

How Local Context Affects Providers' Adoption and Use of Interoperable Health Information Technology: Case Study Evidence from Four Communities in 2013

ROUND 2 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 2013 (Round Two)

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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 care 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 brief and a previous 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 2 MU readiness in four regions with relatively high EHR adoption rates—Worcester, MA, Macon, GA, Milwaukee, WI, and Sacramento, CA—as of late 2013. The previous issue brief focused on Stage 1 MU readiness as of late 2012 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. 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

Studying 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 are adopting EHRs and achieving MU, and the implications for policymakers. In this brief, 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.

In this issue brief, we present findings from interviews conducted in the last quarter of 2013 in four hospital referral regions (HRRs). The 306 HRRs in the U.S. represent local health care markets containing the referral hospital(s) most often used by residents of the area.⁷ We refer to HRRs as “communities” in the rest of this brief.

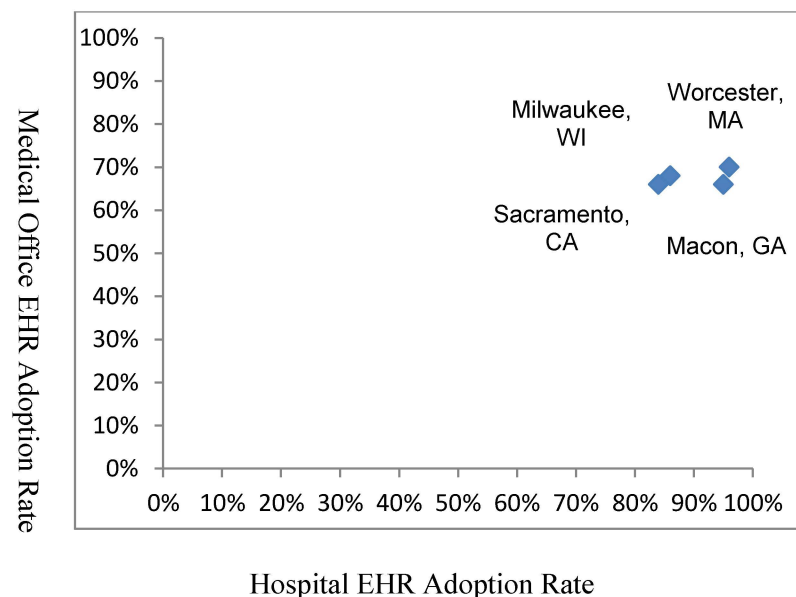
The four health IT communities profiled in this report are Worcester, MA, Macon, GA, Milwaukee, WI, and Sacramento, CA. All have relatively high rates of EHR adoption among physicians and hospitals as shown in figure 1. We eliminated from consideration regions that may not be well positioned to meet Stage 2 MU requirements during the first year of implementation—HRRs categorized as laggards or in the late majority of EHR adoption.⁸

We conducted a total of 36 semi-structured interviews in these four communities either in person or over the telephone from September to December of 2013. Respondents included: project staff directly involved in states’ health IT programs (e.g., health IT coordinators and directors of RECs, state HIEs, and Medicaid EHR incentive payment programs); health IT decision-makers, 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 about HITECH programs provided by the Office of the National

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Figure 1. EHR Adoption Rates as of 2012 among Four Health IT Communities Interviewed



Sources: 2012 American Hospital Association Information Technology Supplement Survey and 2012 SK&A Physician Office Usage of EHR Database.

Coordinator for Health IT (ONC) and interviewees, as well as publications about local markets and state health IT policy.

For each HRR, we begin by briefly describing important baseline state government policies and local health care market characteristics that might affect the health IT community. We then describe how interviewees perceived HITECH program implementation in the community. Across all communities, interviewees provided little feedback on the Workforce Development Program; we therefore do not include sections describing this program's implementation. Finally, we briefly describe other health care reform efforts that may provide additional incentives for providers to meaningfully use EHRs.

Worcester, MA

Baseline Conditions

Worcester is a small city in between western MA and the Boston area. According to some interviewees, the provider market in western MA is fragmented and consists of many independent small practices, while the market in the Boston area is highly consolidated and made up of large organized delivery systems that employ physicians. In contrast, Worcester has both major hospital systems—UMass Memorial Medical Center and St. Vincent Hospital—and small group practices.

According to our interviews, unaffiliated Worcester physicians are increasingly joining hospitals or large group practices to adjust to changes in physician reimbursement and to take advantage of resources and health IT support available in larger organizations. One interviewee estimated that around 600 physicians in Worcester are currently part of a small or unaffiliated practice, compared to 2,000 physicians seven years ago. One of the most commonly cited consolidation models involves large hospitals acquiring community physician practices. One respondent said this model is beneficial to both parties, as physicians receive a free or heavily-discounted EHR and hospitals get the physician's patient referrals. Additionally, Reliant Medical Group, a large group practice in Worcester that has been a leader in promoting health IT and quality improvement, has hired many unaffiliated physicians from small group practices. As a result, Reliant has extended their EHR system into the community and facilitated health information exchange in Worcester. For example, to improve quality and outcomes for its patients with diabetes, Reliant used clinical decision support to foster a collaborative, multidisciplinary approach to improving care. Reliant also worked with the [Massachusetts eHealth Institute](#)—the state's REC—to assist other medical practices interested in making the switch to an EHR system and improving health care quality.⁹

Worcester was well positioned for HITECH implementation because of the region's cooperative culture. In contrast to Boston, Worcester is a small community where it is easy for patients and providers to organize around common goals. Several interviewees said physicians in Worcester band together to try to compete with Boston physicians in terms of improving quality of care. For example, one interviewee cited how various providers, including two major hospital competitors (UMass Memorial Medical Center and St. Vincent), worked together to exchange health information through the IMPACT project, an ONC-funded HIE Challenge Grant further discussed in the next section.

State legislation and the political environment in MA also facilitated successful HITECH implementation in Worcester. MA has been at the forefront of health system change; this history of change includes major accountable care organization (ACO) activity, multi-payer payments to medical homes, and the state's seminal 2006 health care reform law. Multiple interviewees also mentioned that the state's 2012 cost control law, which requires physicians to demonstrate the skills required to meet MU by 2015 and connect to the state HIE by 2017, will have a positive impact on the number of physicians meeting MU criteria.

Finally, Blue Cross Blue Shield of MA, the largest insurer in the state, has long promoted EHR and health IT adoption. Many interviewees also said that the company’s alternative quality contract model has created long-term incentives for providers to invest in EHRs to meet the model’s quality requirements, as further described at the end of this section.

HITECH Implementation

The Massachusetts eHealth Institute (MeHI) administers the Medicaid EHR Incentive Payment Program with the state’s Medicaid program (MassHealth), serves as the REC, and is the state-designated organization in charge of state HIE activities. MeHI, created by the state legislature in 2008, is responsible for advancing the adoption of EHRs and electronic exchange of health information throughout Massachusetts.

Table 1. HITECH Programs in Worcester, MA

HITECH Program	Grant Recipient	Name	Launch Date
Medicaid EHR Incentive Program	N/A	MassHealth EHR Incentive Program	October 2011
Regional Extension Center	Massachusetts Technology Park Corporation	Massachusetts eHealth Institute (MeHI) Regional Extension Center	February 2010
Health Information Exchange Program	MeHI/Massachusetts Executive Office of Health and Human Services (EOHHS)	Massachusetts Statewide Health Information Exchange/Massachusetts Health Information Highway (Mass HIway; MeHI/EOHHS collaboration)	October 2012
Workforce Development Program	Bristol Community College	Community College Consortia	April 2010

Meaningful Use and Incentive Payment Programs. Despite Worcester’s high rate of EHR adoption among physicians and hospitals, and strong foundation for HITECH implementation, some interviewees expressed major concerns about the Stage 2 MU criteria that providers will have to meet. First, its ambitious timeline is leading some providers to feel they cannot keep up with the pace of implementation and are being dragged through the process. Second, some physicians are concerned about Stage 2 MU’s patient engagement requirements because they feel they cannot control their patient’s behavior. The patient engagement criteria require physicians to use their EHR systems to send and receive secure messages to and from at least 5 percent of their patients, and to have an online patient portal that more than 5 percent of a physician’s patients use to access their health information.

The state’s Medicaid EHR Incentive Program experienced early delays and setbacks, but overall has been successful. The program launched three months late due to delays in software upgrades, changes in Stage 1 MU criteria, and lags in receiving claims data from MassHealth. Since then, the program’s outreach team successfully helped practices determine program eligibility and go through the MU attestation process. As of January 2014, the state’s Medicaid EHR Incentive Program had paid out over \$7.3 million to providers across MA.

Regional Extension Center. Most interviewees described the REC as effective at signing up providers and helping them toward Adopting, Implementing, and Upgrading (AIU) EHRs or meeting the Stage 1 MU criteria. As of February 2013, approximately 2,500 eligible providers statewide were enrolled in a REC, of whom 55 percent attested to Stage 1 MU. At the time of our interviews, Worcester was performing ahead of the rest of the state: of the 521 eligible providers in Worcester enrolled the REC, 70 percent have successfully attested to Stage 1 MU.

According to our interviews, the local REC was successful in Worcester for various reasons. Interviewees said the REC was helpful in working with providers to assess their EHR readiness, select EHR vendors, train staff on their EHR systems, and educate staff about the MU measures. The REC also hosted meetings and webinars to boost provider and insurer engagement and worked with the Massachusetts Medical Society to advertise meetings and highlight EHR implementation success stories, which helped to spread outreach. Interviewees said the REC was also helping practices navigate through the bureaucracy of the Medicare and Medicaid EHR Incentive Payment Programs to ensure physicians received their payments. Another interviewee said the REC was working with a health IT leader in the Worcester community, Reliant Medical Group, to increase MU awareness and help providers implement and optimize EHRs.

One interviewee expected the Stage 2 and Stage 3 MU requirements to be more challenging for the REC to help providers with. In general, the interviewee said providers appeared less engaged in the Stage 2 MU process, as the initial momentum of HITECH faded. Another challenge facing the Worcester REC is the fact that they will no longer be able to provide direct assistance to individual practices once their HITECH funding ends and will need to scale back their services.

State Health Information Exchange Program. Mass HIway is a collaboration between the Massachusetts Executive Office of Health and Human Services (EOHHS) and MeHI to deploy a secure statewide health information exchange. Participants can connect to Mass HIway through DIRECT-enabled EHR systems (secure email), a local adapter for network distribution (LAND) or secure webmail portals.¹⁰ Our interviews revealed Mass HIway faced serious challenges. While Mass HIway has not had the participation initially hoped for, the infrastructure is in place to be successful as more providers achieve Stage 2 MU.

Interviewees cited technical and workflow barriers to Mass HIway participation. An interface connecting EHR vendors to Mass HIway has not yet been built and few vendors have communicated with Mass HIway. As one interviewee said, the “vendor community and provider community have to do this together. In general, we’ve had organizations that are ready to join the Mass HIway, start exchanging information, and address workflow issues, and the vendor is not ready technically to support that.” Additionally, even among providers who have DIRECT-enabled EHR systems, or are connected through a DIRECT-compliant intermediary system, technical and workflow issues—such as system checks, consent flags, and so forth—were a barrier to these providers participating in Mass HIway.

Some interviewees thought that privacy and security concerns among consumers were a barrier to Stage 2 MU and health information exchange. Because MA requires patients to “opt-in” to sharing their health records, obtaining and operationalizing patient consent has been a barrier for providers communicating with Mass HIway. Despite being knowledgeable about health care, some respondents indicated that consumers in MA don’t necessarily know what information exchange is, and are often worried about privacy violations.

Despite these barriers, health IT leaders in Worcester are optimistic that health information exchange will become more widespread in response to recent project grants. In July 2013, Massachusetts issued grants to 13 EHR vendors to help them build interfaces and connect their customers to Mass HIway. Massachusetts also issued 32 implementation grants to help providers, some in Worcester, directly connect to the state HIE. Additionally, ONC issued an HIE Challenge Grant to fund the Improving Massachusetts Post-Acute Care Transfers (IMPACT) project in Worcester. The IMPACT project, which focuses on transitions of care and data sharing between and among acute care and post-acute care facilities, facilitated cooperation among 16 organizations in Worcester—including a Federally Qualified Health Center, a large independent multi-specialty group practice, a long-term acute care facility, and an

inpatient rehabilitation facility—and created a web-based software for organizations that do not have EHRs.

In addition, steady funding for Mass HIway should improve its sustainability over time. To encourage and incentivize small practices to connect to Mass HIway, the state subsidizes the subscription fee for these providers to participate. To sustain itself, future Mass HIway activities will continue to charge subscription fees for some providers and leverage enhanced Medicaid Management Information Systems (MMIS) and state matching funding.

Health Reforms to Sustain Health IT Efforts

Some of the main objectives behind HITECH and health care reform are closely aligned: improving health care quality and outcomes, patient safety and access to information, and efficiency in the health care system.¹¹ HITECH can enable health care reform efforts by having complementary objectives and encouraging the electronic exchange of health information between providers and public agencies.

Massachusetts is a leader in health care reform and has implemented various programs that may have positively affected HITECH's implementation. These programs include:

- **The state's landmark 2006 health care reform law.** The law helped key stakeholders prepare for HITECH by making health care a top priority in the state and increasing awareness among consumers and providers.
- **The state's 2012 cost control bill.** This legislation required physicians to demonstrate the skills required to meet MU by 2015 and connect to the state HIE by 2017.
- **Medicaid matching funds for the state HIE to supplement ONC funding.**
- **Adoption of the patient-centered medical home (PCMH) and ACO models.** Many Community Health Centers have adopted the PCMH model and many providers have joined or formed ACOs. PCMH and ACO initiatives and objectives—such as improving health outcomes through care coordination and continuous access to care—are closely aligned with components of HITECH. While EHR adoption is not required to establish a PCMH, having an EHR can help manage the volume of documentation required to establish and sustain a PCMH. In addition, because there is considerable overlap between the meaningful use of EHRs and the establishment of a PCMH or ACO, providers who achieve MU could have a jumpstart on establishing a PCMH or ACO and vice versa.¹²
- **MassHealth's Primary Care Payment Reform Initiative.** The initiative aims to improve access to primary care, enhance patient experience, quality, and efficiency through care management and coordination, and to integrate behavioral health care with primary care. This initiative is similar to a PCMH model with integrated behavioral health services.
- **Delivery System Transformation Initiatives.** This initiative, part of the state's Medicaid Section 1115 waiver, rewards safety-net hospitals for improvements in quality and efficiency, and relies heavily on EHRs.¹³

In contrast to the other communities in this study, Massachusetts's largest insurer, Blue Cross Blue Shield of MA, has long promoted EHR adoption through its alternative quality contract, which combines a per-patient global budget with pay-for-performance incentive payments based on quality measures. While they are not requiring providers to meet a specific level of MU, Blue Cross Blue Shield of MA assumes EHRs are a necessary tool for providers to improve quality and therefore receive enhanced payments. Its alternative quality contract is stimulating EHR adoption in a number of ways, such as giving organizations data and reports on costs, utilization, and specific quality measures that can be integrated into an EHR. The alternative quality contract also holds providers accountable for total medical costs across health care settings, thus increasing the importance of health information exchange within and

across organizations. It also encourages innovation around health IT, such as tele-health, tele-consults, home monitoring, and electronic communication, which are all promoted in place of care that requires in-person office interactions.

Macon, GA

Baseline Conditions

Macon, GA is a small city located an hour southeast of Atlanta, with an agriculture-based economy. The hospital with the largest market share in Macon is the Medical Center of Central Georgia, a clinically integrated physician hospital system part of the Central Georgia Health Network (CGHN). The Macon HRR also has a few financially struggling critical access hospitals and the Houston Medical Center near Robins Air Force Base.

Macon's physician market is comprised of mostly independent, smaller practices with two or three physicians. According to several interviewees, the area's physicians tend to be older and less open to changes in practice workflow.

Macon's providers use several EHR systems; eClinical Works was cited as popular for ambulatory care, and Cerner and McKesson were mentioned as popular with hospitals. CGHN is also a regional HIE, but interviewees said it is only focused on local health information exchange and its leadership does not want to join the state HIE because providers in the CGHN network have the same EHR system and have been exchanging information for years.

Macon had relatively high hospital and physician EHR adoption rates before HITECH, primarily due to the work of CGHN. One interviewee said CGHN was able to negotiate discounted rates for associated providers to purchase eClinicalWorks several years prior to HITECH. While this increased EHR adoption in Macon, many of the providers said their EHR systems do not meet the MU criteria. One interviewee said that many providers who are connected to CGHN had poorly implemented their EHR system and had "years of bad habits to break." For example, this interviewee said some physicians used the EHR as "electronic filing cabinets" by dictating notes and scanning PDFs into it. At the time of our interviews, CGHN did not require their providers to meet MU.

HITECH Implementation

In 2010 and 2011, interviewees said Macon providers generally had bad experiences with EHR vendors, including poor user experience and the unexpected need to purchase EHR add-ons for certain functions. Interviewees said providers' experience with EHR vendors has improved since then but vendors are still perceived as a barrier to EHR adoption and MU. One interviewee said many practices obtained their EHR systems from their affiliated hospitals, but that those EHR systems were configured for use in the hospital setting rather than the primary care setting. Another interviewee said practices that buy EHRs on their own find the cost of fully customizing their systems prohibitive.

Improving the message on how MU can transform health care quality and outcomes could increase provider participation in Macon. As one interviewee stated, "Will we get more efficient? Not really. Will we get paid more or make our bottom line better? Hell no. Will it make our lives easier? Absolutely not. But if it's the right thing for the patient, then you have to do it."

However, conveying information about the intent of MU is challenging because of general suspicion of government programs in Macon. Providers interviewed also expressed general frustration over MU and

government involvement in health IT. Physicians are willing to use health IT to improve health care quality, but they view MU as just “hitting the targets” as opposed to a beneficial transformation. As one interviewee noted, “when [physicians] feel like this is just more hoops to jump through, created by the federal government, that’s where the rub comes.”

Table 2. HITECH Programs in Macon, GA

HITECH Program	Grant Recipient	Name	Launch Date
Medicaid EHR Incentive Program	N/A	Georgia Department of Community Health, Georgia Medicaid EHR Incentive Program	September 2011
Regional Extension Center	Morehouse School of Medicine	Georgia HITREC	February 2010
Health Information Exchange Program	Georgia Department of Community Health	Georgia Health Information Network (GaHIN)	October 2013
Workforce Development Program	There is no program in Macon or central Georgia	N/A	N/A

Meaningful Use and Incentive Payment Programs. Consistent with the findings in Worcester, many interviewees thought that the Stage 2 MU timeline was too aggressive, and the criteria were more stringent and difficult to attest to than Stage 1. For example, the patient engagement measures included in Stage 2 MU were viewed as potentially difficult to achieve, especially with older patients. As a result, many providers were uncertain about moving forward with the process, according to some interviewees.

Interviewees said the state’s Medicaid EHR Incentive Program had a lot of early problems. Providers were skeptical about the program’s effectiveness because it launched six months later than the start date that was initially announced. Interviewees also cited payment delays after attestation and other administrative issues at the beginning as large initial barriers to the program’s success. While the early part of the program’s implementation was tough, interviewees said the goals in terms of incentive payments had been achieved at the time of the interview.

Some providers worried about affordability since, in their experience, Medicaid incentive payments cannot cover the full costs of EHRs. Interviewees also worried about whether providers participating in the Medicaid incentive program would achieve MU. One interviewee said the incentive payment for AIU—which they described as “very little work”¹⁴—was too high compared to the Stage 1 and Stage 2 payment amounts, which required much more effort. This interviewee said some providers in Macon signed up to receive their first payment for AIU, with no intention of moving on to future stages of MU.

Regional Extension Center. Georgia’s REC is housed at the Morehouse School of Medicine, an academic medical center in Atlanta that disperses funding to local consultants who work to sign up and assist providers across the state. Interviewees said the REC’s consultant model has created tension between Morehouse and the frontline consultants related to program goals. For example, one interviewee was disappointed with the Georgia REC, saying it “seems like a great place for consultants to launch their careers” and does not align with the REC’s goal of assisting mostly small or solo practices who primarily serve high Medicaid, high-uninsured, or high-underinsured populations.

Interviewees also said the consultant REC model made it very difficult to see how services to providers can be effectively sustained. One interviewee said that, instead of viewing the initial REC funds as seed funding, Morehouse instead pushed out the grant funding into the community to consultants as quickly as possible and did not plan for long-term sustainability.

One interviewee expressed frustration at ONC's goals for the REC. He said that at the start of the program, the focus was on signing up as many providers as possible as clients of the REC. Eventually, interest moved to getting providers to go live on their EHRs and to achieve MU. Some interviewees in Macon felt that many providers signed up with the REC with no intention of ever moving forward with MU, which stunted the potential impact of the REC moving forward.

Distrust of government was also an initial barrier to REC success in Macon. One interviewee said physicians were hesitant to sign up with the REC or attest to MU because they perceived both as part of the Affordable Care Act (ACA), and thought the law would be repealed. However, REC contractors started to receive calls from providers who wanted to sign up late because they recognized the REC and ACA were not going away.

The REC in Georgia created a membership model to address sustainability issues. Initially, they told clients they would provide assistance without charging a fee. However, as federal funding has begun to wind down, interviewees said the REC can no longer provide assistance at no cost. One interviewee said the REC is still trying to figure out what their value-added services are.

State Health Information Exchange Program. The Georgia Department of Community Health, the state Medicaid agency, created the Georgia Health Information Network (GaHIN) and serves as an HIE “orchestrator” for the state. GaHIN aims to connect local or regional HIEs across Georgia; at the time of our interviews, the state was working with seven regional HIEs. There are two local HIEs in Georgia that are closed off and do not connect to the state HIE, including one mainly for ambulatory doctors in Macon that is managed by CGHN.

Macon has another local HIE that is connected to the state HIE, called the Georgia Regional Academic Community Health Information Exchange (GRACHIE), managed by the Medical Center of Central Georgia and the Georgia Health Sciences Health System. GRACHIE consists of mostly hospital-employed physicians, as it ties the two hospital systems together.

Prior to HITECH, there was a fair amount of health information exchange in Macon among CGHN-affiliated providers, but this exchange was limited to within the health system's provider network. Central Georgia is very rural and one interviewee said that until recently, internet connectivity issues posed a challenge to EHR use.

GaHIN uses HITECH funding to build the infrastructure for the state HIE. According to our interviews, GaHIN went live with query-based exchange in August 2013; at the time, a Medicaid data exchange module, including pharmacy, dental, claims, and public health data, was scheduled to go live in October 2013. Twenty organizations—hospitals, state agencies, a payer, and regional HIEs—were planning to connect to the state HIE, and data for around 6 million patients were expected to be available on the state HIE by the end of 2014, mainly through large health systems and the regional HIEs. One interviewee said Blue Cross Blue Shield of Georgia is actively participating on the board of GaHIN and that the board is in talks with other payers to get them to connect to the HIE. While the state HIE seems to have started slowly, and little exchange is actually occurring, the number and type of organizations lining up to connect indicate that GaHIN is gaining momentum.

The state HIE model is focused on connecting large organizations, such as regional HIEs, large health systems, and payers. GaHIN's goal is to have no fees charged to providers for the first three years. GaHIN hopes that if the larger organizations' fees are waived for the first three years, individual member providers will not be charged during that period either. Interviewees involved with GaHIN said this lack of upfront contribution will allow the state HIE to ramp up the volume of participation, and hopefully demonstrate value by the end of the first three years.

In 2012, Georgia’s foster care system transitioned from Medicaid FFS to managed care, which facilitated the connection of state agencies—Department of Human Services, Department of Family and Children Services, Department of Juvenile Justice, and Department of Behavioral Health and Developmental Disabilities—to the state HIE. At the time of our interviews, these connections were scheduled to begin in 2014.

Some interviewees said there is general confusion around HIPAA privacy rules in Georgia, especially around what information can be shared with other providers. They said this has been a challenge and has not been addressed at the state policy level. The legislature was described as taking an “If it’s not broke, don’t try to fix it” approach to health IT issues.

Health Reforms to Sustain Health IT Efforts

Georgia has not undertaken many other health reforms that could promote EHR adoption or MU. The state is not going forward with the expansion of its Medicaid population allowed under the ACA. Interviewees said there is some ACO activity but little medical home activity in Georgia. One interviewee said, “We don’t beat providers up over NCQA [medical home recognition].”

Milwaukee, WI

Baseline Conditions

Milwaukee is the largest city in Wisconsin, with a diverse economy that includes six Fortune 500 companies.¹⁵ The community is dominated by four large, integrated health care systems, the largest of which is Aurora Health Care. Aurora, an ACO that serves as a narrow network for Anthem Blue Cross Blue Shield, was described by several interviewees as the leader in this market in terms of innovation. The rest of the market is mostly shared among three systems—Froedtert Health, Wheaton Franciscan, and Columbia St. Mary’s—that have teamed up to form a second ACO for United Healthcare (which some interviewees referred to as the “non-Aurora” ACO). Intense competition amongst the four systems has encouraged them to maintain comparable EHR capabilities.

Many physicians in Milwaukee are part of an integrated system—either owned by or aligned with one of the four major health systems. One of the reasons practices often join a large system is to access more sophisticated EHR systems since the integrated systems tend to provide considerable technical assistance and support to providers during the adoption process.

Epic is the dominant EHR vendor in the state, though some larger providers have their own system. Cerner has some presence, but Aurora recently switched from Cerner to Epic. Interviewees described several perceived benefits of Epic. For example, since Epic’s headquarters is located in Wisconsin, people feel confident they can obtain the support they need. Epic also offers a number of classes to train physician champions and has a fairly active users group.

Overall, Milwaukee has a high rate of EHR adoption and was well-positioned for HITECH. As we will elaborate on, our findings suggest that the dominance of an innovative health system, the presence of other large competing systems, and the dominance of one EHR system has contributed to successful implementation of Stage 1 MU. However, these factors have also led to a more local focus, contributing to the community’s difficulty embracing the statewide HIE. In Milwaukee, it appears that the state’s approach to HIE has actually caused this market to move backward in health information exchange.

Table 3. HITECH Programs in Milwaukee, WI

HITECH Program	Grant Recipient	Name	Launch Date
Medicaid EHR Incentive Program	N/A	Wisconsin Department of Health Services, Wisconsin Medicaid EHR Incentive Program	August 2011
Regional Extension Center	MetaStar, Inc.	Wisconsin Health Information Technology Extension Center	February 2010
Health Information Exchange	Wisconsin Department of Health Services	Wisconsin Statewide Health Information Network (WISHIN)	August 2011 (Direct)
Workforce Development Program	Milwaukee Area Technical College	Community College Consortia	April 2010

HITECH Implementation

Meaningful Use and Incentive Payment Programs. Milwaukee began as a relatively advanced market in terms of EHR adoption and many providers were able to achieve Stage 1 MU without much difficulty. Among providers who have not adopted EHRs in Milwaukee, physician attitudes and resistance to change is the main barrier to EHR adoption and MU, along with provider concerns about undertaking Stage 2 MU and ICD-10 at the same time, the challenges associated with calculating Medicaid patient volume, and the tight deadlines to achieve MU.

While health system leaders appear confident that Epic systems will be able to meet MU standards, some interviewees expressed some concerns with Epic. Specifically, some interviewees were concerned that Epic products will not be ready for Stage 2, particularly with respect to the exchange requirements. Providers also talked about how it is too expensive and time-intensive to switch EHR systems they are already in place.

Regional Extension Center. The REC serving Milwaukee is the Wisconsin Health Information Technology Extension Center (WHITEC), a division of Metastar, which is Wisconsin’s CMS-funded quality improvement organization. WHITEC subcontracts with the Wisconsin Primary Care Association (WHIPCA) to work with FQHCs, and with another subcontractor to work with critical access hospitals. According to one interviewee at the time of the interview, an estimated 20 percent of WHITEC’s providers are from Milwaukee and about two-thirds of the providers the REC has worked with statewide have met Stage 1 MU.

The REC focuses on assisting independent providers, many of whom want to remain independent and value having neutral advice on purchasing an EHR, but question the REC’s independence. One interviewee said, “it is hard in this market with big systems and vendors to show them we’re not trying to sell them something.”

According to our interviews, the REC will continue providing services once HITECH funding ends by charging fees but will shift their focus away from small rural providers, who will likely not be able to afford the fees. One interviewee said charging for a security risk assessment is a possible revenue source and WHITEC has come up with creative ways to make this low-cost. WHIPCA has also received a grant to allow them to continue providing technical assistance to FQHCs without charging fees.

State Health Information Exchange Program. Wisconsin’s regional exchange (the Wisconsin Health Information Exchange, or WHIE) did not continue after the Wisconsin Department of Health Services, the recipient of ONC cooperative agreement funds, chose to utilize the Wisconsin Statewide Health Information Network (WISHIN) as the organization to provide infrastructure, services, and governance of statewide health information exchange. WHIE competed against WISHIN to be the ONC-funded state

HIE Program and lost. Although WISHIN had plans to include the Milwaukee region's WHIE in their architecture, the expense of maintaining two exchanges, may have contributed to WHIE shutting down.

Many interviewees said Milwaukee has moved backward in terms of health information exchange. For example, previously, WHIE had facilitated exchange of information between the emergency departments of the major health care systems. This health information exchange arrangement was motivated by the fact that patients were likely to go outside their system for emergency care and shop around multiple emergency departments for prescription drugs. WISHIN wanted to continue sharing information among emergency departments but lost credibility due delays in these efforts.

Providers seem to have found value in WHIE and many were paying an annual fee to participate. Those fees have now been redirected to WISHIN, from which some providers report they have not yet seen much benefit. According to some interviewees, large health systems saw their contributions toward WHIE as an investment in FQHCs and other low-budget smaller players in the Milwaukee community. Some felt this sense of a greater community good seems to have been lost in the transition to a statewide HIE program. However, at the time of the site visit, all the large systems in Milwaukee had signed memorandums of understanding to participate in WISHIN, and four community health centers had signed up as well.

Because most of the health care systems in Milwaukee use Epic, they are able to share information through Epic's exchange module, "Care Everywhere." Since Epic allows some data sharing and the health systems believe that most of their patients stay within their system, the health systems feel there is little or no need for the state HIE. However, Epic's data sharing capability is very limited in that it is only among those with Epic systems and even among Epic systems only a subset of patient data is exchanged. In addition, some interviewees said that patients do in fact go to different systems, not just for emergency department use, but for other services.

A goal of the state HIE is to drive participation by value, not by mandate. Many health systems are skeptical about whether WISHIN is needed, particularly as they need to pay a fee to participate. Some are giving WISHIN a chance but feel it needs to demonstrate its usefulness relative to Epic.

WISHIN, like many other organizations across the country, has been working hard to engage health plans but many are not yet convinced of the value of helping to fund state HIEs. Health plans might be free riders who benefit from the investment of others, and appear to lack understanding over whether their investment in health information exchange affects the medical loss ratio (MLR). An additional barrier is that insurers operating in the community need to obtain approval from national headquarters to invest in state HIEs.

Health Reforms to Sustain Health IT Efforts

The ACO movement in Milwaukee has led to increased adoption of Epic systems because the ACOs are requiring providers to use Epic to participate. Large systems that own physician practices (e.g., Aurora) had an easier time getting physicians to adopt Epic than those that do not (e.g., Froedtert, which contracts with physicians at the Medical College of Wisconsin). Wisconsin is not moving forward with expanding its Medicaid program under the ACA, but has begun issuing payments for Medicaid/CHIP medical homes, which could encourage further EHR adoption and use in the state.

Sacramento, CA

Baseline Conditions

The Sacramento HRR lies in California and a small part of Nevada and has a total population of around 2.5 million people. The top employers in the area include the state and county governments—the city of Sacramento is the capital of California—and has several large health systems.

Our interviews suggest that Sacramento’s baseline health care market enabled the successful implementation of several HITECH programs. The Sacramento HRR features four large health systems that have a history of using EHRs prior to HITECH. These four well-resourced systems—Sutter Health, Dignity Health, Kaiser Permanente, and the University of California-Davis (UC Davis)—make up most of the hospital market. In addition, many physicians in the area are part of physician groups affiliated with these large systems and have therefore received free or discounted EHRs from the hospital. Sacramento, as with California more broadly, also has a high concentration of HMOs, and of physicians and hospitals with prior experience with provider consolidation and managed care.

Major insurers in Sacramento include large plans like WellPoint, Kaiser Foundation Health Plan, and Blue Shield of California. Regional HMO plans, such as Western Health Advantage, incentivize cost containment and efficiency via EHRs. Interviewees agreed that when it comes to promoting widespread EHR adoption and use, the large health plans have little to no financial “skin in the game.”

Several state-specific laws affect the EHR adoption landscape in Sacramento. California’s Corporate Practice of Medicine laws prevent hospitals from directly employing physicians, which has led to large systems adopting one type of EHR while smaller unaffiliated practices adopt different products. Additionally, data security is a significant issue in California: two state laws signed in 2008 expand health information privacy rights beyond the scope of the federal HIPAA requirements. Health systems in this community—UC Davis, for example—have invested significant resources into strengthening their data security and privacy.

Table 4. HITECH Programs in Sacramento, CA

HITECH Program	Grant Recipient	Name	Launch Date
Medicaid EHR Incentive Program	N/A	MediCal, California Medicaid EHR Incentive Program	October 2011
Regional Extension Center	California Regional Extension Center (North)	CalHIPSO (North)	February 2010
Health Information Exchange Program	California Health and Human Services Agency	California Office of Health Information Integrity (CalOHII) and partners (e.g., California Association of Health Information Exchanges (CAHIE))	September 2012
Workforce Development Program	Cosumnes River College	Community College Consortia	April 2010

HITECH Implementation

Meaningful Use and Incentive Payment Programs. In general, most interviewees felt Stage 1 MU set a good balance between ambition and achievability. But some interviewees in Sacramento cited a number of barriers affecting providers’ ability to achieve Stage 1 MU, including frequent changes in program

guidance and interpretation of MU rules and regulations. This was cited as a barrier several times, with interviewees saying CMS and ONC did a poor job publicizing 2014 changes to the Stage 1 MU criteria.

Early adopters, like the four large hospital systems in Sacramento, viewed Stage 2 MU as a logical progression from Stage 1 and fairly easy to achieve. Early adopters hoped that ONC and CMS would not “water down” the Stage 2 MU criteria. For example, regarding the transitions of care measure, one interviewee said that rather than forcing organizations to exchange data across unaffiliated organizations and different vendor systems, the Stage 2 requirement now allows providers to do one transition of care, perhaps by exchanging data within the same health system; this interviewee thought that this change would limit actual exchange across organizations. Some interviewees also hoped Stage 2 MU would further incentivize providers to do more with health information exchange in general.

In contrast, small practices and rural hospitals in Sacramento do not have the same resources and are not connected or closely aligned to larger, more sophisticated organizations, and were perceived as having more challenges with meeting MU requirements. For some physicians, the idea of going through the attestation process again to meet Stage 2 MU was painful because of their difficult prior experience with achieving Stage 1 MU. One physician said she will probably have to contract with someone to help get her data ready for attestation, since her staff is so small.

A common barrier cited to achieving to Stage 2 MU was the requirement to have a patient portal. As previously stated, the patient engagement criteria requires physicians to use their EHR to send and receive secure messages to and from at least 5 percent of their patients, and to have an online patient portal that more than 5 percent of a physician’s patients use to access their health information. One interviewee said buying a patient portal from their EHR vendor costs approximately \$20,000. Other options include using an untethered patient portal owned by the organization or using DIRECT (secure email). For those, providers also need a health information service provider (HISP) to move the data from one EHR to another or to a personal health record (like Microsoft’s Health Vault). Interviewees said patient access to information measures are going to pose a big challenge, especially the “view, download and transmit” MU requirement.

Many interviewees in Sacramento said the state’s Medicaid EHR Incentive Program has been helpful in supporting providers trying to achieve MU, especially rural hospitals.

Regional Extension Center. CalHIPSOS, the largest of four RECs in California, serves the Sacramento HRR and is made up of 10 local extension centers (LECs). Most interviewees said that the Sacramento LEC, Health Services Advisory Group (HSAG), has provided great assistance to small physician practices, particularly those serving vulnerable populations. As of November 2013, 177 organizations and 497 providers had signed up with HSAG and 193 had met MU criteria or AIU, according to our interviews.

Interviewees in Sacramento said the REC helped providers understand what MU is about and navigate the entire process, and provided technical assistance to some of the providers. Early on, the REC negotiated contracts with certain vendors that have market presence in California, which helped EHR adoption and enrollment in the incentive program. Interviewees said the REC has done a tremendous job of outreach to the hospitals, bringing on staff and making partnerships with other organizations that are trusted entities to work.

The REC is working on a sustainability model as federal HITECH funds wind down. Most interviewees believed the REC will find a way to function once HITECH funding goes away, but sustainability will be a struggle without government support. Interviewees felt the REC has played a significant role, and that there is a continued need for technical assistance to providers. Interviewees said there may be potential

state Medicaid funding for similar technical assistance work and that the REC could potentially adopt a consultant model, where it would provide similar services for a fee.

State Health Information Exchange Program. California is made up of a federated network of local HIEs, and there is no local HIE in Sacramento. Many of these regional HIEs serve urban regions, and not rural ones. Interviewees said it is difficult to see how the state HIE will connect all of these groups.

In California, it took a significant amount of time for the state HIE entity to be created. According to interviewees, CalRIO—the pre-HITECH leader in statewide health information exchange—got into a political duel with a competing organization over operating the state HIE, which led to severe delays in implementation. In the fall of 2012, a third organization, California Health eQuality (CHeQ), was created by the UC Davis Health System to salvage the federally-funded state HIE effort in California.

Based on our interviews, CHeQ faced four major challenges. First, they started relatively late, and faced an aggressive timeline. Second, they never clearly defined their role in health information exchange. Would they simply provide governance or become the HIE of last resort? Third, the organization faced staff turnover issues. Fourth, interviewees were unclear as to what the state HIE plans to do once its federal funding runs out.

The lack of a local Sacramento HIE has led to a patchwork of data exchange between some of the large systems, but little else. Most data exchange is between systems that are on Epic, since three of the four large systems in the area use this product. Despite the composition of the health care market in Sacramento, where the four large systems are fiercely competitive with one another, Sutter and Dignity were cited as being willing health information exchange partners. In addition, UC-Davis and Kaiser are both participants in Healtheway, a nationwide non-profit, public-private collaborative originally started by ONC in 2007 that operationally supports health information exchange.

According to our interviews, the Sacramento REC and state HIE are not formally working together. The ONC-funded state HIE program effort in California took a federated strategy of supporting local and regional HIEs and plans to develop a technical infrastructure to connect them later. There has been some alignment across the state between different local extension centers and regional HIEs, due to the fact that in some areas of the state, a regional HIE and the local extension center are part of the same organization. This is not the case in Sacramento, as there is no regional HIE.

Health Reforms to Sustain Health IT Efforts

California has embraced health reform and is expanding Medicaid under the ACA. At the time of our interviews, over a million people had signed up for insurance through the state's health insurance exchange. The state's health insurance exchange, Covered California, was also cited by an interviewee as a potential driver of competition, EHR adoption, and MU by allowing plans to display information on whether providers participate in certain quality-enhancing programs, such as MU.

ACO and medical home activities are occurring in the state as well, with the California Public Employees' Retirement System (CalPERS) launching an ACO pilot in partnership with Blue Shield of California and select providers in 2010.

Discussion

Across all eight communities profiled here and in the round one issue brief,¹⁶ local attributes have been important and will continue to be important influencers of physician and hospital adoption of EHRs and

achievement of MU. Important local attributes include the structure of the provider market, the presence of leadership, incentives in the public or private sector to promote health care quality and innovation, state health policy, local payer investments and activities, and other local social systems and cultural characteristics. While the sites identified here were relatively more advanced in their EHR adoption compared to the round one sites, these 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. For example, in Sacramento and Worcester, we found that large hospital systems and medical groups have a powerful, positive role in the community and were a hub of innovation, learning, and collaboration. In Milwaukee, a major EHR vendor, Epic, had a strong influence on local provider adoption and use of EHRs, but also might have had a negative influence on provider participation in the state HIE.

Respondents across the four communities cited some common challenges related to moving to Stage 2 MU. These challenges include the aggressiveness of the Stage 2 timeline, getting patients to access their health information through a patient portal, and the wave of other changes facing providers such as expanded Medicaid populations, payment and delivery system reforms like ACOs and medical homes, and ICD-10 implementation. While these other changes may have accelerated EHR adoption and vice versa, some interviewees said these competing demands can be too time consuming and interfere with patient care.

Consistent with the round one case studies, interviewees generally felt that RECs have been effective at signing up and supporting providers with needed and popular services. For example, most interviewees in Sacramento said that the local REC provided exceptional technical assistance, particularly to providers that primarily work with underserved populations. But the experience in Macon also suggests that some RECs are less effective, and that smaller, rural providers in some communities might need more special attention and customized strategies.

Interviewees gave states' Medicaid EHR Incentive Programs mixed reviews, with multiple interviewees across markets citing delays in payment and technical glitches at the beginning of the program as a barrier. But according to most interviewees, as HITECH implementation progressed, providers began to quickly receive and appreciate the incentive payments.

Also consistent with the round one case study experiences, state HIE programs had various implementation challenges and could face additional complications moving forward. While provider participation in state HIE programs has lagged, there were many examples in all communities, particularly in Sacramento and Worcester, of providers directly exchanging information among each other or engaging in other health information exchange efforts. It also appears that many providers in Milwaukee are directly exchanging some health information through the Epic system, but the local HIE ended once the state HIE program was implemented.

As HITECH funding winds down, interviewees were concerned about the sustainability of these programs. In particular, the RECs have provided crucial help to providers in achieving MU, but now have to find new funding mechanisms or shut their doors. Some of the RECs in the communities we studied will charge fees for their services when federal funding runs out, as in Milwaukee, while others have been funded through state legislation to continue to provide services, as in Worcester. Other RECs continue to explore their sustainability options.

Moving forward toward Stage 3 MU and beyond, health reform and other health system changes could be improved with additional input from local communities, as state policymakers, regional insurers, and local health care systems play an increasingly important role in promoting MU and health information exchange. For example, policymakers could target, educate, and engage organizational, clinical,

administrative, and other key community leaders and stakeholders. 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 communities, except for Worcester. By its very nature, health information exchange requires community consensus and collaboration: there can be greater benefits when the whole community participates, but competitive or free-riding actions—a rational choice for many providers, EHR vendors, and insurers—can be a detriment to these gains. These insights will be valuable as local communities attempt to sustain the spark ignited by HITECH and the ACA, guide providers to subsequent and more advanced stages of MU, and integrate health IT and health reform efforts.

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 Kelly Devers, Arnav Shah, and Fredric Blavin, “How Local Context Affects Providers’ Adoption and Use of Interoperable Health Information Technology: Case Study Evidence from Four Communities in 2012 (Round One),” 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 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). Everett M. Rogers, *Diffusion of Innovations*, 3rd ed (New York: London: Free Press; Collier Macmillan, 1983).

⁹ For more information, see: <http://www.healthit.gov/profiles/ehr-experience>.

¹⁰ For more information on Mass HIway, see: <http://mehi.masstech.org/health-information-exchange-0/mass-hiway> and <http://mehi.masstech.org/MassHIwayEbook>.

¹¹ For more information, see: https://www.aaaai.org/Aaaai/media/MediaLibrary/PDF%20Documents/Practice%20Management/Electronic%20Health%20Records/ehr_hcr.pdf.

¹² For more information, see: <http://www.healthit.gov/providers-professionals/faqs/do-electronic-health-records-align-patient-centered-medical-home-initia>.

¹³ For more information, see: <http://www.mass.gov/eohhs/docs/eohhs/cms-waiver/ma-1115-demonstration-extension-09-30-13.pdf>.

¹⁴ Providers can achieve AIU without meeting Meaningful Use. In the Medicaid EHR Incentive Program’s first year, eligible providers and hospitals can receive an incentive payment by *attesting* to adopting (e.g., purchasing a system but not necessarily installing it), implementing (e.g., install system and provide staff training), or upgrading to (e.g., add a new functionality to facilitate MU) a certified EHR system.

¹⁵ Judy Newman, “Ten Wisconsin companies make the Fortune 500 list for 2013,” *Wisconsin State Journal*, May 2013. Available at: http://host.madison.com/business/ten-wisconsin-companies-make-the-fortune-list-for/article_b0bf5377-7fa6-5eef-95bb-1deb8a3352e8.html.

¹⁶ Kelly Devers, Arnav Shah, and Fredric Blavin, “How Local Context Affects Providers’ Adoption and Use of Interoperable Health Information Technology: Case Study Evidence from Four Communities in 2012 (Round One),” 2014, Issue brief prepared for the Office of the National Coordinator for Health IT, awaiting publication.