Evaluation of the State Health Information Exchange Cooperative Agreement Program

Case Study Report:

Experiences from Texas in Enabling Health Information Exchange (HIE)

NORC
at the UNIVERSITY *of* CHICAGO

Case Study Report: Experiences from Texas in Enabling Health Information Exchange (HIE)

"I think Texas is really unique, given the size and diversity of our state. Our strategy is also different than other states'—it's much more market-oriented. So I think this is all one big grand experiment and we will see how it plays out." –*Texas Health Services Authority*

Report Summary	
Intervention and Setting	On March 19-21, 2012, the NORC State HIE evaluation team conducted a formal site visit of the state of Texas program (HIE program) and met with HIE stakeholders in San Antonio and Austin. The primary goals of the site visit were to: ▪ Understand state implementation experiences with respect to governance and HIE program accountability, enabling services for HIE, and establishing trust and sustainability; ▪ Identify common enablers, barriers, and challenges to HIE; ▪ Understand provider perceptions and experiences with HIE; and ▪ Understand specific strategies used to engage with large provider systems for enabling exchange and ensuring statewide coverage.
Data Collection and Target Population	During the site visit, NORC held discussions about Texas' HIE efforts with representatives of the following groups: ▪ State Health Information Technology (HIT) Coordinator ▪ Texas Health Services Authority (THSA) (lead technology organization) ▪ State agencies (Medicaid Office) ▪ Provider Associations (Texas Hospital Association; Texas Medical Association) ▪ Large Hospitals (University Health System; St. David's HealthCare; Memorial Hermann, Methodist Health System) ▪ Health Information Exchanges (Integrated Care Collaboration; North Texas Accountable Healthcare Partnership) ▪ Regional Extension Centers (RECs) (Gulf Coast REC; West Texas REC) NORC also conducted two provider focus groups.
Key Take-Aways	Key take-aways from the Texas site visit include: ▪ Texas' regional and local health information organizations (HIOs) market-based solution, with a minimalist approach to central services, is representative of the state's culture, given its geographic and population diversity and its reliance on the private sector. ▪ Texas' "white space" strategy and voucher program is an innovative, market-based solution to help providers that do not have access to a local HIO to achieve meaningful use (MU) using Direct. However, it is too early to assess the success of this approach. ▪ Texas legislation and policies around the corporate practice of medicine are likely to enable future growth in private HIE, which in the long-term may bring into question the value of the recently funded community-based HIO initiatives. ▪ The diversity of consent models used by different HIOs remains an issue in Texas and there appears to be a need for a uniform statewide consent policy or state-level consent-management capacity.

Introduction

Health information exchange (HIE) has been evolving rapidly since it began in the United States for (U.S.) over twenty years with the goal of increasing the quality and efficiency of health care. In the 1990s, early HIE efforts took the form of local and regional HIE initiatives, such as Community Health Information Networks, many of which were supported by federal funding.[1] Building on these early HIE efforts, in 2004, the Agency for Healthcare Quality and Research (AHRQ) funded the State and Regional Demonstration (SRD) project to support state and regional level HIE.[2] In addition to these federally funded projects, a few regional health information organizations (HIOs), such as HealthBridge in Cincinnati, OH, developed through private funding. However, many local and regional HIO efforts met significant financial and technical challenges and could not sustain themselves.

The enactment of the Health Information Technology for Economic and Clinical Health (HITECH) Act, part of the American Recovery and Reinvestment Act (ARRA) of 2009, created unprecedented opportunities to promote electronic health records (EHRs) and HIE by providing financial incentives to providers to encourage the adoption of EHRs. In 2009, the Office of the National Coordinator for Health Information Technology (ONC) created the State HIE Cooperative Agreement Program and announced the availability of $564 million for states and territories to enable HIE.[3] Since the State HIE Cooperative Agreement commenced, several additional initiatives have been announced that further align federal priorities in support of HIE efforts. For example, the Centers for Medicare & Medicaid Services (CMS) released its final rule on Stage 1 Meaningful Use (MU) requirements in July 2010, which announced the availability of incentive payments for providers and hospitals for MU certified EHR technology.[4] Several Stage 1 MU objectives promote HIE, emphasizing the use of e-prescribing, exchange of clinical care summaries, integration of laboratory results into EHRs, and the reporting of immunizations and syndromic surveillance data to public health departments.[5, 6] In 2010, ONC also 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 information exchange.[7]

Eager to understand the effects and implications of the State HIE Cooperative Agreement Program, ONC contracted with NORC at the University of Chicago (NORC) to conduct a multi-year evaluation of the program, including in depth case studies of five states. ONC and NORC selected Texas as one of the five because of its progress enabling statewide HIE services, its engagement with large provider systems, its size and diversity, and its technical approach. As such, it provides important insights that may assist other states engaged in exchange activities.

Key Factors That Influence HIE in Texas

Texas' large size and diversity, as well as its reliance on private sector solutions to meet public needs, have influenced the evolution of its health-care market. Texas is the second largest of the 50 states,[8] leading to a geographic distribution that consists of many large, densely populated cities spread among large stretches of rural areas.

Texas' physician practices are predominantly small, consisting of practices of five or fewer physicians. Approximately 75 percent of physicians are in small practices. Ninety-seven percent of U.S. medical offices in Texas have less than ten physicians.[9] This is due, in part, to the Texas Medical Practice Act, which prohibits "the corporate practice of medicine," meaning that individuals

or organizations not licensed to practice medicine may not employ physicians or receive fees for services rendered. However, in 2003, the Texas legislature created 501A entities, allowing academic medical institutions that find it essential to employ physicians in a hospital setting for resident training programs to establish Nonprofit Health Corporations. These 501A Corporations create a vehicle for hospitals to own physician practices as long as the Board of Directors is comprised of physicians. As a result, these regulations are changing the relationships between hospitals and ambulatory care providers, especially as more hospitals and physician groups are forming networks. In spite of the unique circumstances of their formation, these hospitals and systems are, like their counterparts in other states, seasoned EHR users that are engaged in private exchange of health information. Table 1 provides a background on the state's HIE landscape.

Table 1. Background on Texas State HIE Activities

Texas HIE	
Funding Amount	$28,810,208
Population Size	25,145,561[10]
Recipient Organization	Texas Health and Human Services Commission (HHSC)
State Designated Entity (Lead Organization)	Texas Health Service Authority (THSA)
Strategic and Operational Plan Approval Date	11/03/2010
ONC Strategic Model Classification[11]	Capacity builder/Orchestrator*
Technical Model	Local HIE grant program and a thin layer of state-level services, consisting of a Record Locator Service (RLS), consent management services, and a gateway to the Nationwide Health Information Network (NwHIN)
HIE Vendor for Shared Services	Proposed strategy includes a thin layer of state-level services, consisting of a Record Locator Service, consent management services, and a gateway to NwHIN.
Health Information Service Providers (HISPs)[1]	1) GSI Health, 2) Harris Healthcare Solutions/Integrated Care Collaboration, 3) Inpriva, 4) Sandlot Solutions, 5) Secure Exchange Solutions
Regional Extension Centers (RECs)	1) Gulf Coast REC (at the University of Texas Health Science Center at Houston) 2) CentrEast REC (at the Rural and Community Health Institute, a component of Texas A&M Health Sciences Center) 3) North Texas REC (NTREC), a program by the Dallas Fort Worth Hospital Council Education and Research Foundation 4) West Texas HIT REC (WTxHITREC), a program of the F. Marie Hall Institute for Rural and Community Health at Texas Tech University Health Sciences Center

*The Capacity Builder/Orchestrator Model, as defined by ONC, describes states with a "dual approach of bolstering sub-state exchanges through financial and technical support tied to performance goals and establishing a thin layer of state-level services."

---

[1] A Health Information Service Provider, or HISP, is a logical concept that encompasses certain services that are required for Direct Project exchange, such as the management of trust between senders and receivers. It may be a separate business or technical entity from the sender or receiver, depending on the deployment option chosen by the implementation. Retrieved from: http://directproject.org/faq.php?key=faq

In 2007, prior to the State HIE Program, Texas House Bill 1066 established the Texas Health Services Authority (THSA) as a public-private nonprofit corporation responsible for the coordination and advancement of Texas health IT and HIE efforts. Their goal was to improve health care quality, safety, and effectiveness. Because the legislature did not provide funding for its operation, the THSA initially worked out of the governor's office and functioned primarily as an advisory committee to the governor. This changed in 2010, when the Texas Health and Human Services Commission (HHSC), the recipient of $28.8 million of HITECH funding for the State HIE Program, allocated money to the THSA for the operationalization of the State HIE Plan.

Organizations in Texas were developing HIE solutions prior to the state receiving Cooperative Agreement Program funding. The THSA identified 36 known and potential HIOs as part of its initial environmental scan. In 2009, 18 of these organizations reported HIE-related activities, ranging from early stage development efforts to highly developed, active data exchange. These HIOs consisted of IDNs (integrated delivery systems), independent practice associations, and other organizations performing HIE solutions mainly across regional networks. The majority of them, however, were at an early stage of developmental maturity. At the time, their services and planned services included clinical data exchange, such as patient visit data and lab results, emergency preparedness, public health data exchange, and quality reporting.

Texas' Approach to HIE and The Role of Contextual Factors

Texas' approach to enabling HIE services is largely influenced by local market needs. Due to Texas' vast size and geographic diversity, the THSA elected not to build a centralized, state-led, and managed infrastructure. Instead, it is leveraging relationships established by HIOs in local communities to provide services, and working to expand existing health IT infrastructure and capacity.

Leadership and Governance Models
Texas governance model is one of shared authority between the Texas HHSC and the THSA. A 13-member board of directors, appointed by the governor with input from the state senate, leads the THSA. The board consists of healthcare professionals ranging from physicians, nurses, and pharmacists, to lab and health insurance representatives, to experts in public administration. The board and their staff oversee the daily general operations of the THSA.[12]

The THSA has five taskforces to inform its activities: Data Standards, Technical Architecture, Privacy and Security, Provider Engagement, and Consumer Engagement. The taskforce provides input to the THSA Collaboration Council. The Collaboration Council, which serves as the THSA's Steering Committee, has representatives from medical and hospital associations, a health plan, the state public health department, the four regional extension centers (RECs), employers, and consumers.

In 2010, HHSC received State HIE Cooperative Agreement funds and contracted with the THSA to implement the state's strategic and operational plan. Together, the two organizations administer state-level operations, including developing policies and guidelines to enable state services, running local HIE programs, and contracting with and supporting HIOs in setting up local exchanges through the Local HIE Grant Program. In order to receive funding, the individual HIOs must submit strategic and operational plans, establish governance structures, and implement HIE services.

Technical Approach

Texas' approach to HIE is a thin-layer strategy focused on promoting local HIE solutions based on community needs. Texas is taking a market-based, three-pronged approach consisting of:

1. Providing general state-level operations, which includes establishing governance, standards, policies for privacy and security, and a sustainability plan;
2. Initiating a competitive grant program, the Local HIE Program, to create and expand local and regional HIOs; and
3. Establishing a "white-space" coverage program to provide Direct services to providers in areas without regional HIOs to assist them in meeting MU requirements.

In this approach, the state has not established any technical services; instead, it provides funding, governance, and oversight to local HIOs in the Local HIE Program. The HIOs submit strategic and operational plans for small-scale HIE efforts and receive funding and state support for their activities. This funding distributes a portion of Texas' State HIE Cooperative Agreement Program dollars to HIOs in the form of sub-grants. It is up to these local and regional entities to build infrastructure, determine consent policies, and decide how to store and with whom to share data.

The THSA has also established an innovative market based solution for helping providers in the "white space," i.e., regions lacking HIE coverage. An estimated 160 hospitals and 3,000 physicians located in Texas' counties and rural areas currently exist in this white space without access to regional HIOs. The THSA launched the white space program in January 2012, which involved certifying health information service providers (HISPs) to provide Direct messaging services to help providers meet MU requirements. These transmissions typically include sending and receiving structured and unstructured data, especially lab results and clinical care summary documents. Thus far, Texas has certified five HISPs: GSI Health, Harris Healthcare Solutions/Integrated Care Collaboration, Impriva, Sandlot Solutions, and Secure Exchange Solutions. Texas offers vouchers to providers to offset the initial connection costs to HISPs. HISPs may not charge participating physician or hospitals for any services until the THSA has expended the voucher funds on those services.

Although it does not currently offer technical services, Texas is planning to do so in the future. The THSA has a strong desire to leverage the market effectively so that state-level services complement the services provided at the local level, instead of competing with them. The THSA anticipates releasing an RFP in the summer of 2012 and contracting with a vendor by the end of the year. It plans to provide a Record Locator Service (RLS) and consent management services, and to act as a gateway to the Department of State Health Services (Texas public health agency), Medicaid, and the Nationwide Health Information Network (NwHIN). In the future, the THSA may add other services based on market demands and HIO activities.

Texas' approach, enabling HIE on a regional level with a minimalist approach to central services, is tailored to the state's geography and political environment. Texas has a population of over 25 million distributed among several large metropolitan areas and geographically vast rural areas.[13] Stakeholders believe a single network approach is not adequate for a state of this size and diversity, noting that healthcare delivery, by and large, takes place locally. Additionally, several stakeholders state that they are more comfortable with local entities acting as a repository for data, with providers expressing concerns that data shared at the state level would be used to rank or

evaluate them. Moreover, stakeholders feel regionally based HIOs allow for more representation in the decision making process.

Texas has four RECs supporting HIE activities with services tailored to the regions they serve. RECs generally provide consulting services, technical support, and work study programs for EHR vendors, as well as EHR demos, user reviews, informational videos, and other services for providers. RECs also help providers attest for MU incentive payments. Those that serve university systems and public health reporting areas also tend to leverage their community relationships to conduct provider outreach. Stakeholders report that having four RECs with designated geographic areas, rather than a single REC for the entire state, is a more appropriate approach for Texas, given the varying needs and practice styles of the different regions. Stakeholders also believe that providers are more likely to trust a regional partner rather than a statewide entity.

The RECs work closely with each other, collaborating on a website, informational material, and vendor best practices policies. In addition, they share information with Medicaid and Medicare on the EHR Incentive Program. The RECs also work collaboratively with the HIOs, HHSC and the THSA, and the Texas Medical Association (TMA), coordinating on presentations, outreach, and information sharing. Most stakeholders express positive views on the work RECs are doing to help providers implement EHRs.

The THSA plans to create a state-level consent model that functions as a "do not call" list. The Local HIE Grant Program did not dictate a uniform consent model, and as a result each local HIE developed its own. THSA initially anticipated providing consent management services in years five and seven of its program; however, local HIOs express a strong desire for the state to provide these services sooner. In THSA's potential consent management model, THSA will not maintain health information at the state level; instead, they will manage the various consent models and the flow of information among HIOs. Providers will be able to request information on a particular patient and see whether that individual has opted in or out of an HIO, and then additional information will flow depending on the patient's consent status. If the patient has opted in, a pointer will let the provider know which organization houses their requested data and will route them appropriately. Some local HIOs have hybrid consent models that exclude sensitive or behavioral health information, a restriction that the THSA also plans to manage through its consent management services.

Most stakeholders express concerns about the technical capability of the state to manage the flow of information between opt-in and opt-out patients. Stakeholders believe the varying consent models across the local HIOs will make it difficult to develop a technological framework at the state-level that seamlessly manages the flow of patient information across HIOs, regardless of whether the patient has opted in or out.

Payment Structure and Sustainability Approach
Texas relies on a light public sector component wherein non-state entities are largely responsible for securing payments and ensuring sustainability of services. This might change in the future, depending on whether the THSA establishes shared services for local and regional HIOs in the state. For Direct services, the THSA currently offers vouchers to offset providers' initial connection costs in the amount of $400 per white space physician and $5000 per white space hospital.

Although it has not yet established a formal sustainability plan, the THSA anticipates that its primary form of funding will consist of a revenue-sharing model, wherein HIOs pay fees for THSA certification and fees for services provided by the state. The THSA also considers payers to be key players in the sustainability plan with hopes that they will allocate funding to support state-level services. However, some stakeholders question the value of state-level services in the future given the existence and ongoing investment in the development of regional entities providing HIE solutions.

The sustainability of local HIOs is a stakeholder concern. In contrast to those that question the sustainability of future state-led services, other stakeholders emphasize concerns about the sustainability of local HIOs after the state funding ends. Some reflect that HIOs often show little value proposition compared to the cost of establishing them. Others question whether HIOs can acquire a critical mass of participating entities, given that most providers in Texas are small practices who lack the financial resources and technical capacity to initiate and maintain exchange activities. If these small practices do not connect, large hospitals will derive little value from HIOs. However, the THSA contends that local HIOs and the value proposition of the services they provide to their customers and community, particularly through query-based exchange, will be the main drivers of sustainability.

> "…If we want to drive sustainability… we really have to take a de-centralized approach where it is stakeholder-driven at the community level: the physicians, hospitals, payers that participate in that community, pharmacy labs, and other key stakeholders… those types of stakeholders would really drive value proposition for HIE going forward." —*THSA*

Implementation

Using ONC funds, Texas established a Local HIE Grant Program to support HIOs in the planning, implementation, and operation of local HIE initiatives and networks. In December 2010, the Texas HHSC issued a Request for Applications (RFA) for the Local HIE Grant Program, directed at HIOs who could provide core services to their communities in order to meet MU requirements (e.g., clinical care documents, lab results delivery, and e-prescribing). HHSC asked applicants to describe health care outcome goals for their community and encouraged them to develop tools to measure HIO-led improvements in health care. Applicants were also required to submit plans for a governance structure and sustainability plan; consider the use of Direct services, and commit to a 25 percent match of state funding as an assurance of community buy-in.

Seventeen HIOs responded to the RFA and HHSC initially funded 16. The evaluation team consisted of the THSA, the HIT Coordinator, and HHSC and Medicaid staff. The team used a funding formula based on the number of providers and hospitals that HIOs proposed to connect as well as an award for planning, $75,000 or 15 percent of the total allocation (whichever was higher), to be used to develop the business and operational plan. Of the 16 HIOs that HHSC initially funded, 12 are currently in the implementation phase. Of the remaining four, two merged with other HIOs, while two smaller ones withdrew after determining that they did not have the resources required to move forward.

Though the majority of HIOs funded by the HHSC are new, two were already operational prior to the issuance of the RFA and are using the funding to expand their existing services. The THSA

anticipates that all 12 HIOs will be up and running by mid-2012. The HIOs plan to use a variety of different technical models to enable HIE, and some HIOs have selected a vendor to provide services. In addition, most HIOs have adopted a consent model, with about half selecting an opt-in model and half selecting an opt-out model. Those who have yet to determine a technical model, vendor, and consent model intend to finalize their plans by mid-2012. HHSC has allocated approximately $17.5 million of the HITECH funding to the Local HIE Grant Program.

Discussions with a few HIO grant recipients suggest the Local HIE Grant Programs (sub-grants from the state to local HIOs) has catalyzed HIE activity in local communities. The HHSC's and the THSA's role of guidance and oversight has worked well so far. For example, the THSA developed a model Business Associate Agreement (BAA) that HIO grant recipients could use instead of producing their own. This allowed HIO leaders to engage stakeholders in a discussion of the state-vetted BAA, and quickly and efficiently reach consensus, a process that would typically take a long time due to competing stakeholder interests. The oversight role ensures that grant recipients spend Local HIE Program money appropriately through various reporting requirements, which builds community trust. HHSC also requires HIOs to establish a broad governance structure consisting of physicians, hospitals, payers, pharmacies, labs, and patient representatives. This has been successful in that stakeholders feel the THSA regularly engages with them and often seeks their input on issues that arise. As part of its commitment to ensuring local buy-in and inclusion, HHSC encourages HIOs to include other key stakeholders, such as those from the VA, Department of Defense, long term care, and large businesses, as part of their governance structures if these entities are a large community presence. This funding stipulation has allowed local HIOs to establish broad-based governance structures where no single stakeholder exercises unilateral control.

> "We are a very diverse group where nobody controls to an uncomfortable degree. So everybody is a little uncomfortable at the table, but everybody knows the physicians are not going to run away with it, hospitals aren't going to run away with it and everybody distrusts each other equally." — *HIO Representative*

Although THSA has a wide variety of stakeholder participation, various stakeholders express the need for increased patient involvement in HIE efforts. In order to engage with patients and families and to promote patient access to and control of their medical data, many stakeholders believe a personal health record (PHR) that provides patients with electronic access to their medical information is necessary. Providers and hospitals believe that PHRs are a good mechanism for reconciling data between hospital systems and patients. However, providers stress that the burden should not be entirely on the physician to educate the patient and that the THSA should serve this role.

MU is one of the main drivers of Texas HIE. EHR adoption rates in Texas are lower (52 percent) than the national average (57 percent),[14] meaning that an increasing number of providers will be seeking technical services in the coming months. Many providers have also begun to receive EHR incentive payments, which many expect will increase adoption. However, many stakeholders comment that CMS needs to establish more aggressive MU requirements to bolster exchange and HIE connectivity. One HIO representative expresses concern that while they are managing to keep their connection costs low for exchange services, the cost of implementing EHRs may be prohibitive for some small providers and prevent them from meeting MU requirements. To address the issue, this particular HIO is developing its own, hosted EHR-lite targeting provider practices of

10 or less. It hopes that using the HIO's EHR and exchange services will help small providers meet both Stage 1 and 2 requirements, while reducing the cost and technical complexity of their participation.

Providers identify a number of potential uses cases for HIE outside of MU requirements. These include bidirectional referrals between in- and out-of-network physicians, exchange of clinical care summaries and lab data across unaffiliated entities, and aggregation of patient information and data analytics to determine community-level health information. Other examples of HIE use cases include:

- **Admission, Discharge, and Transfer (ADT) Data.** Hospital representatives emphasized the importance of ADT data for quality reporting purposes.
- **Exchanging information with providers outside their health systems.** Most providers are interested in exchanging information with other health systems and ambulatory providers, particularly emergency department visits.
- **Electronic exchange of referrals.** Ambulatory providers want to exchange referrals and consults with specialists electronically instead of through the current cumbersome, paper-based process.

Health systems generally see value in local repositories for data aggregation and analytics. Some stakeholders believe the value of HIOs lies in data analytics such as tracking health outcomes and identifying trends in community health data. By and large, stakeholders support local level data repositories to manage and improve health care delivery in their communities. They prefer to have data in local hands, rather than in a state-led central repository where they suspect data may be mined to rank hospitals and physicians.

Liability and accountability are important issues for hospital and provider support of HIOs. In the event of a security breach, hospitals and other providers express concerns about an HIO's ability to provide comprehensive audit trails and have information available for the purposes of defense against lawsuits. Providers and hospitals strongly believe legislation should hold HIOs liable if there is a data breach. In addition, providers express concerns about having access to too much information, and making decisions regarding patient care based on data and results obtained through HIOs. Particularly, if a court summons a physician to testify about what information they used to determine a patient's treatment, HIOs and/or their exchange partners must have a way of ensuring the reliability of shared data.

Changing healthcare dynamics are also driving HIE activities in Texas. For example, changes in payer reimbursement rates and the advent of Medicare penalties for preventable readmissions tend to promote the use of HIOs. HIOs can also serve as aggregators of quality of care data at the local, regional, or state level, or for use in tracking local trends and/or needs in public health. Some HIOs also mention the growing awareness and demand for improved care coordination among community providers driving their exchange activities.

Stakeholders believe engagement, primarily with large health systems, is critical for the success of the Texas State HIE Program. As part of the RFA application process, the HHSC required local HIOs to submit letters of interest from physicians and hospitals to demonstrate the participation and engagement of large hospitals in HIE efforts. The initial threshold required letters

of interest from 20 percent of hospitals and physicians that planned to connect; by 2013, this threshold will increase to 80 percent, underscoring the importance of these large providers.

Despite large hospital systems expressing interest in participating in HIE efforts for the "public good," some have been slow to sign up with local and regional HIO's. Although large hospitals are at the table and supportive of the state's efforts to fund local HIOs, many question the value they will derive from the regional HIO. Some argue that hospitals' interests are better served through "private HIE" and support of accountable care organizations (ACOs), recognizing this may hinder broad-based HIE participation.

> "I would say we are incredibly aligned; the Regional Extension Centers, the TMA, THSA, the State government, the Medicaid HIE are all closely interconnected… where people are serving on interconnecting boards and relationships. I think we are incredibly aligned." —*Provider Association*

A few health systems view state-funded regional HIOs as a way to share a limited amount of data, such as CCDs, but are looking for other ways through which they can establish larger networks for information sharing. For example, in addition to connecting with its local HIO, one large health system in Texas is planning to build infrastructure for connectivity with another large hospital system. This hospital sees its local HIOs as a way to share CCDs, but wants a separate avenue through which to share additional data with select partners. Texas is seeing a rise in hospital- and enterprise-based HIE; consequently, providers have alternate venues through which they can exchange information, outside of the 12 HHSC-funded HIOs.

The Medicaid Health Information System (MEHIS) is an innovative approach for exchange that may be able to leverage the THSA in the future. MEHIS currently provides a portal for providers to access claims data, including health history, visit history, prescription drug history, and lab results from tests analyzed by the state laboratory. Medicaid will also provide data through a portal that connects directly to providers' EHRs. Providers will request information using an assigned ID number and the patient's ID, and Medicaid will provide them with the requested information. Medicaid is conducting a pilot program with two established HIOs to provide prescription drug history information for Medicaid beneficiaries. This pilot will inform Medicaid on how useful the data is for providers and which transport protocols are the best mechanism for transmitting patient information. Medicaid's future plans include establishing interfaces with the THSA and ImmTrac, Texas' immunization registry, to access immunization data and make it available to Medicaid providers.

The THSA is using Direct to connect providers in "white space" counties but is seeing no uptake. In 2012, the THSA evaluated 15 applicants responding to a Request for Qualifications (RFQ).[15] A team of THSA and HHSC reviewers used a multi-step process evaluation to assess quality, cost, readiness, coverage, and willingness to deliver core services. The final stages of the evaluation included interviews, live demonstrations, and a technical capabilities test of the HISPs' ability to send Direct messages. The THSA chose GSI Health, Harris Healthcare Solutions/Integrated Care Collaboration, Inpriva, Sandlot Solutions, and Secure Exchange Solutions to provide "lite"

> "I think [Direct] will start getting some legs under it, but it hasn't been the easiest sell. The white space will 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." –*Health Information Exchange representative*

HIE connectivity services, including CCDs and lab results delivery using Direct transport protocols.

To drive demand for Direct services, the THSA established a voucher program to offset initial connectivity costs for providers and provides the HISPs with initial funding to support these services. Despite THSA subsidies, as of March 2012, no providers had enrolled with the HISPs to access Direct services. While some stakeholders believe the program is new and awareness is still low, other stakeholders attribute the lack of uptake to various factors:

- The "first fax conundrum" where providers are hesitant to be the first to adopt secure messaging without a guarantee that their potential trading partners will also acquire and use Direct messaging;
- Providers have other options for meeting MU requirements through EHR vendors, affiliations with hospitals, or other provider organizations;
- The development of ACOs, with plans to establish their own HIE infrastructures, erodes the potential market for Direct. For example, rural providers in the Texas Panhandle who may have found utility in Direct services are planning to establish an Advance Payment ACO instead.
- Provider needs outstrip the capabilities and practicality of Direct. One large hospital representative notes that Direct is essentially a secure email system where one would have to attach and send files manually. They note that Direct may be a useful solution for a doctor in a small office who needs to send a limited number of referrals to a finite number of partners, but for hospital systems and large providers with multiple tests and trading partners, manually connecting and exchanging with each partner is not feasible.
- Concerns about Direct as a mechanism for exchange because it is a "pull" not a "push" approach. Although stakeholders recognize Direct's value in connecting providers who do not have EHR systems, they believe Direct is a transport mechanism for digitizing information without the added value of query-based exchange.

In spite of these concerns, the THSA, the RECs, HIOs, state-level professional associations, and local rural health institutes continue collaborating on provider outreach to encourage the use of Direct. The THSA seeks their input when developing resources, such as fact sheets, brochures, and information on the white space voucher program, and on the Local HIE Program as well as to help promote HIE and provider connectivity to HISPs. The RECs also plan to establish agreements with the TMA to do marketing and outreach to physicians about REC resources. One regional HIO does see demand for Direct in rural areas because it is a low-cost solution that allows the five or six local physicians to connect with the local hospital. The HIO also sees its utility as a method for long-term care and behavioral health facilities, who require secure exchange but have limited needs and a limited volume of information to send. So while the HIO is pursuing query-based exchanged, it intends to maintain Direct services.

> "Direct's intended use is not terribly valuable to the end user right now because of other systems that will be coming to replace it; however… the cost is dirt cheap. So we owe it to our community to try and find a way to use such a cheap resource."
> —*HIO representative*

Hospital systems are interested primarily in private or regional HIOs over public services for a variety of reasons. One large hospital system plans to participate in public exchange but says one main reason it maintains a private system is because the state offers a fraction of the services. Its

own private-HIE solution integrates "anything you can think of" into the EHR, processing 14 million electronic documents per year, and the organization is able to tailor the information to their needs to avoid "drinking from a fire hose." Another large provider system exploring both private and public HIE options raises concerns that the goal of broad exchange—that no matter where a person travels, in the event of an emergency their medical records are accessible at point of care—is not currently possible because of costs, difficulty of coordination, and lack of a state and national framework. Another echoes this concern, stating that the value proposition of information sharing is much higher on a regional and local level where patients are most likely to seek care. This individual also notes frustration with the speed of federal and state efforts. In mid-2010 his organization decided to create a private exchange system, spent a year constructing it, and now shares data among four different EHRs. In this case, a private HIE solution was better able to meet both the technical and the practical (time-related) demands of the organization.

Conclusion

The geographical makeup and diversity of the Texas have greatly contributed to the development of a three-pronged, market-based approach to the state's Cooperative Agreement Program. The THSA funds 12 local HIOs throughout the state, allowing them to provide services based on the needs of their individual communities. HIOs are encouraged to engage with a wide variety of key stakeholders in their regions, particularly with large health systems, to ensure the services they provide are creating a value-add for both market relevance and sustainability. Additionally, Texas' white space program provides an innovative solution to tackle the issue of connecting providers in the vast rural regions of "white space" and helping them meet MU requirements. While the future of the Local HIE Grant Program seems promising, as of March 2012, the white space program was not seeing demand from providers.

The state has delayed offering state-level services so they can focus on bolstering and expanding local HIO efforts. Given the size and diversity of the healthcare market in Texas, the state's approach has strong support from stakeholders; however, the future of the state's role in HIE and the sustainability of the HIOs remains uncertain. Changing dynamics in the healthcare market and in state and federal legislation have shifted the traditional relationships between hospitals and ambulatory providers. The creation of Nonprofit Health Corporations, to bypass the prohibition on the corporate practice of medicine, allows the creation of networks of hospitals and ambulatory care providers, many of whom have an interest in a growing the private HIE market. Furthermore, changes spurred by the ACA have encouraged hospitals to start developing ACOs. These changes may challenge the viability of community-based HIOs and state-level services; thus, adequate state planning, the strategic offering of in-demand services, and stakeholder participation is critical to the program's longevity.

[1] Vest JR, Gamm LD. (2010). Health information exchange: Persistent challenges and new strategies. *Journal of the American Medical Informatics Association, 17*, 288-294.

[2] Agency for Healthcare Research and Quality Archive (2004). State and Regional Demonstration Projects in Health Information Technology (AHRQ-04-0015). Retrieved from: http://archive.ahrq.gov/fund/contarchive/rfp040015.htm

[3] Office of the National Coordinator of Health Information Technology (2012). HITECH and Funding Opportunities [Internet]. Retrieved from: http://www.healthit.gov/policy-researchers-implementers/state-health-information-exchange .

[4] Office of the National Coordinator of Health Information Technology (2012). Meaningful Use Rules – Stage 1 [Internet]. Retrieved from: http://www.healthit.gov/policy-researchers-implementers/meaningful-use-rules-stage-1

[5] Blumenthal D. & Tavenner M. (2010). The "Meaningful Use" Regulations for Electronic Health Records. *New England Journal of Medicine, 363*, 501-504.

[6] Ibid.

[7] The Direct Project. (2011, October 11). The Direct Project Overview. Retrieved from: http://wiki.directproject.org/file/view/DirectProjectOverview.pdf

[8] U.S. Census Bureau (August 2011). 2010 Census: Texas Profile. Retrieved from: http://www.census.gov/geo/www/guidestloc/pdf/48_Texas.pdf.

[9] SK&A. (June 2012). U.S. Physician Office Density Report.

[10] U.S. Census Bureau (2012). 2010 Census Data [Internet]. Retrieved from: http://2010.census.gov/2010census/data/

[11] Office of the National Coordinator for Health Information Technology (February 2011). State HIE Strategic and Operational Plan Emerging Models. Washington, DC: Department of Health & Human Services. Retrieved from: http://www.nationalehealth.org/sites/default/files/onc_state_hie_strategic_and_operational_plan_models_full_study-_feb_2011.pdf

[12] HIE Texas (2012). About Texas HIE [Internet]. Retrieved from: http://www.hietexas.org/about-texas-hie/overview

[13] U.S. Census Bureau (2012). 2010 Census Data [Internet]. Retrieved from: http://2010.census.gov/2010census/data/

[14] Centers for Disease Control and Prevention (2011). Electronic Health Record Systems and Intent to Apply for Meaningful Use Incentives Among Office-based Physicians Practices: United States, 2001-2011. NCHS Data Brief, 79. Retrieved from: http://www.cdc.gov/nchs/data/databriefs/db79.htm

[15] HIE Texas (2012). White Space Strategy: Overview [Internet]. Retrieved from: http://www.hietexas.org/white-space/overview