastructure can be significant and thus will need to be factored into the decision making process, given the fiscal concerns in many states. The cost of investment can also mean a lengthy set-up time to build, test, and enable complex infrastructure, and a potential loss of flexibility to respond to market shifts.

If market demands shift away from central repositories, or if hospital systems or Accountable Care Organizations (ACOs) decide to create their own repositories, a state has already invested in infrastructure that cannot be easily halted, changed, or decommissioned. This presents two possible problems: lack of flexibility in responding to an evolving market, and/or difficulty in gathering investment and support from HIE stakeholders, which will threaten its long-term sustainability. Another concern is that by the time the state builds heavy infrastructure, the speed of technological advancements will have made the infrastructure obsolete and/or require costly upgrades. States must weigh the pros and cons of light versus heavy infrastructure and consider the needs of their local markets carefully before investing in one of the two models.

**Table 4.** Technical Model and Services by State

	Maine	Nebraska	Texas	Washington	Wisconsin
<b>Technical Approach</b>	Heavy infrastructure	Heavy Infrastructure	Thin layer, local HIE grant Program	Thin layer with hub, translation services	Thin layer network of networks
<b>State Enabled Services</b>	Enterprise master patient index (EMPI); Provider Directory, Translation services; Routing services; Authentication services; Audit log	MPI; Direct; Provider Directory; Authentication services, Record Locator Service (RLS), Audit Log, Translation Services	Planned: Consent management; RLS; Nationwide Health Information Network gateway	Authentication services, translation services, Provider Directory, Health Plan Directory	Phase 1: Direct and MPI; Phase 2: Provider Directory, RLS and MPI to support query/retrieve
<b>Vendor Name</b>	Orion (portal, data repository, interface engine); IBM Initiate (MPI); Health Language Inc (data mapping); Kryptiq and Surescripts (Direct)	Axlotl	HISPs: GSI Health, Harris Healthcare Solutions, Inpriva, Sandlot Solutions, Secure Exchange Solutions	Axway	Ability for Direct Services
<b>Direct Services</b>	Yes, as of January 2012	Yes, ongoing roll out of services	Yes, as of January 2012	No	Yes, conducting various pilot studies
<b>Direct Use Cases</b>	<ul style="list-style-type: none"> <li>▪ Clinical summary document /lab exchange with rural/small providers</li> <li>▪ Populate central repository using CCD</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lab exchange with providers</li> <li>▪ Electronic referrals between NeHII and VA Hospital in Omaha</li> <li>▪ Sharing of behavioral health information</li> <li>▪ Interstate exchange</li> </ul>	<ul style="list-style-type: none"> <li>▪ Exchange of CCD and lab results</li> </ul>	N/A	<ul style="list-style-type: none"> <li>▪ Exchange of newborn screening lab results,</li> <li>▪ Sending immunization results to the registry</li> <li>▪ Claims adjudication</li> <li>▪ CCD exchange between ER and FQHCs, LTC facilities and hospitals</li> <li>▪ Exchange between rural hospitals and clinics</li> </ul>

## Status of the Adoption of Direct Services

Direct is a method of secure exchange between two known parties who connect to one another point-to-point, rather than through a hub that serves multiple parties. Once a direct connection has been established, two providers can send and receive information, such as laboratory orders and results, referrals, and discharge summaries. Four out of five states have initiated Direct services. Table 4 illustrates the Direct use cases each state is exploring. Other states, beyond those selected for the case studies, are exploring different ways Direct can be used to meet their immediate and short-term needs; in some cases, Direct is a state’s initial foray into HIE. Currently, more than 30 states and territories have live Direct services or pilot studies in progress.<sup>16</sup>

Direct offers providers at least one option to meet Stage 1 MU requirements and can serve as a temporary method to enable clinical information exchange in the absence of other services, or it can provide long-term information exchange for providers with limited exchange needs. In addition, Direct can allow exchange of sensitive information that cannot be exchanged easily with shared records because of privacy concerns. For example, eBHIN in Nebraska has developed a unique use for Direct as a means of exchanging sensitive behavioral health information that must remain segregated within EHRs and restricted to select users. In this case, Direct supplies the ideal solution by allowing exchange between authorized entities and maintaining the separation of sensitive data from more broadly shared records. Direct can also serve a number of administrative use cases, such as submitting prior authorization requests. In Maine, HIN uses Direct to populate a central clinical repository and Wisconsin is exploring a variety of administrative use cases with providers, including claims adjudication.

“I think [Direct] will start getting some legs under it, but it’s hasn’t been the easiest sell. The white space would be interesting as we get more people, because they truly are rural. It is a way to very quickly get up. We’ve got to think of creative ways to use it.” –*Texas Health Information Exchange representative*

Of the four states enabling Direct services, three states (Wisconsin, Maine, Nebraska) selected the lead organization to serve as the health information service provider (HISP). A HISP provides certain services that are required for Direct messaging, such as the management of trust between senders and receivers. The HISP may be a separate business or technical entity from the sender or receiver, depending on the implementation option chosen by the state or SDE.<sup>17</sup> Only Texas opted for a more market-based approach by certifying vendors to serve as HISPs to provide Direct services rather than the state providing services itself. Early experiences with Direct suggest that enabling Direct services is fast, not technically complex, does not require a provider directory, and meets Stage 1 MU requirements. In both Maine and Wisconsin, the SDEs enabled Direct services within a month.

“Direct is more of a stop gap solution to robust HIE.” –*Wisconsin REC employee*

In spite of these advantages, securing provider participation in Direct has been a challenge for a number of states. For example, it took Wisconsin-based WISHIN four to five months to secure provider participation, while Texas continue to see limited uptake. Some of the major issues encountered with Direct include workflow challenges and lack of vendor readiness to fully support Direct. In order to be effective, Direct must be integrated into provider workflow, meaning that Direct communications can be stored and accessed in the same system as other provider records, and that they are present in the EHR.

Currently, not all EHR vendors have Direct messaging integrated into EHRs, which is a significant barrier. Another issue that may limit provider uptake is the “first fax conundrum” where providers are hesitant to be the first to adopt secure messaging through Direct without the guarantee that their potential trading partners will do the same. The proposed Stage 2 MU requirements specify incorporating Direct services into EHRs and will likely address this issue.

### Individual Choice and Consent

In their initial call for strategic and operational plans, and as clarified in program information notice ONC-HIE-PIN-003 in March 2012, ONC indicated that states should ensure individuals have “meaningful choice regarding whether their individual identifiable health information (IIHI) may be exchanged through the HIE entity” when HIE entities store, assemble, or aggregate IIHI. ONC also clarified that patient choice is not required beyond existing state law when HIE entities serve as conduits for directed messaging.<sup>18</sup> States that are enabling or plan to enable additional query-based exchange services, meaning that providers have the ability to search and retrieve stored health information, must pursue consent policies to govern these actions.

Of the five states included in the case studies, two states (Maine and Nebraska) are pursuing an opt-out model with opt-in for sensitive health information; two states (Texas and Washington) do not have a state level consent policy; and Wisconsin is planning to seek legislation that harmonizes state law with HIPAA so that no additional consent is required and patient health information is automatically included without an option for patients to opt out. While consent does not present an issue in Washington because the state does not store data, Texas confronted consent issues even in the absence of state-level data storage. In Texas, local HIOs are all pursuing different consent approaches and many are concerned this may present issues for HIO-to-HIO exchange. Nebraska and Maine, both of which maintain central repositories, have adopted opt-in with exception consent models. In both states, stakeholders report the opt-out model has encouraged patient participation in exchange.

### Sustainability

Sustainability models are a critical element to ensuring the long-term success of state-led HIE activities that remain in the nascent stages in most states. All five states currently rely on subscription fees paid by their users, and some are using their remaining ONC funds to operate until they can identify other sources of revenue. States that have recruited large health systems and/or payers for the bulk of funding describe the pressure to provide value for these stakeholders to ensure their continued participation and the concern that delays in the implementation process may result in the waning interest of these entities. Similarly, these entities have expressed desire to participate in the success of statewide HIE but wish to see a return on investments in the near future.

Washington and Nebraska are the most advanced in this planning and have pursued other business opportunities to address these concerns. Washington’s lead entity OneHealthPort is a private company that provides services to non-state clients and strives to keep overhead costs minimal in order to keep subscription costs low. Nebraska sells the use of its infrastructure to nearby states like Wyoming. In Maine, the sustainability strategy involves offering a broader range of HIE services that will attract a variety of stakeholders to pay for subscriptions. States enabling Direct services have opted for a minimal monthly provider charge of between \$10 and \$15 per provider per month (Nebraska, Maine, Wisconsin) or have waived provider fees (Texas). Texas has also established a voucher program where the state will make a \$400 payment to the HISP for every physician connected and \$5000 for each hospital connected.



This voucher-based funding is intended to offset the initial costs of providing exchange services to the provider. Sustainability plans are discussed in further detail in the individual state summaries.

## Crosscutting Challenges

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NORC asked each stakeholder interviewed to identify key barriers to promoting HIE in their state. In all states, cost and sustainability caused the greatest concern; many states also articulated challenges related to costs and lack of vendor support for providers; low provider awareness; and the evolving market.

### Cost and Sustainability

Among those identified, stakeholders universally acknowledged cost and sustainability of statewide HIE as the primary challenge to statewide exchange. Stakeholders expressed concerns over the cost of infrastructure investment, and the costs of initiation and maintenance of services and technology regardless of state, local market, or technical approach. Concerns about cost may prove difficult to address given that it is not the state, but the vendors, who control these factors.

### Costs of Interfaces and Support for Providers

Interface cost and lack of support are two recurrent issues in four out of the five states. Small providers in Washington are unlikely to participate in state-led HIE services because of a combination of limited exchange needs and initial investment costs. To combat these concerns, Washington introduced a tiered subscription model rewarding early adopters and charging subscription fees based on organization size. In addition, they attempt to maintain low operating and administrative costs to lower subscription fees. Maine has experienced high costs at the vendor level. As a result, the state has pursued relationships with multiple HIE vendors because the initial designated vendor proved to be too expensive. Providers in Wisconsin also report a distrust of vendors and fear hidden costs or sudden price increases for services, which undermines participation. Texas stakeholders report that services, particularly EHR interfaces, are too expensive to enable, and vendor support is absent or insufficient to justify purchase and use of services. Other vendor issues include vendor backlog. In some states, the healthy market demand for EHRs have overwhelmed vendors who seem largely focused on driving revenue by selling EHRs and less focused on the workflow needs of providers.

### Provider Awareness

Stakeholders view low provider awareness of state-led HIE initiatives as an important challenge to adoption and one that is tied to uptake and sustainability. Although providers are familiar with different types of exchange, such as sending prescriptions and radiology reports electronically, they are less likely to view these individual activities under the larger umbrella of “statewide HIE services” or the state-led HIE Program, particularly if they are small providers. Rather, in many cases, small providers have low awareness of state-level policy and technical efforts, and low awareness of HIOs. Some states plan to mount campaigns to raise awareness among small providers, while others have decided to target large health systems in hopes of achieving uptake by a critical mass that will encourage small providers to follow suit. With the goal of attracting large health system support comes a need to demonstrate value to stakeholders in order to ensure the ongoing relevance and sustainability of HIE. Many state HIE efforts received both philosophical and financial support from large health systems, payers, and other community-based funders. As HIE efforts launched, converting stakeholder support into HIE adoption has proven to be a daunting task for some. Enabling services that address both MU and market needs



may be one strategy to demonstrate value to certain stakeholders and secure the participation of others. While the requirements for Stage 1 MU were minimal, the proposed Stage 2 requirements include several more demanding requirements focused on electronic prescribing, inclusion of structured (coded) lab results into EHRs, public health reporting measures, and transitions of care, and the exchange of clinical care summaries.<sup>19</sup> While these proposed requirements are likely to serve as stronger drivers for HIE by raising awareness among providers, states will still require financing to make available options for providers to meet MU requirements.

### Engaging Large Health Systems

Engaging large health systems in state-led HIE is both a principal goal and a practical challenge among the states. As discussed in the section on health market characteristics, large health systems play a significant role in local markets. Washington State is the only state of the five that reports success and satisfaction with the level of engagement with large health systems in the State HIE Program. Health systems proved to be not only philosophically aligned, but they also agreed to participate in the oversight committee and to purchase services. Overall, other states were successful in gaining interest from large health systems but struggled to varying degrees to convince them to participate. In Maine, although large health systems participated in HIE pilot projects, the changing state landscape has many of them considering whether to invest in private HIE instead of the somewhat limited state-offered services. This may involve purchasing HIE services offered by EHR vendors or connecting to other affiliated hospitals and providers through a shared technology platform. Wisconsin is struggling to provide services of value in a highly developed marketplace. Many of the state's providers are in or affiliated with large hospital systems that have EHRs and need query-based exchange. Because Wisconsin does not offer query-based exchange and is currently focused on Direct, hospital systems are pursuing IDNs and other private network solutions instead of using HIE services offered by the state's program. In Texas, large health systems express interest in and have been philosophically supportive of HIOs, but have been slow to actually sign up with local and regional HIOs. While many cite "the public good" in describing their interest, others question the value public or community-based HIOs can provide large hospital systems and suggest their needs may be better served by private HIE options. Nebraska stakeholders tell a similar story of philosophical support but are uncertain of the value in state-led services. Many Nebraska hospitals have invested in spite of these reservations but would like to see value demonstrations in the near future to justify their financial support.

State HIE leadership in all five states appear to be leveraging investments in HIE made by large hospital systems and are not attempting to compete with these systems for services or providers. Each of the five states have also been focused on enabling services for providers that may not have other options for HIE, particularly small and rural providers. For example, Texas and Wisconsin are enabling Direct services for small rural providers and critical access hospitals. Leadership in each state continues to grapple with how to provide value to entities whose immediate exchange needs are already satisfied outside of state-offered HIE services. One solution is to fill gaps in currently available services. For example, one area in which hospital systems in a few states have reported interest is around public health reporting. HIN in Maine is assisting with the electronic exchange of reportable labs between hospitals and the public health department. NeHII in Nebraska is also planning to offer public health reporting functionality in subsequent phases of their implementation.

### Evolution of the Market

The evolution of the health care delivery market is a recurrent, but not a universal concern. Currently, there is increasing consolidation in the market: independent providers are affiliating with hospitals or

joining larger practices and many EHR/HIE vendors now offer a range of HIE functions outside of state services. The expansion of private HIE is a growing concern for states that have made investments in heavy infrastructure and fear their investments may become duplicative and/or unnecessary. States like Washington, Wisconsin, and Texas are acutely aware of the pressures and needs of their local markets, as well as the fact that these demands might change over time, and leverage their light infrastructures accordingly. Other states, such as Nebraska, are using a cautious state environment to their advantage by adding services incrementally, as funding allows, and in response to sustained demand for certain services.

### Lack of Truly Interoperable Systems Remains an Issue

Stakeholders in some states reflected on whether it is in the interest of vendors to create interoperable systems, in spite of user demands for interoperability. For example, Washington stakeholders report that the major EHR vendors in the state do not seem to provide truly interoperable systems, in spite of what is promised when providers purchase services. While these vendors may support interoperability between providers who have a similar EHR platforms, exchanging information with providers on different EHR platforms remains a challenge. Another common issue was the difficulty of exchanging clinical care summary documents between different provider EHRs. Even though EHR vendors support the clinical care document (CCD) standard, the implementation of the standard varies between different vendors. Consequently, CCDs are exchanged as PDFs or text and not as structured data, complicating integration into some EHRs. In Maine, the state's primary HIE vendor did not provide certain services that the state desired, including the ability to incorporate PDF files into the central data repository established by HIN. This lack of interoperable services is one of several reasons the state chose to pursue relationships with different vendors for different services.

Concerns about cost, uptake, and market evolution may prove difficult to address given that it is not the state, but the vendors, who contribute to these factors. On the other hand, new competition in the rapidly developing market may compel vendors to meet provider demands for lower investment and maintenance costs and improved usability, which would improve provider uptake. Increased uptake by a critical mass could, in turn, help address the lingering issue of effectively using exchanged data, thought of as "the last mile of HIE connectivity." Even stakeholders who are philosophically aligned with state-led HIE express concerns over how to integrate and use the data they would receive, especially if it is incomplete. Although widespread HIE does not address the issue of how to integrate the data, it does create a rich and more complete data source for health analytics and providers at point-of-care that could provide substantial value to stakeholders, states, and patients.

### Conclusion

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The past two years of the State HIE Cooperative Agreement has witnessed unprecedented growth and development in the health IT infrastructure of the nation, as well as broader changes in the health care delivery system. While most states are still in the earlier stages of development of their HIE programs, these five states have surged ahead into the implementation phase of their plans. Key factors such as a history of HIE activity or HIOs in the state, urban versus rural makeup, and health market characteristics at baseline shaped their governance models, their selection of technical infrastructure and services, and local demand for these services. Although prior exchange activities provided an initial advantage in the planning and development stages, they are not a prerequisite for success.

While each of the five states selected technical approaches to address the needs of their unique markets, early experiences from these states suggest central HIE infrastructure may allow a state or state designated entity to offer a broader range of services to HIE stakeholders. Early focus on stakeholder value proposition and sustainability planning is critical for long-term success.

These states will face new challenges during the implementation phase as they are tasked with converting stakeholder support into financial commitment and real-time exchange of health information. Both the financial commitment and the actual exchange of clinical data pose substantial challenges. States must also enable services that address both MU and market needs in their service offerings. This effort will be complicated by the complexity and evolution of the health care market, including expansion of the market-based solutions offered by vendors, and the growth of and competition from private HIE and ACOs that may create islands of exchange that potentially threaten more broad-based HIE activities. The evolution of ACO models and private HIE will have bearing on whether providers are motivated to pursue exchange with providers outside their organizations. States can still play a helpful role in ensuring hospital systems and private HIE initiatives are willing to share at least the key data with providers outside their private networks, and with the state for quality monitoring and potentially comparative effectiveness research purposes.

Given the significant concerns about sustainability and who will pay for state-offered services in the long-term, it may also prove beneficial to ensure that states have assistance, either from state or national informational resources, in developing both sustainability plans and contingency plans. States were universally concerned about sustainability, especially in a rapidly evolving market, and would benefit from guidance from model sustainability plans tied to pay-for-performance and Affordable Care Act (ACA) initiatives.

The case studies presented here, while not representative of all state-enabled HIE efforts, provide important insights into some of the key issues faced in attempting to realize broad-scale HIE. The experiences of these five innovator states have the potential to provide important insights that may assist other states engaged in exchange activities. The fact that all five of these states had a prior history of HIE points to a potentially difficult road ahead for states that have started more recently. However, there is reason to believe that other states can potentially make up ground with the lessons learned from early state efforts and herein lays some key policy recommendations. First, states should focus on governance and establishing the conditions for HIE, such as stakeholder involvement and provider awareness, regardless of whether or not they plan to directly provide HIE services and infrastructure. Communicating the value of HIE is critical. Therefore, a second key lesson is that states should harness provider interest in new care models, such as ACOs and Patient-Centered Medical Homes, to explain the role of HIE and providers' need to track the care of individual patients across multiple clinical sites. Third, states that are recent adopters can start laying the groundwork for solving long-term challenges, such as sustainability, by not only demonstrating the value of HIE but communicating the need for financial commitments from providers, at least in the long-run.

In conclusion, the close examination of these early adopters has taught us lessons not only for these states, but also for states that are to follow. Learning from early adopters can help all states with burgeoning programs, or new interest, benefit from the successes and sidestep some of the challenges that are inherent in building an HIE program.

## References

- <sup>1</sup> Office of the National Coordinator (2012). HITECH and Funding Opportunities. Retrieved from [http://healthit.hhs.gov/portal/server.pt/community/healthit\\_hhs\\_gov\\_hitech\\_and\\_funding\\_opportunities/1310](http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov_hitech_and_funding_opportunities/1310).
- <sup>2</sup> Centers Medicare and Medicaid Services (2012). CMS Finalizes Definition of Meaningful Use of Certified Electronic Health Records (EHR) Technology. Retrieved from: <http://www.cms.gov/apps/media/press/factsheet>.
- <sup>3</sup> The Direct Project (2011, October 11). The Direct Project Overview. Retrieved from: <http://wiki.directproject.org/file/view/DirectProjectOverview.pdf>
- <sup>4</sup> Office of the National Coordinator for Health Information Technology. (February 2011). *Health Information Exchange Challenge Grant Program*. Retrieved from: <http://healthit.hhs.gov/portal/server.pt?open=512&mode=2&objID=3378>
- <sup>5</sup> Office of the National Coordinator. (2009). *American Reinvestment and Recovery Act of 2009*.
- <sup>6</sup> Dullabh, et al. (2011). The Evolution of the State Health Information Exchange Cooperative Agreement Program: State Plans to Enable Robust HIE. Retrieved from <http://www.healthit.gov/sites/default/files/pdf/state-health-info-exchange-program-evolution.pdf>
- <sup>7</sup> Williams, et al. (2012). From the Office of the National Coordinator: The Strategy for Advancing the Exchange of Health Information. *Health Affairs*, 31(3), 527-536.
- <sup>8</sup> Office of the State Coordinator for Health Information Technology Governor’s Office of Health Policy and Finance (June 2010). Maine Statewide Health Information Exchange Strategic and Operational Plans: A Strategy to Create an Infrastructure that Preserves and Improves the Health of Maine People. Retrieved from: <http://statehieresources.org/state-plans/>
- <sup>9</sup> An Act To Increase Health Care Quality through the Promotion of Health Information Exchange and the Protection of Patient Privacy, LD 1331, Maine Statutes, 2011.
- <sup>10</sup> NeHII Completes Demonstration of Statewide Health Information Exchange (2009, July). Retrieved from: [http://www.nehii.org/index.php?option=com\\_content&view=article&id=52](http://www.nehii.org/index.php?option=com_content&view=article&id=52)
- <sup>11</sup> Office of the National Coordinator of Health Information Technology. (2012). State Health Information Exchange Program, Approved State Plans. Retrieved from: <http://statehieresources.org/state-plans/>
- <sup>12</sup> Adler-Milstein, J., DesRoches, C.M., Jha, A.K. (2011). Health Information Exchange Among US Hospitals. *The American Journal of Managed Care*, 17(11), 761-768.
- <sup>13</sup> KLAS (2011, June 30). Health Information Exchanges: Rapid Growth in an Evolving Market, Performance Report.
- <sup>14</sup> Banger A.K., Dullabh P., Eichner J., Kissam S. (2010, May). Lessons Learned from AHRQ’s State and Regional Demonstrations in Health Information Technology. (Prepared by RTI International, under Contract No. HHS290200900027i). AHRQ Publication No. 10-0075-EF. Rockville, MD: Agency for Healthcare Research and Quality.
- <sup>15</sup> Department of Health & Human Services (HHS) Office of the National Coordinator for Health Information Technology (ONC) (2011, February). State HIE Strategic and Operational Plan Emerging Models.
- <sup>16</sup> Andriesen, B. Bright Spots of the Direct Project Adoption. (2012, June 18). Health IT Buzz, Office of the National Coordinator of Information Technology. Retrieved from: <http://www.healthit.gov/buzz-blog/state-hie/the-direct-project-adoption/>
- <sup>17</sup> The Direct Project. (2011, October 11). The Direct Project Overview. Retrieved from: <http://wiki.directproject.org/file/view/DirectProjectOverview.pdf>
- <sup>18</sup> Privacy and Security Framework Requirements and Guidance for the State Health Information Exchange Cooperative Agreement Program, ONC-HIE-PIN-003
- <sup>19</sup> Center for Medicare and Medicaid Services (2012, February 23). Fact Sheet on Proposed Stage 2 Meaningful Use Criteria. Retrieved from: <https://www.cms.gov/apps/media/press/factsheet.asp?Counter=4286&intNumPerPage=10&checkDate=&checkKey=&srchType=1&numDays=3500&srchOpt=0&srchData=&keywordType=All&chkNewsType=6&intPage=&showAll=&pYear=&year=&desc=&cboOrder=date>