

Creating Sustainable Local Health Information Exchanges: Can Barriers to Stakeholder Participation be Overcome?

BY JOY M. GROSSMAN, KATHRYN L. KUSHNER AND ELIZABETH A. NOVEMBER

Local health information exchanges (HIEs) hold the promise of collecting patient clinical data across sites of care to provide more complete and timely information for treatment, as well as supporting quality improvement and reporting, public health activities, and clinical research. Findings from a study of stakeholder perspectives on participation in four HIEs by the Center for Studying Health System Change (HSC) and the National Institute for Health Care Management (NIHCM) Foundation suggest, however, that barriers to achieving data exchange remain high. Concerns about loss of competitive advantage and data misuse impede provider and health plan willingness to contribute patient data. Additionally, uncertainty about who benefits from HIEs is affecting stakeholder willingness to fund the exchanges.

The more mature exchanges—Cincinnati-based HealthBridge and the Indiana Health Information Exchange (IHIE)—have achieved some viability by meeting a specific business need—more efficient delivery of hospital test results to physicians. The newer exchanges—CareSpark, serving northeast Tennessee and southwest Virginia, and the Tampa Bay Regional Health Information Organization (RHIO)—have struggled to identify and finance initial services without a similar critical mass of hospital participation.

While narrow data exchange efforts that improve transaction efficiency may be a pragmatic first step to overcome barriers to stakeholder participation, expanding HIEs to achieve the broad-based data exchange necessary for quality reporting and pay-for-performance (P4P) activities raises more challenges.

Connecting the Electronic Dots Among Disparate Health Providers

Patients in the United States typically receive care from many unaffiliated providers that maintain separate medical records, mostly on paper. To fully leverage the benefits of health information technology (IT), providers must not only adopt electronic medical records (EMRs) within their organization, but also share data electronically to allow physician access to a patient's clinical data across sites of care.

Health information exchanges are organizations that support the electronic sharing of clinical data among independent hospitals, physicians and other health care stakeholders in a community.¹ By offering physicians more timely and complete medical records at the point of care, HIEs have the potential to improve health care quality and efficiency, for example, by improving care coordination and reducing duplication of services.² Moreover, exchanges potentially can aggregate clinical data across patients for uses other than direct patient care, such as quality improvement, public health and clinical research.

HIEs are a central component of the federal government's strategy, introduced in 2004, to facilitate the development of a national health information network

(NHIN). Despite the potential benefits to patients, practitioners, hospitals and others, few HIEs existed before the federal government's efforts to promote their development. Those efforts have spurred HIE startups across the country.³ Recently, the shutdown of several HIEs has sparked concerns that many of the exchanges may go the way of the failed community health information networks (CHINs), which were promoted in the 1990s to address clinical data exchange.⁴

Stakeholder Buy in Key

Lack of stakeholder buy in is a major barrier to the development and sustainability of community-wide clinical data sharing.⁵ Stakeholders play key roles in HIEs as data providers, data users and data funders. This comparative case study of four HIEs explores local health care stakeholders' perceptions of the value of core data exchange activities to their organizations; their willingness to participate as data provid-

ers, data users or funders; and how HIEs' core data exchange activities are designed to respond to stakeholder preferences and achieve participation (see Data Source).

While studies have examined the use of clinical data exchange for purposes beyond treatment,⁶ interest in HIEs supporting provider performance measurement for quality reporting and P4P is relatively new. For example, in 2006, the U.S. Department of Health and Human Services issued "Prescription for a Value-Driven Health System," which promotes IT, quality and price transparency, and P4P via local community initiatives, including HIEs.⁷ In response to such interest, this study also explores stakeholders' views about the appropriate HIE role in supporting quality reporting and P4P initiatives; stakeholder willingness to participate in such activities; and the implications for the design of these initiatives.

Understanding stakeholder willingness to participate in different types of data

exchange activities, and under what terms, is important. To be sustainable, HIEs must have health care providers contributing enough clinical data to make data exchange services valuable to physicians or other users. In addition, some stakeholders must at least be willing to pay operating costs, assuming the HIE can obtain start-up funding from other sources. To achieve this in the competitive and sometimes adversarial climate that exists among hospitals, physicians, health plans and other stakeholders requires these parties to collaborate by sharing a key competitive asset: patients and their data.

Concerns about loss of competitive advantage and data misuse are compounded by a lack of consensus on how to finance HIEs. Empirical evidence of HIEs' clinical and financial benefits is limited and start-up costs can be considerable. Moreover, allocating costs is complicated by the fact that benefits can accrue to multiple parties depending on how an exchange is structured—for example, more efficient data exchange among providers can produce savings for both providers and health plans. Other important barriers to HIE development include technological limitations and patient privacy concerns.

Despite these challenges, some HIE advocates have proposed a broad public utility role for HIEs as the local health care system's information intermediary or "infomediary."⁸ They envision the exchanges going beyond core clinical data exchange activities that give physicians access to data at the point of care to offering physicians clinical decision support, reminders and other quality improvement tools aimed at individual patients. They also view HIEs as having the potential to "reuse" clinical data aggregated to the population level to support a broad range of public or private purposes, such as quality reporting, P4P, population-based public health efforts and clinical research. By leveraging clinical

Data Source

This Research Brief is based on discussions held between February and August 2007 with health care stakeholders in four communities with local health information exchanges (HIEs). The HIEs were HealthBridge in the 14-county greater Cincinnati tri-state area; the Indiana Health Information Exchange in the nine-county Indianapolis area; CareSpark Health Information Exchange in a 17-county region in northeast Tennessee and southwest Virginia; and the Tampa Bay Regional Health Information Organization in the seven-county Tampa Bay, Fla., area. Both HealthBridge and IHIE now operate in additional communities; this study focused on stakeholder participation in their core geographic markets identified above.

In each community, study participants included HIE staff, an academic or other individual who provided perspective on local market dynamics, as well as representatives of organizations in each of the following stakeholder groups: hospitals, physician organizations, safety net hospitals and community health centers, employers, health plans, and local/state government, including health departments and Medicaid. Representatives of organizations in other stakeholder groups—labs and pharmacies, state entities involved in supporting HIE, consumer groups, and health information technology vendors—were included as appropriate in selected sites. A total of 76 discussions were conducted. Respondent organizations included HIE participants as well as non-participants.

data over more users to achieve economies of scale and scope, HIEs may be able to fund fixed, as well as operating, costs and potentially cross-subsidize public benefit activities. Existing HIEs have taken different approaches to attracting stakeholder participation as data providers, data users and/or data funders.

Exchanges Vary Across Communities

The four HIEs selected for this study can be grouped by stage: HealthBridge and IHIE are mature organizations and are actively exchanging data, while CareSpark and Tampa Bay RHIO are relatively newer organizations still in the planning and development phase.

HealthBridge was formed in 1998 when the five hospital systems in the Cincinnati tri-state area at the time came together under the auspices of the Greater Cincinnati Health Council in response to pressures from local employers to curtail health care costs. IHIE was founded in 2004 by the five major Indianapolis hospital systems in collaboration with the Regenstrief Institute, Inc., an academically affiliated medical informatics organization. IHIE was an offshoot of an earlier clinical data exchange effort, the Indiana Network for Patient Care (INPC), which started in 1994. While HealthBridge and INPC provided some clinical data exchange services in the 1990s, this report focuses on the introduction of community-wide electronic test results delivery, also known as clinical messaging, which started in Cincinnati in 2000 and Indianapolis in 2002.

CareSpark and Tampa Bay RHIO were formalized in 2005 after several years of planning. Both were started by local, multi-stakeholder community groups. CareSpark, covering northeast Tennessee and southwest Virginia, was an outgrowth of a local citizen group's effort to convene business and health care organizations to address

regional health improvement. Tampa Bay RHIO was initiated by a small group of health care and business leaders, supported by the Tampa Bay Partnership, a not-for-profit economic development organization representing regional businesses. These two HIEs are still developing and piloting data exchange activities.

In all four HIEs, the convening organizations initially succeeded in bringing together the communities' health care stakeholder groups—hospitals, physician groups, safety net providers, employers, health plans, state and local government, and laboratories, among others—to participate in the HIE in some capacity. Notably, in most of the exchanges, consumer participation was minimal. Most of the communities' largest health care organizations were represented at HIE meetings and often on HIE committees or boards. High levels of initial stakeholder participation were motivated by two factors: organizations' desires to be "good corporate citizens" by participating in an activity that appeared to have compelling public benefit and to have "a seat at the table" to ensure their interests were represented. In this capacity, stakeholders contributed in-kind labor and services, as well as start-up funding.

Engaging Stakeholders

Each of the HIEs took somewhat different approaches to engage stakeholders as data providers, data users and/or major data funders. Both HealthBridge and IHIE started with a narrower, transaction-based approach to support core data exchange, viewing revenue-generating services as the key to building a sustainable business model. Primarily, both identified clinical messaging as an activity major hospital systems would support through data provision and funding.

Both of these exchanges have leveraged existing data and infrastructure to provide additional services—for example, two-way

Advocates envision the exchanges going beyond core clinical data exchange activities that give physicians access to data at the point of care to offering physicians clinical decision support, reminders and other quality improvement tools aimed at individual patients.

automated public health reporting to support state and local health departments' biosurveillance activities. At the time of this study, IHIE also was starting an initiative to combine clinical data with health plan claims data to measure provider performance in support of community-wide quality improvement and pay-for-performance initiatives. HealthBridge was actively considering options to move in this direction.

CareSpark and Tampa Bay RHIO were still working to identify the initial services

organizations were concerned about how participating would impact market share.

Stakeholders also assessed whether their strategic and operational needs were met by the HIE's legal agreements, governance structure and technical architecture. Participation agreements specify what services are offered, what data are exchanged, how the data can and cannot be used, data privacy and security policies, and participation costs. The HIE's governance structure dictates how changes in the agreements can be made and to what

of distributing clinical results. For example, HealthBridge reported hospital costs were at least halved by switching from paper to electronic clinical messaging.

To support these services, hospitals and other data providers were willing to pay transaction or subscription fees for sending data. IHIE reported being close to breakeven on operating costs; HealthBridge is showing net income. Data providers were not asked to pay for start-up costs via these fees. IHIE funded development costs primarily through public and private grants, along with hospital prepayment for clinical messaging services. BioCrossroads, a consortium focused on developing Indiana's life sciences industry, provided significant funding, given the value of IHIE data in supporting biomedical research. INPC was funded primarily from government grants. In contrast to IHIE and INPC, because HealthBridge's board initially insisted that exchange projects be self-funded, HealthBridge's start-up costs were financed by loans from participating hospital systems and two health plans; repayment of these loans was reportedly on schedule.

According to Indianapolis hospital respondents, savings were not a primary driver of hospital participation in IHIE. Savings, however, appeared more important to participating hospitals in HealthBridge. Indianapolis hospitals' internal estimates showed participation in IHIE was not expected to generate substantial hard-dollar savings but could improve hospital staff productivity by shifting clinical results delivery responsibilities to IHIE. Hospital respondents in both markets noted that additional benefit resulted from shifting other tasks to the HIEs, such as building electronic medical record interfaces and public health reporting. Balanced against potential savings were the hospitals' costs of participating,

In deciding whether to participate as data providers, data users and/or funders, stakeholder organizations reported weighing the benefits and costs of business, legal and technical issues.

they would offer; neither had selected the initial data to be exchanged nor had they identified the specific financing approach. In the interim, each HIE was engaged in a pilot to exchange data. Both organizations, reflecting their roots in community-based efforts, had identified using HIE data for population-based quality improvement initiatives as a priority but had not explicitly addressed the role they might play in P4P.

Stakeholders Weigh Participation

In deciding whether to participate as data providers, data users and/or funders, stakeholder organizations reported weighing the benefits and costs of business, legal and technical issues. From a business perspective, organizations evaluated the value of the HIE services against upfront and ongoing participation costs. Respondents noted that a major concern was how participating in an HIE fits into an organization's competitive strategies and how this should be balanced against playing a good corporate citizen role. In particular,

extent an organization's interests will be represented. The technical architecture affects the feasibility and costs of stakeholder participation, as well as data ownership and control.

HIE leaders in HealthBridge, IHIE and CareSpark actively negotiated with stakeholders over these features to increase HIE participation; Tampa Bay RHIO was not yet doing so. What was implemented, in turn, has affected the HIEs' evolution and potential for sustainability as they seek to attract additional participants, data and funding.

The remainder of the report will first focus on stakeholder participation in core data exchange activities in HealthBridge and IHIE, followed by a discussion of stakeholder participation in CareSpark and Tampa Bay RHIO and an exploration of quality initiatives involving all four exchanges.

Hospitals Key to Critical Mass in Mature HIEs

Both HealthBridge and IHIE started by offering hospitals clinical messaging services as a way to reduce the hospitals' costs

including user fees and indirect costs for labor, computer interfaces with the HIE and legal expenses. Respondents suggested that, for Indianapolis hospitals, clinical messaging was probably close to breakeven on hard-dollar costs relative to previous delivery methods.

Hospitals' Greatest Concern: Controlling Access to Data

Hospitals' greatest concern in weighing the costs and benefits of participation in both HealthBridge and IHIE was losing competitive advantage by relinquishing control of "their" data. They viewed clinical data as a key strategic asset, tying physicians and patients to their organization.

"If the hospital is the only one with the patient data, then physicians may be more inclined to continue to send their patients to the hospital," explained an Indianapolis hospital respondent.

Hospitals were concerned that direct competitors or other parties might use data in ways that could harm the organization's business interests, for example, by using the data for marketing purposes to redirect patients to other providers. Of particular concern was use of data for hospital performance measurement. Hospitals also were concerned that the HIEs' data policies would make them non-compliant with federal patient privacy requirements.

Despite the competitive concerns and potential lack of substantial hard-dollar savings, hospital CEOs in both markets decided collaborating, rather than competing, on clinical data exchange was the "right thing to do." In fact, a hospital respondent noted, "There was steadfast support from CEOs [for participating in IHIE], but not from the CFOs and COOs."

In each community, HIE leadership played a critical role as a neutral party in promoting collaboration among compet-

ing stakeholders. The HIEs' neutrality and the trust among stakeholders built up during earlier data exchange efforts were key factors in the hospital CEOs' willingness to collaborate.

Hospital Concerns Shape Exchange Design

IHIE and HealthBridge had to address hospitals' competitive, data privacy and security concerns in designing technical architectures, participation agreements and governance. HealthBridge and IHIE clinical messaging services began by supporting narrow, one-way data sharing.

The major hospital systems in each community use clinical messaging as the primary mechanism for delivering test results, transcripts and other information to physicians, replacing most mail, fax and phone delivery of such data by the hospitals. A limited number of physician groups and ancillary providers also use the HIEs to distribute results. Results typically are accessed via a Web-based portal and can be printed by practice staff for paper charts. On request, the HIEs also deliver results by fax, or in the case of HealthBridge, by mail. HealthBridge started delivering results directly into physician practices' electronic medical records in 2003; IHIE began this service in 2007.

While clinical messaging is an enhanced method of results delivery, the data typically are not aggregated at the patient level into a searchable, longitudinal medical record. This architecture addresses provider concerns by reducing the potential for data misuse but limits the data's clinical value. For example, in the case of HealthBridge, individual clinical messages are routed by the physician of record and stored using physician identifiers, rather than patient identifiers. IHIE uses a similar approach for clinical messaging.

At the time of this study, data providers using IHIE's clinical messaging

.....
 Hospitals' greatest concern in weighing the costs and benefits of participation in both HealthBridge and IHIE was losing competitive advantage by relinquishing control of 'their' data. They viewed clinical data as a key strategic asset, tying physicians and patients to their organization.

service also participated in INPC, which provides treating physicians with access to a patient's aggregated medical record upon hospitalization. INPC's technical architecture differs; the data are stored in a centralized clinical data repository with each organization's data housed in a separate silo. This architecture allows INPC to aggregate data at the patient and population levels, enhancing the data's clinical value, while allowing participating organizations to retain control over their data. Clinical data repositories are more technically complex and costly to implement than data exchange that does not link patient data across sites of care.

In HealthBridge, IHIE and INPC, only designated physicians and their authorized

could not be used to compare provider organizations or individual physicians for any purpose, including quality reporting and P4P, without approval. Furthermore, these HIEs' governance structures gave founding members primary control over such changes. For example, newer members of IHIE, including independent physician groups and hospitals, do not have governing board voting rights.

Challenges to Expanding Data Provider Participation

The value of data exchange increases with the participation of additional data providers, including physicians and ancillary providers. Physicians are particularly important data providers, offering hard-

while a practice in IHIE's market suggested that other methods, such as a fax server that delivers batches of patients' results, might be less expensive than using IHIE, which charges a fee to the data sources for sending each result separately.

Like hospitals, physicians feared losing competitive advantage by relinquishing control of "their" data. As a medical group CEO said, "We are all competitors around the table... We are putting a lot of our strategic information out for the world to see." Physicians also had concerns about privacy compliance and often expressed support for mechanisms for patients to explicitly opt in or opt out of the HIE, a feature neither of the HIEs offered.

In Indianapolis, some physician practices had concerns about participating in INPC and IHIE as data providers because of the centralized nature of INPC's clinical data repository. Physicians reported a lack of confidence in the HIE's ability to prevent inappropriate access to data under the existing agreements, compounding physician concerns about inadequate governance representation.

The HIEs had limited participation by other ancillary providers, such as labs, radiology centers, pharmacies and pharmacy benefit managers (PBMs). Radiology centers and the two major national lab companies were participating in HealthBridge. One regional lab was participating in IHIE. PBMs or other sources of pharmacy data were not yet involved in either HIE. Ancillary providers, including national companies, were more likely to participate when they had sufficient local market share and believed participation was necessary to serve customers.

Community health centers (CHCs) generally participated only as data users in the two HIEs, if at all, and not as data providers, in part because most CHCs

Like hospitals, physicians feared losing competitive advantage by relinquishing control of 'their' data. As a medical group CEO said, 'We are all competitors around the table... We are putting a lot of our strategic information out for the world to see.'

office staff can access patient data. Access is triggered by a patient encounter for which the patient previously consented for providers to access their records. This design meets two objectives. As a hospital respondent noted about INPC, "There is always... a triggering event and not a general availability of information. It's not like the hospital can go fishing around other hospitals' databases." This approach also protects patient privacy and security and helps ensure compliance with federal patient privacy requirements.

The hospital systems and other founding HIE members negotiated agreements protecting providers' competitive interests by limiting data use. In particular, data

to-obtain ambulatory encounter data and specialist consultations that can significantly enhance an HIE's value.

The number of physicians using HealthBridge and IHIE for results delivery grew slowly, reflecting practices' lack of EMR adoption or other means to share data electronically. But even among larger practices with these capabilities, participation was low. Large physician practices offered contradictory assessments of whether clinical messaging was cost-effective in comparison to other results delivery options. A practice in HealthBridge's market reported substantial savings in labor, printing and mailing costs by switching from paper to the HIE,

lack IT and staff resources. Efforts to use HealthBridge to share demographic data between CHCs and hospitals—needed to determine patient eligibility for government programs—were unsuccessful. Some respondents believed failure in part stemmed from hospital concerns that competing institutions would use the data to “steal” indigent patients, considered valuable because their care is reimbursed through a local tax fund.

Employers and Health Plans on the Sidelines

HIEs, and policy makers more broadly, would like to engage employers and health plans in clinical data exchanges as funders, as well as engage health plans as data providers and users. While individual employers and/or employer coalitions played important roles in generating community support for the development of IHIE and HealthBridge, they generally did not see a business case for directly funding core clinical data exchange. Employers and health plans viewed the clinical messaging initiatives in HealthBridge and IHIE as a cost of doing business for providers.

Health plans participated in HealthBridge initially, providing start-up loans and discussing contributing claims data, while health plans were less engaged in IHIE. But as HealthBridge and IHIE began operations, health plans started developing proprietary IT networks to support health plan administrative functions, such as eligibility verification. This limited health plan motivation to participate in data exchange activities. About the same time, in HealthBridge, national companies purchased some local plans. As health plan interests diverged from HealthBridge’s because of these changes, the plans scaled back participation, and the exchange repaid the health plan loans.

Value of Clinical Messaging to Physicians Unclear

The potential for clinical data exchange to affect care delivery depends on physicians’ reliance on the HIE as a major data source. All physicians in the HealthBridge and IHIE communities were given access to clinical messaging and technical support, but neither the hospitals nor the HIEs actively recruited physician participation. Although the HIEs reported high physician use rates, stakeholders in each community believed that substantial numbers of physicians and their staffs were not actively using clinical messaging. Some physicians reported that only a few physicians in their practice used the HIE, or that as a practice, they requested that the HIE deliver data by fax or mail.

In both markets, clinical messaging had reduced but not eliminated other data sources for physicians, including the hospitals themselves. For example, hospitals continued to provide data on new patients directly to physicians. Hospitalists in at least one large Indianapolis hospital continued to fax information to physicians. Indianapolis hospitals also provided physicians access to data, including that from IHIE, via their own physician Web portals; in those cases, physicians may be unaware of IHIE and the services it provides. Practices continued to receive data from other physicians and ancillary providers, such as laboratories, that were not sending data via the HIEs.

Physicians had differing views about the impact of using the HIE on efficiency. While physicians were not charged a fee to access the data, printing costs formerly borne by the hospitals were shifted to them. In terms of efficiency, some practices believed the HIE provided faster, more reliable access to results. One practice suggested, however, that efficiency gains were limited by the overwhelming flow of hospital

data, such as multiple versions of pathology reports or reports on all inpatient labs during a patient’s hospital stay. Practices with EMRs noted that the HIEs can provide value by building a single interface, reducing the number of interfaces that the practice would need to build itself. While IHIE and HealthBridge had begun this task, they were still working with practices to improve interface reliability. One practice reported that only about 60 percent of results populated the practice’s EMR correctly.

Critical Mass Needed in CareSpark and Tampa Bay

CareSpark and Tampa Bay RHIO both were considering what clinical data to exchange initially, for example, medication histories, laboratory results and radiology reports. Both HIEs were interested in ultimately capturing enough data for a patient continuity-of-care record that summarizes a patient’s medical history and for community-wide health improvement activities.

To support these activities, the exchanges planned to build more complex clinical data repositories that aggregate data by patient. CareSpark was developing the technical infrastructure and nearing negotiation of data-use agreements. Tampa Bay RHIO was focused in the short run on expanding an existing state-funded pilot, which exchanged limited data on fee-for-service Medicaid patients.

However, without a critical mass of hospital or other stakeholders committed to providing data and funding, CareSpark and Tampa Bay RHIO were finding a sustainable business model elusive. For example, CareSpark had developed a conceptual financing model that allocated participation costs in proportion to estimated benefits, with fees charged to employers, health plans and data providers, such as hospitals and physicians. At the time of this study, however, CareSpark did not have the neces-

sary stakeholder commitments to make this model viable. Similarly, both HIEs were considering offering clinical messaging but did not have sufficient interest from data providers to formalize their plans.

As with HealthBridge and IHIE, respondents in both the CareSpark and Tampa Bay RHIO markets noted the HIEs' important role as neutral parties in fostering stakeholder collaboration. But these HIEs' approaches to gaining stakeholder participation varied substantially from HealthBridge and IHIE.

CareSpark aimed for broad stakeholder participation and broad consensus among many parties. For example, the CareSpark board passed a resolution creating a "zone of cooperation" around HIE. CareSpark also allowed flexibility in the HIE design to address different participants' needs, for example, allowing both opt-in and opt-out models of patient consent and providing both centralized and decentralized data architectures.

In contrast, Tampa Bay RHIO was using a project management structure, working with a small group on the pilot and identifying viable initial services that could then be marketed more broadly to stakeholders. At the time of this study, they were starting to engage some additional stakeholders. Respondents in both communities noted the trade-offs between gaining broad enough stakeholder buy in and narrowing the effort to make progress and keep participating stakeholders engaged.

Across stakeholders, overall views about the benefits and costs of HIE participation were consistent with those discussed for HealthBridge and IHIE, particularly with respect to concerns about loss of competitive advantage and data misuse. However, within each stakeholder group, views on the value of participation were more varied, reflecting in part different expectations about where the HIEs were headed.

For example, in contrast to the mature HIEs, not all of the major hospital systems in these two communities had committed to providing data. While some hospitals believed the HIEs' approaches were aligned with their organizations' competitive strategies, other hospitals were not convinced of the value of participating. One hospital in the Tampa Bay RHIO, for example, did not see one-way data sharing as adding value since admitting physicians already had electronic access to hospital data. The hospital saw greater value in two-way data exchange where the hospital could access pre-admission data from large physician practices or immunization data from public health departments. Other reasons hospitals in these communities cited for lack of participation included dissatisfaction with the HIE's proposed technical design and changes in the hospital's strategic priorities, which limited resources to commit to HIE activities; the latter was a factor common across stakeholder groups.

Physicians and Others Slow to Join

Relative to the hospitals, even fewer physician groups, CHCs and ancillary providers had committed to data sharing. In CareSpark, at least one large physician group had committed to providing data, while no physician groups had committed in the Tampa Bay RHIO, not even a large academic practice whose physicians were closely involved in the HIE's development. Other physician groups in each community were interested in participating but believed the HIEs had not reached out to them.

CHCs in these communities believed that the needs of the safety net population and its providers were not explicitly addressed, and some CHCs believed they were overlooked as important data providers. Tampa Bay RHIO's Medicaid pilot did not initially include any CHCs; a network

of multiple local CHCs with an EMR had recently joined at the time of this study. Ancillary providers were generally not actively engaged in either HIE.

CareSpark and Tampa Bay Rely on Start-Up Grants

Start-up funding for Tampa Bay RHIO and CareSpark varied from IHIE and HealthBridge in a number of ways. These two HIEs relied much more heavily on government grants. In addition, some employers were providing financial support. CareSpark received a \$600,000 pledge, as well as in-kind support, from the largest local employer, Eastman. Tampa Bay RHIO received substantial in-kind support from the Tampa Bay Partnership, which played a major convening role and was housing and partially staffing the HIE. Few other employers, however, had yet to play an active role in either exchange.

Tampa Bay RHIO and CareSpark also differed from the more mature exchanges in relying on IT vendors rather than in-house expertise for technical support. For example, the chair of Tampa Bay RHIO is the chief executive of a local vendor, which provided a technology platform for the HIE's pilot via a proprietary e-prescribing product. Some respondents were concerned that competition among multiple local and national vendors participating in CareSpark was impeding development of technical infrastructure.

Health plan participation in Tampa Bay RHIO and CareSpark followed a course similar to HealthBridge. Plans initially provided start-up funds and discussed contributing claims data. However, a local plan in the CareSpark market was purchased by a national plan and other health plans in each HIE began developing potentially competing IT products, which provide physicians statewide with access to eligibility, claims and other data.⁹ As a result of these

changes, health plans scaled back participation in CareSpark. At the time of this study, none of the statewide or national insurers had specific plans to provide claims data to either exchange, although some plans saw potential to contribute data to the Tampa Bay RHIO.

Quality Initiatives Across the Four Exchanges

Policy makers are particularly interested in the role HIEs may be able to play in addressing limitations in existing quality reporting and P4P programs, which primarily rely on claims data. HIEs have the potential to reduce administrative costs and burdens by efficiently leveraging existing data to automate reporting. HIEs can improve quality measurement by incorporating clinical data with claims data across multiple payers.

As neutral entities, HIEs are positioned to facilitate the development of standard quality measures. Using standard measures for all patients, regardless of health plan, reduces providers' administrative burden and allows them to focus on core measures that apply to the majority of their patients. HIEs are particularly interested in this role as a means of attracting employers and health plans to participate more actively by providing claims data and much-needed revenue.

At the time of this study, IHIE was developing the Quality Health FirstSM (QHF) initiative in central Indiana in collaboration with a local employer coalition. IHIE was serving multiple roles as data provider, data aggregator and manager of QHF's other activities, including negotiating with stakeholders and overseeing quality measure development. The employer coalition was instrumental in getting health plans to participate in IHIE for the first time. Anthem, based in Indianapolis, planned to participate in the quality initiative, along with several local health plans,

Medicare and Medicaid. Other national plans still were in discussions about joining. While hospital systems were participating as data providers, QHF, however, had not signed up many physician groups beyond hospital-owned practices, which employ a large proportion of the community's primary care physicians (PCPs).

QHF was planning to provide reports on physician performance to participating physicians and health plans. Reports were to focus initially on PCPs and then expand to specialists and hospitals. Health plans were expected to use the reported data in their P4P programs. The plans were still negotiating with QHF, however, over the degree of standardization of their programs. These guidelines, in turn, will affect the extent to which the QHF program standardizes P4P for physician practices.

To generate quality measures, IHIE was planning to use INPC data, aggregated by patient, having received permission from the founding hospitals to use the data for physician performance measurement. IHIE was also planning to collect additional data, including claims from participating payers, pharmacy data and physician practice data. While leveraging existing INPC data and infrastructure, substantial additional start-up funds were needed for data collection, aggregation and analysis. These additional costs were covered by philanthropic grants. Health plans are expected to pay a per-member, per-month charge to cover operating costs and, potentially, some of the HIE's fixed costs for the underlying clinical data repository.

Of the other study sites, HealthBridge was the only one actively considering an expanded role in quality initiatives. The exchange was participating in a grant-funded community-wide quality improvement effort as the aggregator of clinical data for quality measurement. HealthBridge also was developing plans to implement and

Policy makers are particularly interested in the role HIEs may be able to play in addressing limitations in existing quality reporting and P4P programs, which primarily rely on claims data.

finance a clinical data repository to provide access to patient-specific records in hospital emergency departments. These activities were seen as steps toward building the necessary infrastructure to provide support for P4P programs. In contrast, CareSpark and Tampa Bay RHIO were focused on operationalizing core data exchange. While they had considered how the HIEs could support quality improvement activities, neither had yet identified what role they might play in supporting P4P programs.

Challenges to Engaging Stakeholders in Quality

Across the four sites, most respondents expressed a similar vision that HIEs support quality measurement by serving as the data conduit but that a separate entity lead quality reporting initiatives. Some stakeholders were skeptical that the HIEs had the needed expertise, and many noted that the HIEs already “had their hands full.” Most importantly, respondents believed that, in taking on a more active role in provider performance measurement, HIEs risked being perceived as aligning with payers and losing their critical status as a neutral party, at least from the provider perspective.

“HIEs must be cautious about evolving business relationships so as not to deter stakeholder participation,” warned a physician respondent. More generally, competition among hospitals, physicians and health plans and the “oppositional interests of providers and payers,” as described by HIE staff, were seen as barriers to using HIEs for quality initiatives. “As we were going through the planning process and looking at the business case, it became very polarized between providers and payers on the committee,” according to one respondent.

The IHIE and HealthBridge original participation agreements, which prohibited any comparison of physicians or hospitals,

required modification to allow the HIEs to use the data for provider performance measurement. For the initial reporting, IHIE received permission from its founding hospitals to allow data aggregation at the physician and practice levels. Results can be distributed only to participating physicians and health plans and cannot be publicized.

In discussing future hospital performance measurement, a hospital respondent noted, “Hospitals are concerned about how the data will be used, if they will be used to pit hospitals against each other in contract negotiations with health plans. There is a lot of uncertainty about how the plans will use the data.” Similarly, respondents had mixed perceptions about the willingness of HealthBridge’s hospitals to participate in performance measurement. Some respondents believed hospitals’ earlier experiences with core data exchange made them comfortable with the role HealthBridge might play in developing a clinical data repository to support performance measurement, while others thought the hospitals would resist. Even if willing to proceed, respondents did not think hospitals expected to be the primary funders of such efforts.

Physicians were even more anxious about having HIEs involved in performance measurement. Respondents across communities cautioned that many physicians, particularly those in smaller practices, were still uncomfortable with P4P. HIEs might dissuade physician participation in core data exchange activities if the HIEs planned at the outset to take an active role in supporting provider performance measurement. While physicians in large practices were more likely to think P4P was inevitable and that having the HIE involved was generally positive, they, like hospitals, remained wary of working with health plans, concerned that the plans would use the data for price negotiation and network

selection. “With payers at the table, we need to be careful not to give up a lot of data that could come back and bite us,” noted an Indianapolis practice. Participating in quality programs increases the pressure for physicians, regardless of practice size, to also become data providers to the HIE.

Employer, Health Plan Roles

Employers saw an opportunity for a more active role in helping HIEs develop quality improvement or reporting activities, although most did not envision paying directly for services for their employees. One exception was Eastman’s willingness to pay CareSpark a per-member, per-month fee for access to a third-party vendor that gives physicians feedback using comparisons of claims data to evidence-based clinical guidelines. CareSpark planned to add clinical data as they become available. No other employers had yet committed to purchasing these services.

Health plans had mixed views about participating in community-based quality initiatives. Health plans actively implementing P4P supported the view that the HIEs have the potential to add value to their programs by combining clinical and claims data from multiple payers and facilitating collaboration with providers in developing measures. Weighed against these benefits was the potential loss of competitive advantage for plans that viewed their claims data as a competitive asset and their P4P strategy as a market differentiator. In addition, statewide Blue Cross Blue Shield plans and national plans developing company-wide P4P programs were concerned about the costs of participating in multiple HIEs, typically operating in sub-markets within a state and each structured differently.

Most statewide and national health plans in the four communities noted they were planning to participate in only select HIEs that the companies believed fit well with their corporate strategies. For example,

UnitedHealthcare was considering participating in QHF in Indianapolis but did not plan to participate in CareSpark or Tampa Bay RHIO, where the plan has substantial market presence. Anthem was more actively engaged in the development of QHF, viewing it as a potential prototype for the company's national P4P program. The company also was open to considering participation in HealthBridge, where it also operates. A national plan respondent foresaw that "...national carriers will still have their own programs...[the local HIE's] incentive program is fine as long as it is consistent with ours... There is strong importance to developing national standards; otherwise national players will have difficulty partnering with local entities."

Implications

The case studies presented here, while not representative of all HIEs, provide important insights into the barriers many exchanges face in developing a sustainable business model. The study findings suggest that the substantial barriers to community-wide clinical data exchange identified in the wake of the failure of the CHINs of the 1990s continue to exist today. Many HIEs, including those in this study, have substantial stakeholder participation at their outset. However, when participation is defined more narrowly as providing data, using data or providing sustained funding for data exchange, the degree of stakeholder participation drops off rapidly, as the study findings demonstrate.

In the study communities, provider organizations still face substantial disincentives and few incentives to share data with unaffiliated organizations. Beyond the hospital systems in two markets, stakeholders were unwilling to pay enough collectively for the same set of services to sustain HIEs. Generally, neither health plans nor employers were willing to fund core clinical data exchange as a benefit for patients.

Employers typically also did not see themselves funding HIEs to support quality initiatives, and health plans had few incentives to deviate from company-wide pay-for-performance strategies to participate in local efforts.

Absent major policy changes, it is likely that community-wide HIEs of different designs and proprietary 'niche' data exchanges will continue to proliferate, with the landscape varying by community.

In the face of these barriers, the mature HIEs in this study can be viewed as extremely successful in fostering clinical data exchange. The transaction model used by IHIE and HealthBridge to engage hospital systems also has been used in other communities to get clinical data exchange off the ground. CareSpark's and Tampa Bay RHIO's experiences highlight, however, the substantial effort required to gain sufficient stakeholder buy in for core clinical data exchange. The complexities of implementing an HIE in these four communities suggest that achieving the broad vision of health information exchange will take even longer to achieve. Community-wide quality reporting and P4P via HIEs will likely occur only in select communities with provider and health plan buy in and the ability to aggregate data at the patient and provider levels.

IHIE's experience helps support this perspective. The clinical data repository IHIE is leveraging for quality reporting was paid for by government grants, not by local stakeholders, and even this mature HIE has invested substantial effort in developing additional technology and in negotiating with providers and health plans to gain participation.

Many of the policy efforts underway at the national level, including NHIN devel-

opment, may help address other barriers to HIE development, including technological and legal issues. However, a core feature of the health care marketplace has remained unchanged since the failed CHIN efforts: "Institutions and provider practices treat

health data as a business asset over which these organizations can exert property rights."¹⁰ Much of the recent policy discussion about HIE sustainability has assumed the status quo and continued this focus on business asset models. The question remains whether the policy debate will turn toward incentives for health data management along public-good models.

Absent major policy changes, it is likely that community-wide HIEs of different designs and proprietary "niche" data exchanges will continue to proliferate, with the landscape varying by community.¹¹ Private market niche exchanges, where unaffiliated organizations with business relationships come together to address specific business needs, are already proliferating, and the pace is likely to accelerate as more health care organizations adopt clinical IT and interoperability improves. Niche exchanges include the connection of clinical information systems between hospitals and community-based physicians and private results and image sharing systems, such as those of the independent national laboratories. In such an environment of competing models, it is unlikely that development of local HIEs will be sufficiently widespread to support a national health information network.

Funding Acknowledgement: This research was funded by the Agency for Healthcare Research and Quality (AHRQ) under Contract no. 290-05-0007 (02). The views expressed are the authors' and do not necessarily represent the position of AHRQ or the U.S. Department of Health and Human Services.

Notes

1. HIEs are also known as regional health information organizations, or RHIOs.
2. For estimated cost savings from HIEs, see Walker, J., et al., "The Value Of Health Care Information Exchange And Interoperability," *Health Affairs* Web Exclusive (Jan. 19, 2005).
3. eHealth Initiative, *Fourth Annual Survey of Health Information Exchange at the State, Regional and Community Levels* (December 2007).
4. Miller, Robert, and Bradley S. Miller, "The Santa Barbara County Care Data Exchange: What Happened?" *Health Affairs*, Vol. 26, No. 5 (September/October 2007); Lorenzi, Nancy M., *Strategies for Creating Successful Local Health Information Infrastructure Initiatives* (Dec. 16, 2003), <http://aspe.hhs.gov/sp/nhii/LHII-Lorenzi-12.16.03.pdf>.
5. Grossman, Joy M., Thomas S. Bodenheimer and Kelly McKenzie, "Hospital-Physician Portals: The Role Of Competition In Driving Clinical Data Exchange," *Health Affairs*, Vol. 25, No. 6 (November/December 2006); Malepati, Sarath, Kathryn Kushner and Jason S. Lee, "RHIOs and the Value Proposition: Value Is in the Eye of the Beholder," *Journal of American Health Information Management Association*, Vol. 78, No. 3 (March 2007).
6. Shapiro, Jason S., "Evaluating Public Health Uses of Health Information Exchange," *Journal of Biomedical Informatics*, Vol. 40, Issue 6, Supplement 1 (Dec. 1, 2007).
7. <http://www.hhs.gov/valuedriven/index.html#TransparencyLeadstoChange>
8. Employers Forum of Indiana, White Paper, *Converging Pathways: Health Information Exchange and Pay-For-Performance*, Draft (Oct. 25, 2006); de Brantes, Francois, et al., "The Potential of HIEs as Infomediaries," *Journal of Healthcare Information Management*, Vol. 21, No. 1 (Winter 2007).
9. These products are Shared Health, developed by BlueCross BlueShield of Tennessee, and Availity, jointly developed by Blue Cross and Blue Shield of Florida and Humana.
10. Personal communication with Patricia Flatley Brennan, R.N., Ph.D., F.A.A.N., professor of Industrial & Systems Engineering and professor of Nursing, University of Wisconsin-Madison (Feb. 15, 2008).
11. Glaser, John, "The Advent of RHIO 2.0," *Journal of Health Information Management*, Vol. 21, No. 3 (Summer 2007); Grossman, Bodenheimer and McKenzie (November/December 2006).



NIHCM
FOUNDATION

1225 19th Street, NW
Suite 710
Washington, DC 20036
Tel: (202) 296-4196
Fax: (202) 296-4319
www.nihcm.org

President and CEO: Nancy Chockley



600 Maryland Avenue, SW
Suite 550
Washington, DC 20024-2512
Tel: (202) 484-5261
Fax: (202) 484-9258
www.hschange.org

President: Paul B. Ginsburg