How Local Context Affects Providers' Adoption and Use of Interoperable Health Information Technology: Case Study Evidence from Four Communities in 2012

ROUND 1 OF CASE STUDIES

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How Local Context Affects Providers' Adoption and Use of Interoperable Health Information Technology: Case Study Evidence from Four Communities in 2012 (Round One)

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Background on HITECH Programs

The Health Information Technology for Economic and Clinical Health (HITECH) provisions of the American Recovery and Reinvestment Act of 2009 were created to improve health care quality, safety, and efficiency. Key components of HITECH include:

- *The Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs provide payments to eligible health professionals and hospitals that adopt, implement, or upgrade certified electronic health records and achieve the meaningful use (MU) of health information technology (health IT).*[1]
- *The Stage 1 MU regulation includes a core set of 15 objectives and a menu set of 10 additional objectives, of which providers must implement five to qualify for EHR incentive payments. Providers could attest to Stage 1 beginning in 2011. Stage 2 MU criteria—which build upon the Stage 1 criteria and emphasize patient engagement and health information exchange—were released in September 2012; providers who attested to Stage 1 in 2011 or 2012 could begin attesting to Stage 2 in 2014. Stage 3 MU criteria are in development and are proposed to begin in 2017.*[2]
- *Regional Extension Centers (RECs) across the country offer technical assistance to providers to "bridge the technology gap" mainly by assisting primary care providers in small practices and underserved settings with all aspects of the EHR adoption process, including achieving MU.*[3]
- *The State Health Information Exchange Cooperative Agreement Program (HIE Program) seeks to facilitate electronic flow of health information between providers within and across 56 states and territories, including the District of Columbia.*[4]
- *The IT Professionals in Health Care Program, referred to as the Workforce Development Program, aims to rapidly train a workforce of health IT professionals to help providers implement and meaningfully use EHRs.*[5]

Purpose of this Brief

Through three rounds of comparative site visits, this study illustrates how local context affects HITECH program implementation as well as providers' incentives and ability to achieve MU. In this issue and a subsequent brief,[6] *we identify the influence that state governments and policies, local grantees charged with implementing particular HITECH programs, health care market and community characteristics, and current health care reform efforts are having on providers' incentives and ability to meaningfully use EHRs and qualify for Medicare and Medicaid incentive payments.*

This issue brief focuses on Stage 1 MU readiness in four diverse regions—Seattle, WA, Lubbock, TX, New Haven, CT, and Topeka, KS— as of late 2012. The subsequent issue brief focused on Stage 2 MU readiness as of late 2013 in four different communities. The third round of site visits, to be conducted in the fall of 2014, will include follow-up interviews with key respondents in these eight communities and will focus on the achievement of MU moving forward.

Local markets and communities start with very different health IT infrastructures, resources, challenges,

and public and private parties that affect whether providers have the incentives and knowledge to achieve MU. Customized technical assistance and health IT community development strategies may better fit and support diverse local health care markets and communities. Our findings suggest that there are different types of emerging health IT communities and multiple pathways to successful implementation of HITECH programs.

Four Health IT Communities

Viewing health care through local health IT communities is useful for understanding the context in which HITECH programs are being implemented, the extent to which and how quickly health care providers will adopt EHRs and achieve MU, and the implications for policymakers. We primarily focus on how local market structures and dynamics, population and provider characteristics, and social networks (e.g., a set of norms, habits, or culture) can potentially aid or hinder health care providers' exposure to and attainment of MU within a health IT community.

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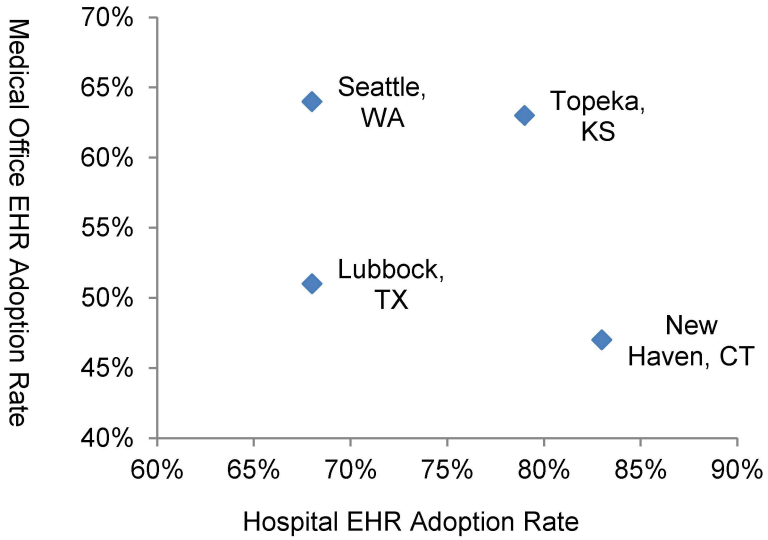
In this issue brief, we present findings from interviews conducted in the last quarter of 2012 in four hospital referral regions (HRRs). The 306 HRRs in the U.S. represent local health care markets containing the referral hospital or hospitals most often used by residents of the area.[7] We refer to HRRs as "communities" in the rest of this brief.

The four health IT communities profiled in this report are Seattle, WA, Lubbock, TX, New Haven, CT, and Topeka, KS, which vary in the rate at which their hospitals and physicians have adopted EHRs as of 2010, as shown in figure 1. While there is some variation in EHR adoption across the four communities, we purposefully eliminated communities categorized as EHR innovators or laggards from our consideration. By definition, innovators are rare and do not reflect typical HRRs and providers. Laggards may be so far behind that they may not be well positioned to respond to HITECH programs during the first two years of implementation.[8]

Figure 1. EHR Adoption Rates as of 2010 among Four Health IT Communities Interviewed



Sources: 2010 American Hospital Association Information Technology Supplement Survey and 2010 SK&A Physician Office Usage of EHR Database.

In each of these four communities, we conducted approximately 13 semi-structured interviews (51 total) in person or over the telephone from September to December of 2012. Respondents included: project staff directly involved in states' health IT programs (e.g., health IT coordinators and directors of REC, HIE, and Medicaid incentive payment programs); health IT decisionmakers, including clinical and

administrative staff in hospitals and physician practices; and representatives of key provider associations, health plans, and community health centers in the state. We also reviewed documents on HITECH programs provided by the Office of the National Coordinator for Health IT (ONC) and interviewees, as well as publications about local markets and state health IT policy.

What might explain this pattern of EHR adoption among providers at the beginning of HITECH, and what aspects of the local context were shaping providers' incentives and ability to achieve Stage 1 MU during our visits? For each site, we begin by briefly describing important baseline state government policies and HRR health care market characteristics that might affect the health IT community. We then describe how interviewees perceived HITECH program implementation in the HRR. Finally, we briefly describe other health care reform efforts that may provide additional incentives for providers to meaningfully use EHRs.

Seattle, WA

The Seattle community features many large organized delivery systems with a history of using EHRs and health IT. Many physicians in the area are employed by these systems. Our interviews suggest that this community's baseline health care market facilitated the successful implementation of several HITECH programs.

Baseline Conditions

Seattle is home to some of the world's leading technology companies, such as Microsoft and Amazon, as well as other large employers in the manufacturing sector (e.g., Boeing). Due to a competitive labor market with highly educated workers, these employers provide rich health insurance benefit packages and are quite focused on the quality and cost (or value) of the health care services their employees receive. Additionally, because of their own core business products and process redesign techniques (e.g., Lean, Six Sigma), these firms have in turn asked local insurers and health care providers what IT or quality improvement strategies they are using. As some interviewees reported, company executives from these large employers were initially shocked by how little the health care sector was using IT and other quality improvement strategies, relative to those used in their own high-technology industries, and pressed health care providers to explore how they could use them moving ahead.

The Seattle community is home to several large, prominent organized health care delivery systems and has fairly consolidated provider markets. One of these systems is Group Health Cooperative of Puget Sound, a traditional group-model Health Maintenance Organization (HMO) that owns and operates a full range of facilities and combines insurance products and a large multispecialty physician group that contracts with the plan. The community also is home to several prominent and large hospital based systems, particularly the Swedish Medical Center and the University of Washington, as well as large physician groups like Virginia Mason.

The Seattle community was very well poised to capitalize on HITECH as these systems had heavily invested in EHRs and other health IT systems prior to program implementation. Some interviewees indicated that this investment was partly in response to local employer and competitive pressure, as well as their own intrinsic professional motivation. These large organized delivery systems and their employed or affiliated providers were also already very familiar with EHR technology and largely already convinced of its major benefits. However, the Seattle community also has several smaller, free-standing hospitals in the wider region, which may also explain the overall lower adoption rates by hospitals.

Before the passage of HITECH, in May 2009, the state passed the Substitute Senate Bill 5501, which designated Washington's Health Care Authority as the lead state entity in charge of coordinating and

implementing health IT programs in the state. The state also is viewed as having patient privacy and security laws that favor protecting patients' privacy over facilitating electronic use and sharing of health information by providers.

HITECH Implementation

Meaningful Use and Incentive Payment Programs. For large organized delivery systems and providers in Seattle, achieving Stage 1 MU was relatively easy, primarily involving tweaks to their EHR systems, considering new ways of doing things internally, and selectively reaching out to providers who had not yet achieved Stage 1 MU. These systems and their employed or affiliated providers already had the resources and knowledge (in-house or through privately engaged consultants) to assess and plan for the Stage 1 MU criteria and apply for the financial payments available through HITECH's Medicare and Medicaid EHR Incentive Programs. Some of these systems also saw the potential strategic and business case for helping free-standing and unaffiliated providers with EHR implementation and health information exchange, particularly in outlying suburban areas or rural parts of the state that referred patients to these larger health systems.

The road for smaller, free-standing providers and hospitals was far more challenging, and required more technical assistance and workforce support from local HITECH program grantees or entities, such as EHR vendors. The move from a completely paper-based office to EHRs when the provider has little or no prior experience with EHRs and little or no financial resources and knowledge is a daunting task and major change requiring significant assistance. However, Seattle was faring fairly well in this technical assistance area due to the efforts of the local REC, according to interviewees.

Overall, interviewees provided positive feedback on the implementation of the Medicaid EHR Incentive Program in the community. Although the program did not launch quickly in Seattle, providers and professional associations viewed the program that was ultimately implemented as being successful.

Table 1. HITECH Programs in Seattle, WA

Program	Grant Recipient	Name	Launch Date
Medicaid EHR Incentive Program	N/A	State of Washington, Health Care Authority	June 2011
Regional Extension Center	Qualis Health	Washington and Idaho Regional Extension Center(WIREC)	February 2010
Health Information Exchange Program	Washington Health Care Authority	OneHealthPort	October 2009
Workforce Development Program	Bellevue College	Community College Consortia	March 2010

Regional Extension Center. Interviewees uniformly felt positively about the Washington and Idaho Regional Extension Center (WIREC), the REC that serves the Seattle community. The REC's mission is to support smaller and safety-net providers who do not have the resources or knowledge to achieve Stage 1 MU on their own. The REC was perceived as working well with the community and providing outreach, education, and support to providers to help them adopt, implement, and upgrade their EHRs and/or achieve Stage 1 MU.

While many community health centers (CHCs) [9] in Washington already had EHRs prior to HITECH, most signed up for technical assistance services provided by the state's REC to help them achieve Stage 1 MU and receive the incentive payments available to them.

State Health Information Exchange Program. Meanwhile, the state HIE, OneHealthPort, was encountering multiple challenges. First, large organized delivery systems in the community saw little or no business case for engaging in health information exchange with other providers outside their systems (with non-employed and non-affiliated providers) with whom they compete. They also noted that the majority of their patients receive most of their care within their own system, so they already had the information they needed. Second, due to uncertainty over the viability of the state HIE and other priorities, employers, insurers, or patient advocacy groups did not provide any pressure or funding to incentivize the exchange of health information. For example, insurers were focused on broader health care reform and did not see the potential business case of EHRs and health information exchange for them as payers. Some interviewees were also unsure how any investments in EHRs and health information exchange would be counted in insurers' medical loss ratios (MLRs).[10]

Workforce Development Program. There were also some challenges associated with the HITECH Workforce Development Program. Some interviewees either felt the skills taught through the program were too basic, or that they did not have the need to hire someone. One interviewee said program graduates often did not have the real world experience needed to be hired on at a health care organization.

Despite these negative or neutral perceptions of the state HIE and Workforce Program, there was significant momentum in the local market and community and a certainty that providers would continue moving to future stages of MU to improve quality, safety, and efficiency.

Health Reforms to Sustain Health IT Efforts

In terms of other health reforms being undertaken at the state level, Washington has decided to expand Medicaid under the Affordable Care Act (ACA), and has various medical home payment arrangements available to practices, under either national or state-developed programs. According to researchers at the Dartmouth Institute, accountable care organization (ACO) activity in the state is centered in the Seattle area, [11] which makes sense given the highly advanced organized delivery systems described earlier.

Providers and other stakeholders were concerned that the HITECH program implementation timeline was aggressive and the impending end of some grant programs would make it hard to sustain progress, particularly for smaller and safety net providers. However, the Medicare and Medicaid EHR incentive programs and other health care reforms were viewed as providing significant incentives for all providers to continue moving on to successive stages of MU.

Lubbock, TX

The Lubbock community was not well positioned for HITECH and several aspects of program implementation were not going well there. Since many physicians in the Lubbock community rely heavily on paper records and have little or no prior experience with EHRs or health information exchange, the nature and pace of change in HITECH was extremely difficult for providers. In describing when innovation and change comes to Lubbock and how it is experienced, one interviewee said, "Change emanates from the two coasts—east and west—and hits Lubbock, Texas last and hard."

Baseline Conditions

The Lubbock community is a rural area known for cattle, cotton, gas, oil, and peanut production. It stretches over a vast area of western Texas and eastern New Mexico.[12] Many parts of this community do not have broadband or high enough internet speed to support health information exchange, a problem interviewees cited as a barrier to EHR adoption and health information exchange. In addition, state

borders mean that health IT-related legislation from Texas and New Mexico may conflict on key issues like consent and privacy.

There are a few large employers in the Lubbock community, such as Texas Tech University and Atmos Energy, and many family-owned farms and small businesses that do not heavily use technology and often do not offer health insurance benefits to their employees. Additionally, the community has a sizeable portion of undocumented immigrants that work on the farms and in oil fields.

The Lubbock community has a fairly competitive insurance market with Blue Cross Blue Shield of Texas and United Health. However, many of these insurers are based in Dallas or elsewhere, so are less engaged in local health-related efforts, including health IT.

The hospital market in Lubbock is also fairly competitive, with 27 hospitals operating in the community. There are two competing systems centered in the more urban area (Covenant Health System and hospitals owned by Community Health Systems) and some of the small hospitals in New Mexico are owned and operated by a larger hospital system operated out of Albuquerque. The Lubbock community also has many small, free-standing public (county) and private hospitals, some of which are critical access hospitals with under 25 beds.

While the two larger hospital systems in Lubbock are viewed as the most advanced in EHR adoption and use in the area, interviewees indicated that neither were early adopters of EHR technology or were contemplating making any major new investments in this area in the near future. These hospitals did not have much in-house health IT expertise and did not engage outside consultants to assist with longer-range planning. However, they were working on their own system upgrades and were considering whether they could serve as a de facto hub for health information exchange outside of the state HIE program.

According to interviews, because of "corporate practice of medicine" laws in Texas, there are some restrictions on whether hospitals can own medical groups and/or employ physicians. Therefore, while some medical groups are aligned with hospital systems, there are many other unaffiliated or unaligned medical groups that lack the resources to invest in an EHR. In addition, practices in Lubbock are often short staffed because it is very difficult to recruit and retain new physicians and other clinicians in these rural areas. Consequently, many of the providers are relatively old and extremely busy, adding additional challenges to adopting EHRs and achieving MU.

Texas had passed some health IT related legislation prior to HITECH. In June 2007, the state passed House Bill 1066, which created the Texas Health Services Authority (THSA) as a public-private partnership to coordinate health IT and health information exchange efforts throughout the state. Once THSA was created, the organization conducted various environmental scans on the status of health IT and health information exchange in Texas and began a dialogue about how the state could move forward.

HITECH Implementation

Meaningful Use and Incentive Payment Programs. Several interviewees in the Lubbock community expressed that MU did not add real value and that HITECH implementation was a low priority given the other challenges in the area. Some interviewees also said that HITECH was an unfunded mandate that was designed to put smaller, rural, or critical access hospitals out of business. These interviewees were likely referring to the financial penalties that will take effect in later years for providers who are not meaningful users of EHRs.

Most of the smaller hospitals in particular felt they lacked the resources and knowledge to move forward with EHR adoption and Stage 1 MU. For example, many noted that staff in these hospitals are wearing multiple hats and do not necessarily have any training or experience in EHRs or the time to learn about the technology and MU program requirements. However, a few were making significant progress. There

was an active rural hospital association discussing some of the EHR and health information exchange issues, and some hospitals found ways to make sense of the MU program and get things done despite little or no assistance.

Providers in Lubbock reported significant challenges with certified EHR vendors, including issues with: (1) getting EHR vendors' time and attention for implementation, service, and training, since they were smaller accounts; (2) affording the initial and ongoing costs of the hardware, software, necessary upgrades, and training; (3) understanding vendor contracts that were very complex; (4) using EHRs that were viewed as not being user-friendly and/or easily customizable; and (5) affording the cost of replacing a poorly-functioning EHR. The relatively higher prevalence of complaints about EHR vendors may stem from the fact that most providers we interviewed purchased EHRs from lower-cost or lesser-known vendors—many of whom may have fewer resources or were experiencing greater difficulty keeping up with demand.

Despite providers' struggles with adopting EHRs, the state's Medicaid EHR Incentive Program was perceived as working well by interviewees. Not only had the state launched its program relatively early, but professional associations and providers in the Lubbock community reported getting good information from the state about the program and its requirements.

Table 2. HITECH Programs in Lubbock, TX

Program	Grant Recipient	Name	Launch Date
Medicaid EHR Incentive Program	N/A	State of Texas, Health and Human Services Commission	January 2011
Regional Extension Center	Texas Tech University Health Sciences Center	West Texas Health Information Technology Regional Extension Center (WT-HITREC)	April 2010
Health Information Exchange Program	Texas Health and Human Services Commission	Southeast Texas Health Services	October 2010, not live yet
Workforce Development Program	Midland College	Community College Consortia	March 2010

Regional Extension Center. Interviewees uniformly reported not hearing or knowing much about the REC in the Lubbock community—the West Texas Health Information Technology Regional Extension Center (WT-HITREC)—and if they had heard of it, their impression was negative. The REC was based at Texas Technical University, and was viewed as having experienced numerous operational difficulties and not providing assistance to providers in the greatest need. However, this REC faced a challenging task, given the current state of EHR adoption in the community, the relatively large number of small providers needing assistance, other technological or attitudinal barriers (e.g., lack of broadband and older and more resistant administrators and clinicians), and long distances to travel to assist rural providers.

State Health Information Exchange Program. Most interviewees in Lubbock had a neutral or negative view of the state HIE program. Texas had a decentralized health information exchange model, where different organizations facilitate exchange in particular parts of the state and then, ultimately, these regional hubs would be connected. However, the organization charged with planning and launching state HIEs in Lubbock, Southeast Texas Health Services, concluded that health information exchange was currently not viable in the area and they would not proceed with implementation. There was some discussion about one of the two larger systems serving as the de facto health information exchange hub in the community, but there was no major decision or movement in that regard. Additionally, many rural providers viewed the potential for large systems to serve as the exchange as an impossibility given that

they used different EHR vendors; there was also a fear that these large systems would use EHRs as a way to "tether" smaller systems to them for referrals.

Another setback to the state HIE was the passage of House Bill 300 in June 2011. This legislation expands patient privacy protections for Texas covered entities beyond HIPAA and HITECH requirements, which raised providers' concerns about electronic health data and health information exchange. For example, the law established an opt-in policy (i.e., patients have to actively give consent for their health data to be shared, rather than saying they do not want their data shared) and providers face substantial fines and penalties if they inappropriately share data or have a data security breach.

Texas also had not focused on cross-state health information exchange policy issues. When we inquired about this, they explained that they felt they needed to focus on health information exchange within the state first, before focusing on the challenges of exchanging health information across state lines. They also noted that while Texas borders several other major states, the percentage of patients seeking care across state lines is not large, even if it is greater in some communities like Lubbock.

Workforce Development Program. Few in Lubbock had heard about the Workforce Development Program. The community college was far away from Lubbock and did not provide a clear message about the program's availability and value. Many providers in the Lubbock community perhaps were not yet ready to hire such graduates since the providers were in the earliest stage of EHR implementation.

An Absence of Health Reforms to Sustain Health IT Efforts

There is little health reform activity occurring in Texas in general, and in the Lubbock community in particular, that might give providers additional incentives to continue investing in EHRs and health information exchange. The state is not proceeding with the Medicaid expansion and lacks other provider payment and health reforms, such as pay-for-performance schemes, medical homes, or ACOs. Some expressed concern that because HITECH programs in the community had faltered and would be winding down soon, the area would stall in terms of EHR adoption and health information exchange.

New Haven, CT

The New Haven hospital market is dominated by a system (Yale New Haven) with advanced EHR capabilities and use, whereas the physician market consists of many physicians in small, free-standing practices. While Yale and its affiliated network of hospitals and practices were on the path of implementing Epic EHRs and meeting Stage 1 MU, many unaffiliated New Haven physicians did not have EHRs prior to HITECH; as such, HITECH implementation faced an uphill climb in New Haven.

Baseline Conditions

Yale University and Yale-New Haven Hospital are the two largest employers in the New Haven community, contributing to over 50 percent of the city's economy through education and health care services; other large employers include manufacturing and pharmaceutical companies. In terms of health insurance competition, Blue Cross Blue Shield is the largest plan, with its WellPoint managed care product accounting for the largest market share in the individual, small group, and large group insurance markets. UnitedHealth and Aetna also compete in the market, especially in the small and large group markets.

There are 13 hospitals in the New Haven community, which extends outside of the city itself. The hospital market in New Haven is dominated by the Yale New Haven Health System, which owns the Yale-New Haven Hospital. Yale's huge presence as a major organized delivery system is a defining

feature of the community. Our interviewees reported that approximately 90 percent of all patients in the New Haven area touch the Yale system in some form. In September 2012, the system purchased St. Raphael's, leaving Yale as the only hospital system in the city. The Yale New Haven Health System uses the Epic EHR product.

New Haven's physician market is not overwhelmingly consolidated and integrated with the hospital system. At the time of our interviews, one interviewee reported about 60 percent of physicians in Connecticut worked in small practices. However, this dynamic of unaffiliated physicians practicing in the large shadow of Yale was quickly changing, according to interviewees, with an increasing number of physician practices being bought out by Yale.

According to some interviewees, Connecticut as a state has one of the oldest physician populations in the country, and this demographic characteristic has led to widespread resistance to adopting EHRs. Interviewees said many older physicians working in small practices were holding out to work a few more years and then retire, in part because they did not see the process of adopting, learning, and integrating an EHR into their clinical workflow as being worth the money and effort. Interviewees also said that younger physicians who work in smaller practices might be delaying the adoption of an EHR until the practice is bought by a larger system (such as Yale) to help with the financial costs and time investments needed.

HITECH Implementation

Meaningful Use and Incentive Payment Programs. Interviewees frequently stated that physicians in smaller, free-standing practices in New Haven do not see a business case for EHR adoption. Many said the incentives offered by HITECH programs and Medicare and Medicaid MU incentive programs do not outweigh the full financial and non-financial costs of adoption. This is in part due to the experience of some early adopters in the state, who found that their originally-purchased EHRs did not meet Stage 1 MU. Fundamental cultural issues like physician resistance to adoption and Yale's ubiquity in the hospital market also dampened the implementation efforts of the REC and State HIE. Many interviewees in the community said that the culture in the state does not foster working together, which is a key need for fostering health information exchange. Interviewees also said large stakeholders often do not talk to each other and prefer to work on their own rather than as a group.

In addition to these general cultural barriers in the community, many interviewees also felt that bureaucratic delays and political issues at the state level were major barriers to successful HITECH implementation. For example, laws passed in July 2009 (Public Act 09-232) and June 2010 (Public Act 10-117) were meant to authorize and facilitate health information exchange development in the state, but due to divisions and delays within state government, such policy efforts had been delayed and hindered.

Table 3. HITECH Programs in New Haven, CT

Program	Grant Recipient	Name	Launch Date
Medicaid EHR Incentive Program	N/A	State of Connecticut, Department of Social Services	July 2011
Regional Extension Center	eHealth Connecticut	eHealth Connecticut	April 2010
Health Information Exchange Program	Department of Public Health, State of CT	Health Information Technology Exchange of Connecticut	January 2011, not live
Workforce Development Program	Capital Community College	Community College Consortia	March 2010

Similarly, political and bureaucratic issues delayed the start of the Medicaid EHR Incentive Program, with complaints of increasing programmatic expectations. Interviewees also said the staff of the program was small and stretched too thin at the beginning in July 2011, but was now running smoothly.

Regional Extension Center. The state's REC, eHealthConnecticut, is a private entity launched in April 2010 that contracts with technical assistance contractors to work with providers. Yale-New Haven Health System is one of these direct assistance contractors, tasked with providing "boots on the ground" technical assistance to practices. Interviewees stated that some small practices voiced concern about this arrangement, as many are very resistant to assistance that could be perceived as acquisition efforts by Yale.

While initial delays occurred, interviewees said the REC was helpful once it was implemented. However, the REC still faced challenges related to the underlying demographics in the state's physician market (e.g., old age) and independent physicians' negative attitudes toward EHRs.

State Health Information Exchange Program. Like the REC and Medicaid EHR Incentive Program in the New Haven community, the state HIE faced bureaucratic issues that led to delays in implementation. Interviewees said the REC, eHealthConnecticut, wanted to also be the lead state HIE Program, but the governor at the time disagreed and created a public/private entity to serve that function. This entity suffered from leadership and organizational problems, which led to the first state HIE board being dissolved. A new board was created in 2011, but little progress had been made by the fall of 2012. Interviewees described the state HIE as being in "limbo."

Due to Yale's reach and domination of the New Haven hospital market, many hospitals in the community can exchange data within the system, via Epic's portal. Interviewees said Yale, as well as other large systems in Connecticut outside of New Haven, are not waiting for the state HIE to further the exchange of health information. While Yale is on Epic, the other major systems in the state are not, and thus cannot electronically communicate with each other. However, due to Yale's dominance of the New Haven community, interviewees believe health information exchange will increase as the system continues to purchase small practices and brings more of its network up on Epic.

Due to the slow implementation of the state HIE, knowledge of health information exchange and privacy issues was low, according to interviewees. During the time of our interviews, there was no state legislation about privacy and security issues or known efforts to coordinate data sharing and privacy/security policies with neighboring states. Interviewees said that the state HIE entity was still grappling with whether to have an opt-in or opt-out model for patient consent. The state HIE entity favored an opt-out approach, while consumer advocates in Connecticut argued for an opt-in approach.

Workforce Program. Interviewees in New Haven had little to say about the HITECH Workforce Program. The closest program is located outside the New Haven community, at Capital Community College in Hartford. Practices said that hiring qualified graduates was difficult due to cost considerations, even when there was a need. Those that did hire graduates of workforce programs had positive experiences. On the hospital side, interviewees said there was a need for system-specific (e.g., Epic) trainees, so the workforce programs had less practical value for them.

Health Reforms to Sustain Health IT Efforts

Connecticut is moving forward with the ACA's Medicaid expansion and has begun making payments to medical homes that are aligned with national and state-developed qualification standards. There are some ACOs forming in the state, but the Yale New Haven Health System is not currently participating in any of the Medicare ACO programs. However, interviewees said they are looking into different delivery systems and payment changes.

Topeka, KS

The Topeka community is located in northeast Kansas and is made up of a relatively small downtown urban area surrounded by a vast rural area. Overall, implementation of key HITECH programs was reported as going very well in the community. Hospital staff members and physicians generally had a positive view of EHRs and were making good progress toward achievement of MU.

Baseline Conditions

Some of the largest employers in Topeka are the state and local governments, as Topeka is the capital of Kansas. The state itself is considered a proactive purchaser of health care services for its employees and Medicaid. Some of the other major employers in the community are transportation and distribution companies (e.g., railways, packaging) that distribute agriculture and other products throughout the Midwest.

Blue Cross Blue Shield of Kansas is also located in Topeka, and has the largest health insurance market share both in Topeka and the state overall.[13] According to one interviewee, while Blue Cross has engaged in some patient-centered medical home development activities, the plan has not engaged in local health-related efforts, including health information exchange. As in other communities, interviewees felt that insurers were preoccupied with other issues and were "sitting on the sidelines" with respect to health information exchange issues. One interviewee believed Blue Cross was reluctant to invest in health information exchange because the company did not believe it would ever work.

The Topeka hospital and physician markets are fairly competitive. 17 hospitals operate in the Topeka community, many of which are small, critical access hospitals in the outlying rural areas. Two of the largest hospitals in the Topeka community are Stormont-Vail and St. Francis, with Stormont-Vail being the market leader. These hospitals have some prior experience with EHRs, and there is some movement toward Epic among the larger hospitals and medical groups in the community. Most physicians in Topeka are in smaller, free-standing practices, although there are a few notable larger practices,[14] and some interviewees indicated that there has been an increase in recent years in the purchase and employment of smaller physicians groups by hospitals.

Topeka and the state of Kansas in general were well poised for the implementation of HITECH programs. Some interviewees noted the positive, can-do attitude and culture of the Topeka community and cooperative political environment as reasons for progress and success to date. For example, Executive Order 10-06 created the Kansas HIE Board in June 2010 and House Bill 2182 harmonized privacy and security laws with HIPPA. Several interviewees noted that state hospital and medical associations also play a proactive and positive role in helping implement HITECH programs by working with the state and other grantees, working hard on education and outreach to their members, and helping identify recommended EHR vendors.

HITECH Implementation

Meaningful Use and Incentive Payment Programs. Although smaller, free-standing medical groups face challenges to EHR adoption and MU, physicians in the community were generally positive and were working on achieving Stage 1 MU. There are also a large number of rural health clinics in the community, which are not eligible for the Medicare EHR Incentive Program. However, eligible professionals in such clinics can be eligible for incentive payments through the Medicaid EHR Incentive Program.

The Medicaid EHR Incentive Program was relatively slow to launch (January 2012), but at the time of our interviews was perceived as starting to work well. The REC and professional associations worked with the state to raise awareness of the program and its requirements, to ensure providers were receiving incentive payments for Adopting, Implementing, and Upgrading (AIU) and Stage 1 MU of EHRs.

Table 4. HITECH Programs in Topeka, KS

Program	Grant Recipient	Name	Launch Date
Medicaid EHR Incentive Program	N/A	State of Kansas, Department of Health and Environment	January 2012
Regional Extension Center	Kansas Foundation for Medical Care, Inc. (KFMC)	Kansas Foundation for Medical Care, Inc. (KFMC)	February 2010
Health Information Exchange Program	Kansas Department of Health and Environment	Kansas Health Information Exchange	July 2012
Workforce Development Program	Johnson County Community College	Community College Consortia	March 2010

Regional Extension Center. The REC in the Topeka community, the Kansas Foundation for Medical Care (KFMC) Inc., was very positively regarded in the community. The organization was described as having a very strong understanding of providers' needs and experience in providing technical assistance. At the time of our interviews, 1,600 providers had signed participation agreements with REC, exceeding its goal of 1,200. Additionally, approximately 350 physicians had met Stage 1 MU, and most all others with EHRs were expected to meet the Stage 1 MU criteria within the next year.

State Health Information Exchange Program. Most interviewees had a positive view of health information exchange in the Topeka community. Kansas has multiple statewide exchange programs: Kansas Health Information Exchange, Inc. (KHIE), which was created through state legislation; Kansas Health Information Network (KHIN); and Lewis and Clark Information Exchange (LACIE), which is primarily in the Kansas City area and growing less rapidly. KHIE, the state HIE Program, received all of the HITECH health information exchange funding available from ONC, but KHIN and LACIE were able to outpace them in terms of signing up providers. Most of KHIN's funding has been through local grants from a variety of associations (75 percent) and fee charges to hospitals and provider groups (25 percent).

KHIE was taken over by the Kansas Department of Health Environment in July 2013. When the transition occurred, the department projected that 1 million patient records would be included in the exchange by the end of the year. At the time of our interview, in December of 2012, there were approximately 100,000 patients' records in the state HIE and approximately 20,000 were being added per month. Of the other two statewide HIEs, KHIN is larger and more aggressive than LACIE, with 55 hospitals and 2,400 physicians participating, including Stormont-Vail, which was slated to begin testing the exchange early in 2013. However, both have full query capabilities and both have agreed not to charge each other for the exchange of data related to care. HIEs are required to be interoperable and connect to each other according to state law, although that had not yet been achieved at the time of our visit.

Privacy and security was not a big concern among interviewees in the Topeka community. Interviewees noted that the KHIE legislation was foundational because it harmonized privacy and security laws and laid the groundwork for health information exchange in the state. For example, Kansas adopted an "opt-out" policy that removes a potential barrier to exchange. Health information exchange interoperability across state lines remains a key issue in Kansas, but the state was considering how best to move forward given patient flows and neighboring states policies.

Additionally, the state has a history of other health information exchange related policies that were beneficial for meeting MU criteria. For example, the state has an immunization registry and was working to facilitate providers' connection to it electronically.

Workforce Development Program. Interviewees were aware of the closest Workforce Development Program (located in Kansas City) and generally had a positive view of it and its aims to train health IT staff, particularly in smaller, more rural areas. However, most interviewees lacked any concrete experience with the workforce program and were not sure how well trained and affordable the graduates would be, if they were hired by hospitals and physician practices in areas where they were needed.

Health Reforms to Sustain Health IT Efforts

There is some health reform activity occurring in Kansas and the Topeka community that might give providers additional incentives to continue investing in EHRs and health information exchange. While the state is not proceeding with a Medicaid expansion, which would have made additional providers eligible for the Medicaid EHR Incentive Program and could have sparked other provider payment and delivery reforms to facilitate MU, there have been patient-centered medical home initiatives undertaken in the state that encourage EHR adoption. As in all markets, there was some concern about what would happen as ONC grant funding and other HITECH programs wound down, but cautious optimism that the community and state would continue to move ahead.

Discussion

HITECH programs are designed to help providers achieve three sequential and increasingly challenging stages of MU and are highly interdependent, so if some programs are implemented too slowly or ineffectively, problems can spill over into other programs.[15] In Seattle and Topeka, many interviewees felt that the REC and Medicaid EHR Incentive Programs functioned well after they were launched and were effective at providing support to providers who did not have the resources or knowledge to achieve Stage 1 MU. In contrast, interviewees in New Haven and Lubbock had more neutral and negative views toward the REC, largely due to market, political, and cultural forces that were present in these communities prior to HITECH implementation.

Expanding upon this interdependency perspective, this issue brief illustrates how local context can impact HITECH program implementation and providers' willingness and ability to achieve MU. Communities had different degrees of health IT readiness when HITECH implementation began, and had very different cultures, economic conditions, and health care and health IT market dynamics. Moreover, while some communities appeared to have similar market structures, potential infrastructure on which to build (e.g., larger organized delivery systems and medical groups, active and strong professional associations, more receptive to EHR technology and change), or challenges (e.g., more small critical access hospitals or rural providers and greater resistance to change), the communities we visited were implementing and experiencing HITECH programs quite differently. For example, in Seattle, we found that large organized delivery systems and medical groups played a powerful, positive role in the community and were a hub of culture of innovation, learning and collaboration. In contrast, some interviewees—particularly independent physician practices—in New Haven viewed Yale as a negative force. Similarly, we found striking differences in providers' attitudes toward and ability to achieve Stage 1 MU in two rural communities, where HITECH programs was extremely difficult for providers to deal with in Lubbock but were significantly more manageable in Topeka.

Moving forward, HITECH programs could be improved with additional input from local communities. For example, organizational, clinical, administrative, and other key leaders could be targeted, cultivated, and engaged. As shown in Lubbock and New Haven, greater efforts toward education and outreach might

be needed in some communities to further engage and assist local communities. The experience in Lubbock also suggests that smaller, rural providers in some communities might need more special attention and customized strategies from the RECs. Continued efforts could be made to link struggling REC clients with similar providers, in similar communities, that have achieved MU to demonstrate how to successfully purchase and implement an EHR—since what works in larger, urban areas is not likely to be readily transported or work in other settings.

Consideration may also be given to educating and involving other key stakeholders within communities. Local private employers and health plans could be engaged, as they can play a very powerful role in health care and health IT communities, but to date have largely sat on the sidelines in these four communities. Additionally, education and outreach toward patients could be made to facilitate Stage 2 and Stage 3MU, as providers will need to use secure electronic messaging to communicate with patients and provide patients with online access to their personal health records through a patient portal. Outreach and education could also be targeted to meet patient needs by addressing privacy and security concerns or providing more information on the potential quality, safety, and efficiency benefits of health IT.

State HIE program implementation could and often did occur later without significantly hindering providers' ability to achieve Stage 1 MU, but health information exchange is becoming more important for providers and communities as MU advances toward Stages 2 and 3. By its very nature, health information exchange requires community consensus and collaboration. Greater benefit occurs when the whole community participates, but a competitive or free-riding posture may seem like the rational choice for many EHR vendors. Communities might come up with their own exchange solutions or identify vendor-based solutions, but these local solutions may be more vulnerable to unraveling and less likely to result in the kind of robust and universal exchange ultimately envisioned for EHRs.

Our comparative case study component of the HITECH evaluation also includes another issue brief, with additional focus on Stage 2 MU readiness in four regions with advanced health IT capabilities—Worcester, MA, Macon, GA, Milwaukee, WI, and Sacramento, CA.[16] This analysis of four new HRRs in late 2013 identifies even more concretely what community features and program implementation strategies might work best in areas of the country. As the health care system continues to evolve, these findings suggest health reform efforts could be improved with additional input from local communities, greater consideration of local community context and starting points, and allowing communities to use their local knowledge and resources to make progress.

Endnotes

[1] The Medicare EHR Incentive Program is run at the national level, while each state has a separate Medicaid EHR Incentive Program for eligible providers with a high Medicaid patient volume. For more information on the EHR Incentive Programs, see: http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html?redirect=/ehrincentiveprograms/.

[2] For more information on the Meaningful Use criteria and deadlines, see: http://www.cms.gov/Newsroom/MediaReleaseDatabase/Press-releases/2014-Press-releases-items/2014-05-20.html.

[3] For more information on the RECs, see: http://www.healthit.gov/providers-professionals/regional-extension-centers-recs.

[4] For more information on the state Health Information Exchange Cooperative Agreement Program, see: http://healthit.gov/policy-researchers-implementers/state-health-information-exchange.
[5] For more information on the Workforce Program, see: http://www.healthit.gov/sites/default/files/workforceevaluationsummativereport.pdf.
[6] Fredric Blavin, Arnav Shah, Nicole Cafarella Lallemand, Kelly Devers, and Christal Ramos, "How Local Context Affects Providers' Adoption and Use of Interoperable health Information Technology: Case Study Evidence from Four Communities in 2013 (Round Two)," 2014, Issue brief prepared for the Office of the National Coordinator for Health IT, awaiting publication.
[7] The localization rate is the percentage of all residents' hospitalizations that occur in local hospitals. Dartmouth Medical School, *The Dartmouth Atlas of Health Care, 1996*, ed. Megan McAndrew Cooper (Chicago, Ill: American Hospital Publishing, 1996).
[8] We used Rogers' Diffusion of Innovation Theory [Everett M. Rogers, *Diffusion of Innovations*, 3rd ed (New York: London: Free Press; Collier Macmillan, 1983)] to guide the selection of these four HRRs. This theory can be used to help explain how and why certain ideas, technologies, or products gain widespread use and diffuse through a specific population over time. Because the adoption and use of a given technology does not occur at the same pace for all individuals, Rogers classified the distribution of adoption through the lens of five major groups: innovators (the first individuals or groups to adopt), early adopters, early majority, late majority, and laggards (the last to adopt). All four of the selected HRRs are early adopters, early majority, or late majority.
[9] We refer to CHCs as organizations that receive HRSSA grants under Section 330 of the Public Health Service Act.
[10] Traditional MLR prior to the ACA is defined as the portion of premium income insurers pay out in the form of claims. However, under the ACA, insurers can add expenditures for quality improvement activities, including health IT enhancements, to the claims costs Henry J. Kaiser Family Foundation, "Explaining Health Care Reform: Medical Loss Ratio," 2012, http://kff.org/health-reform/fact-sheet/explaining-health-care-reform-medical-loss-ratio-mlr/..
[11] Valerie A. Lewis et al., "Accountable Care Organizations in the United States: Market and Demographic Factors Associated with Formation," *Health Services Research* 48, no. 6pt1 (December 2013): 1840-58, doi:10.1111/1475-6773.12102.
[12] Patients on the eastern side of the Sandia Mountains in New Mexico (in Portales and Clovis) typically travel into Lubbock, Texas for more advanced care rather than going over the mountain into Albuquerque.
[13] Coventry also has a sizeable presence, but is much smaller in comparison to Blue Cross Blue Shield of Kansas.
[14] For example, the Cotton-O'Neill group is a larger medical group that previously used the NexGen EHR and is moving to Epic.
[15] Marsha R. Gold et al., "Obtaining Providers' 'Buy-In' And Establishing Effective Means Of Information Exchange Will Be Critical To HITECH's Success," *Health Affairs* 31, no. 3 (March 1, 2012): 514—26, doi:10.1377/hlthaff.2011.0753; David Blumenthal, "Launching HITECH," *The New England Journal of Medicine* 362, no. 5 (February 4, 2010): 382—85, doi:10.1056/NEJMp0912825.
[16] Blavin, Shan, Cafarella Lallemand, Devers, and Ramos (2014).