

SPECIAL REPORT

..... The Rise of the Private
..... Health Information Exchange and
..... Changing Role of Public Exchanges

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Introduction

As the need for health information exchange (HIE) to transform the health care system becomes more evident, the number of health information exchange initiatives (HIEs) has grown exponentially. As of 2012, eHealth Initiative (eHI) has identified over 250 active HIEs, including the 56 grantees of the Office of the National Coordinator (ONC) State HIE Cooperative Agreement Program. Given the splintered nature of the health care system, the secure transfer of patients' health information is not only financially valuable, but necessary for the safety and quality of patients' care.

Many providers are anxiously awaiting connections to public health information exchanges to meet new data exchange requirements and address information needs. Over the last several years, private health information exchanges (HIEs) have become a viable alternative to public model exchanges. Generally, unlike most public HIEs, private HIEs are concentrated in a single community, financed by private health care organizations, and do not rely upon public funding. These private models have witnessed significant growth in the marketplace only recently. From 2010 to 2011, the number of active private HIEs grew from 52 to 161, according to a KLAS report.¹ The proliferation and growth in private HIE is largely attributable to the advantages both providers and stakeholders gain from this model of exchange, particularly with regards to sustainability and interoperability.

In fact, in many regions of the country, private HIEs are facilitating data needs; satisfying analytics needs and helping providers meet national requirements to improve patient care. In order to remain competitive and profitable, many providers are turning to private HIEs as the answer to their data exchange needs. This paper explores the sustainability and interoperability challenges facing public and private HIEs, as well as factors critical to their success. This paper will also explore how the rise of private HIEs is redefining the role of the public HIE.

Emergence of Private Exchanges

In 2010, the federal government appropriated \$548 million to 56 states, territories, and state-designated entities to launch public health information exchanges. Two years later, a large number of these HIEs are still enveloped in the arduous process of developing a data exchange with a viable sustainability model, and still rely heavily on government funding. Meanwhile, the need for data exchange has grown exponentially. With the passage of the Patient Protection and Affordable Care Act and implementation of meaningful use rules, there is an increased sense of urgency amongst providers to exchange electronic patient data and participate in accountable care models.

Given the nascent state of many public HIEs, many providers are beginning to look to private exchanges to address their needs. If a hospital or physician organization opts to participate in a statewide or public HIE, they are relying on it to be fully functional, sustainable, and capable of exchanging all of the data that is critical for care. However, by investing in a private HIE solution, hospitals and physician organizations have more control over the design and implementation of their HIE, can facilitate interoperability between the systems already inherent in their location, and may worry less about sustainability because the business model only applies to their specific environment.

Pinnacle Health System

Pinnacle Health System maintains a private HIE located in Harrisburg, PA that was formed in 2009 to connect physicians to the healthcare system. As efforts to develop a regional, public HIE in the central PA area stalled, Pinnacle began to implement its HIE. In addition to receiving initial investments from stakeholders within the region, Pinnacle set up a sustainable business model driven by increasing the use of ancillary services such as lab and radiology through referrals from physicians connected to the exchange. Electronic ordering capability and electronic results delivery were also included as a means to spur additional business. Pinnacle reinvested its profits back into community-focused activities that were initially unprofitable, but ultimately improved healthcare and supported the overall objectives of the HIE. Pinnacle achieved a positive return-on-investment in nine months and has been operating with a profit for the last three years.

Facing Sustainability Challenges

The structure of private HIEs offers some significant advantages in dealing with sustainability challenges. In 2011, eHI identified three components that make sustainability difficult for all health information exchanges. First, HIE is a public good, meaning that stakeholders can benefit from its existence without having to provide funding. Payers are likely to benefit most from decreases in healthcare costs, but rarely fund HIEs when they are first being developed. Likewise, providers may benefit from improved care coordination resulting from HIE use, even if they aren't actively exchanging patient data. A second difficulty in building a sustainable HIE business model is demonstrating value and return on investment (ROI) to stakeholders in order to encourage them to participate in the exchange. HIEs need a high participation rate from patients, providers, hospitals, and payers in order to generate enough revenue to support their organization. Further, stakeholder participation increases the amount of patient information in the system, making it inherently more valuable to those unsure whether they would like to join. While non-financial and clinical care benefits are easier to demonstrate, paying stakeholders may be more concerned that their investment does not represent another sunk cost on top of the multitude of others required for patient care. The nascent state of HIE makes it difficult for researchers measuring the financial impact of HIE, leaving system administrators with little data to suggest that the exchange can save money or lower costs. Consequently, HIEs struggle to demonstrate value and ROI to stakeholders, which can decrease participation and threaten sustainability. A final difficulty is determining the right mix of services for a sustainable business model. HIEs must offer services that providers, hospitals, and payers are willing to purchase. As competition between HIEs increases, they need to continually improve their service offerings in order to remain viable. Innovative services of today will most likely be the common services of tomorrow. As a result, HIEs will need to regularly upgrade and improve their service offerings and subsequently modify their business model based on new services.

Private HIEs have some flexibility and nimbleness that provides advantages for dealing with each of these difficulties. The issues surrounding "public good" and ROI are less problematic for private HIEs, as stakeholders that invest capital into the exchange are strongly invested and tied into its long-term success in order to receive an appropriate return on that investment. This ensures that funding levels are maintained during the operation of the HIE and that the business model reflects the needs of the community that is operating and using the exchange. Moreover, a private HIE is not tethered to a specific business model. They are linked to private institutions which

may have more flexibility to respond and adapt to market pressures and competition more quickly than public organizations can.

Addressing Interoperability Challenges

Interoperability continues to remain an issue for many HIEs, particularly in developing and building consensus around data standards for messaging and vocabularies. However, organizations with private HIEs can usually determine their own data exchange standards and establish relationships between trading partners to allow the exchange of data. These organizations do not necessarily have to implement national standards if they feel those standards do not best represent the needs of their stakeholders and the medical environments participating in the exchange. As long as the HIE is interoperable with the systems exchanging data between providers and the information is accurate, secure and available at the point-of-care, then either proprietary or publicly available standards are acceptable.

There are a number of advantages that private exchange models have in terms of sustainability, demonstrating a positive ROI, and facilitating interoperability through the accelerated adoption and use of data standards and data use agreements. As a result, the trend is shifting to the development and implementation of private HIEs that bring together disparate sources of data from multiple EHRs, create an infrastructure for data exchange to support new delivery models of care, and can realize the efficiencies of care brought about through the use of HIE. With HIE-infused initiatives such as meaningful use, accountable care organizations and the restructuring of provider-payment models, growing increasingly important to healthcare, interest in linking to an HIE has also risen dramatically. A 2011 CapSite survey of 340 hospitals found that 74 percent plan to purchase new HIE solutions in the near future. That share has nearly doubled from when CapSite surveyed hospitals in 2009.² Many of the respondents indicated that they were considering private HIEs, which underscores the need to understand the critical factors that are essential for their success.

Critical Success Factors for a Private HIE

Recent studies indicate that the overall growth of the private HIE market is sustainable over the long-term. An examination of a number of these operational HIEs reveal common success factors in creating a private HIE, such as managing the large amounts of data from diverse EHR systems and allowing providers to participate in the HIE, independent of their own system or level of technical expertise. These success factors can be divided into five key concepts³: shared vision, funding, physician engagement, infrastructure, and privacy and security.

Shared Vision

HIEs are defined by a number of diverse characteristics, including business models, data standards for exchange, technical specifications and business arrangements. Despite evidence indicating a number of benefits associated with using HIEs, such as improved care coordination among patients and moderate improvements in health outcomes, there are few studies that show sustainable, long-term success. When planning an HIE one must take into account the needs of the community being served, the financial and personnel resources available to the HIE, and the types of organizations that will

SAFEHealth

SAFEHealth, the private HIE developed for the Reliant Medical Group (a multi-specialty practice based in Worcester, Massachusetts), knew the most significant needs of its provider community and developed the HIE's services around those needs in order to demonstrate immediate value. The delays and interruptions in care caused by the manual referral process for patients were proving burdensome for many of the providers. The HIE includes an automated referral mechanism that monitors the admission and discharge of patients. Providers receive messages on a patient's status immediately through the HIE, and their lab results are sent through text messaging while a patient is still in the hospital. If a test result comes after the patient is discharged, it goes directly to the primary care provider who can then schedule a follow-up appointment, if needed.

Additionally, the HIE is integrated directly into Reliant's EHR, which makes the functionality much more useable and tightly integrated into the clinician's workflow. It became part of the standard process of care for each provider that was part of this practice. It also provided value, not only from a cost standpoint (which is improved by automating a manual process) but also from a care delivery standpoint. Multiple providers can coordinate care around a patient based on their status and laboratory results by exchanging data seamlessly through several systems. The functionality of the system ensures that a patient's results are seen by the provider who is designated to provide care for the patient. The trust between providers was present during the creation and implementation of this system, and has played a significant role in its success.

participate in the HIE in order to determine the appropriate solution. However, the realization of efficiencies in care and the overall effectiveness of the exchange do not occur for a number of years, making it challenging to evaluate the chosen strategy. Business and operational models are developed, integrated into clinical environments, and eventually lead to the automation of manual processes that are accepted and utilized by providers. At this point, one can begin to measure the overall value of the HIE. Therefore, leadership driving the design and implementation should commit to a long-term, shared vision of how this type of innovation can potentially transform their community's health care environment. Stakeholders can accept this vision and buy-in, as the beneficial effects of the exchange won't be apparent for some time.

Funding

HIEs that receive capital for business development and fees for services from private sector stakeholders are typically more financially viable than HIEs that rely on public funding. Government funding is often only available for a limited and defined period, and can affect decisions relating to sustainability. The arbitrary end date of a grant may not reflect either the business or clinical needs of an HIE organization, and the sudden loss of public funds may distract an HIE from reaching its desired goals and objectives, even if that loss of funds is anticipated. HIEs that are reliant on public funding tend to develop stakeholder buy-in over time, knowing that those funds can cover shortfalls in revenues from participation. With a stable and reliable source of private funding, HIEs can be more selective in what type of government funding they apply for, and can examine opportunities that closely align with the goals and objectives of the HIE or use the supplemental funds to make one-time improvements in infrastructure and service-offerings.

Physician Engagement

For any type of HIE, active physician engagement in information exchange is a critical element of success. Physician engagement should not be limited to the actual use of the HIE in the course of providing care, but also in its planning, design, and workflow development stages. Engaging physicians early can help HIEs create a more physician-friendly implementation process, generate excitement and create buy-in so physicians have a stake in seeing the exchange succeed. Even physicians who are "not connected" can see the improvements in care delivery, communication between providers who are using the HIE, and improved health of patients as a result of the HIE's use. This can potentially incentivize other providers to adopt HIE within their own practices as well.

Taconic Independent Practice Association (IPA)

The Taconic Independent Practice Association (IPA) and the North Texas Specialty Physicians, a 600+ physician IPA, took the lead in forming private HIEs within their communities. They also contributed to the success of these models by providing access to expertise in healthcare quality and safety, as well as clinical workflow and practice operations when developing the exchange. These core competencies are considered critical to physician adoption efforts, and were considered in the earliest phase of design to ensure the most critical and crucial needs of providers were met by the exchange. Taconic IPA still utilizes five committees to continually assist in the evolution of the HIE. The committees cover such issues as: privacy and consumers, security and technology, and quality and clinical care, among others. Each of these issues is considered critically important by physicians and the committees help providers remain engaged in the process.

Infrastructure

The utilization and effectiveness of exchange can be impacted if the infrastructure does not support the capacity of participating providers. It is critical to determine the types of clinical information that will be exchanged by the HIE, the ability of the connected systems to exchange that data among one another, and the workflow needs of the providers. While the sophistication and structure of HIEs has advanced over the last decade, the need to integrate data throughout a host of disparate systems that may utilize different data standards is often a challenging reality. A private HIE can leverage a number of available technological frameworks based on the resources available from the initial investment and the capacity of the community it is serving. Private HIEs are not bound to a solution based on overarching principles that are defined by an outside funding source.

Privacy and Security

A critical success factor for HIEs is the ability to maintain privacy and security of the data within the HIE. A shared vision establishes the foundation for building and sustaining a solid framework of trust among participants. This shared vision and commitment to the local community enable the type of environment needed to develop and endorse a robust and transparent data use agreement. Similarly, policies and mechanisms for patient consent, user authentication, and distribution and use of patient information should be developed to align with the HIE's business goals. Private HIEs may be able to avoid the complexities associated with exchanging data with government agencies and other entities that may subject the HIE to security requirements beyond federal and state provisions.

Critical Role of Public HIEs: Convener

As currently structured, private HIES cannot meet all the data exchange needs of providers and patients. The increased use of private HIEs has begun to shed light on some of the limitations of the private model and benefits of public HIEs, including:

- The need for immediate capital from participants early in the development stage of the HIE may exclude rural or underserved communities with sparse populations of providers who cannot afford the up-front investment. Often, these are the patients and providers that could benefit the most from an HIE.
- Because private HIEs have some freedom to develop the system based on proprietary standards, it can be difficult to integrate the exchange with data sources outside of the HIE's community.

BJC Medical Group

BJC Medical Group in St. Louis, MO is one of the largest non-profit healthcare organizations in the area and includes over 101 multi-specialty locations. Their private HIE was designed to connect those locations and 13 area hospitals. Over time, the HIE expanded to include independent private practices in a referral network. BJC examined the technology offered by their EHR vendor and opted to build out the exchange according to that framework as it met the core needs of the community in the near term, and could be expanded for future HIE requirements. BJC initially developed the exchange to allow for the transfer of visit/discharge summary documents as a means to get providers engaged in the HIE and witness the benefits of having access to other data from the community. Once providers realized the value of the HIE, they expanded the functionality to address a number of other needs, including lab ordering and results delivery, radiology and continuity of care documents (CCDs), among others.

- Notions of data ownership and competition can make it difficult for stakeholders to buy into private exchanges.

As private HIEs continue to emerge, the role of the public data exchange as a convener is even more critical. Public HIEs have the neutrality necessary to work with private exchanges to extend their functionality to providers outside of the community in which the private HIE was developed. Thus, public HIEs still fill a number of key roles, including⁴:

- They are uniquely positioned to develop both intra- and inter-state exchange.
- They can act as regulators, establishing a single set of rules for privacy, data exchange and services
- They can handle challenging issues regarding patient consent and differences in state law and standards development, such as standards needed for exchange authentication.
- They are better at creating services such as a provider directory and at establishing connectivity for public health, quality reporting and advanced directives.
- They serve a vital role in bringing data exchange to rural communities and driving adoption of the nationwide health information network (NwHIN) standards and services.

One such example is the statewide HIE in Vermont, which was established in 2006 and is operated by the Vermont Information Technology Leaders (VITL). VITL's exchange is an independent, public HIE, which connects small, private HIEs and provides exchange functionality where none previously existed. In the beginning, the HIE was designed to demonstrate the capability to move laboratory data and care summary documents. It also worked with the state's medical home initiative to provide information for a registry. As of early 2012, 12 of the 14 state hospitals actively transfer data into the exchange and over 100 practices send information to the registry.⁵

This underscores the new and evolving role of public HIE, which is to convene private HIEs within a region or state. This type of "hybrid" HIE combines both public and private models and leverages the strengths and benefits of each. The North Carolina HIE, which released its public-private model in March, demonstrates how organizations can benefit from their own private HIEs and also benefit from the connectivity of a statewide HIE.

North Carolina's statewide HIE strategy was created by representatives from throughout the state's healthcare community. Initial funding for the HIE came from grants while a business model was concurrently being developed to achieve financial sustainability

by the middle of 2013. It is expected at this time that revenues generated by the HIE will cover its core services, while the state will continue to look for grants to expand its capabilities. The exchange uses licensed distributors to resell its services to providers, which allows those providers to utilize the services of the HIE without direct competition from the state. The exchange's core services enable participants to receive updates, make queries and receive information, and access a portal with a visual interface.

Another example of a public HIE serving as convener of HIE is CliniSync, the statewide HIE for Ohio, which was developed through the collective efforts of a number of stakeholders throughout the state. Grant money was initially used as capital for the implementation and set-up of the HIE as well as to support its infrastructure. A business model was established by the participants in the beginning of the process that requires ongoing subscription fees to achieve sustainability after the initial grant funding expires. CliniSync has used a phased-approach model, in which certain milestones must be met at each phase of development before the HIE moves onto a next phase. Currently, the HIE is providing value through point-to-point transfer of information, which includes alerts and notices of transition of care documents.⁶

Finally, the Kentucky Health Information Exchange (KHIE) has taken an umbrella approach to serve as the aggregator of all of the disparate private HIEs, accountable care organizations and vendor networks within the state. It also offers direct HIE services to rural and independent providers that are not already connected to initiatives that have already been developed. KHIE initially received federal funding, and subsequently developed a sustainability model relying on subscription fees collected from participants. Through KHIE, providers in private HIEs can gain access to the data contained by other HIEs in the state, as well as exchange capability with state immunization registries, a requirement in the meaningful use program. Other services include a patient record locator service and master patient index, as well as links to a new birth registry and state-required cancer registry.⁷

Private HIEs experience some distinct advantages in their ability to develop a robust business model for sustainability, establish data standards for information exchange based on the needs of the community, and increase and evolve functionality with relative ease due to operating in a smaller geographic area instead of an entire state or region. However, there is still a need to fund and develop public HIEs because of their associated strengths. Additional research is needed to understand the different ways "hybrid" models can develop consensus-based standards, achieve sustainability through both private investment and government funding, and extend the innovations of private HIEs to those outside of the community in which they were developed.

Conclusion

As the market evolves through new models of care delivery that emphasize quality outcomes and cost efficiency, there is a strong need for a sound and comprehensive HIE strategy. All HIEs would be well served by developing an infrastructure that features long-term commitment by stakeholders, funding that is linked to the goals of a shared vision by each of the participants, extensive engagement of the physician community, and a system architecture that positions the HIE for the future. For those considering the development of a private HIE, there are a number of recommendations to consider:

- **Define a vision for the HIE that stakeholders and physicians can buy into** – this is the most effective way to ensure physician engagement and a long-term commitment while the benefits of the HIE are still being realized.

- **Create a viable governance entity and engage the provider community early in the process** – this is needed to maintain the operation of the HIE and to determine how the exchange can best service the community.
- **Develop a sustainability model** – this should be done at the beginning of the process based on the needs and resources of the community.
- **Identify value** – determine the most essential functions of the HIE based on the needs of providers within the community and enable those within the exchange. Providers will see immediate value and continue to be active in the use of the HIE.
- **Ensure continuity with workflow** – it is important that the HIE integrate into the workflow of a hospital or physician practice with limited interruptions in workflow to maintain continued use.
- **Build and maintain trust among stakeholders** – this is perhaps the largest precursor of success in building, maintaining and sustaining a private HIE.
- **Work with the public HIEs** – because public HIEs serve as conveners, it is important that these systems work together to enable data exchange between networks and across state boundaries.

Going forward, the HIE landscape will undoubtedly evolve to match the escalating needs of health care reform. Leaders of health care systems will need to collaborate with hospitals and physician networks, as well as other health care providers in their communities to build HIEs that feature deep stakeholder commitment to a shared vision, private funding that is linked to the achievement of goals that advance the shared vision, extensive engagement by the physician community, and an architecture that positions the HIE for the future. Public HIEs have an opportunity to strategically allocate capital and resources to compliment private HIEs activities. By facilitating the connectivity of private HIEs to these public models, synergies emerge from the growth of a “hybrid” model that will enable the HIE environment to match the fundamental objectives of this new era of healthcare.

¹ "Health Information Exchanges: Rapid Growth in an Evolving Market" KLAS, June 2011.

<https://www.klasresearch.com/Store/ReportDetail.aspx?ProductID=642>

² "2011 US Health Information Exchange Study" CapSite, October 2011. <http://capsite.com/assets/Uploads/2011-U.S.-Health-Information-Exchange-HIE-Study-TOC.pdf>

³ See note 1

⁴ Lenert, Leslie, David Sundwall, and Michael E. Lenert. "Shifts in the Architecture of the Nationwide Health Information Network." -- *Lenert Et Al.* N.p., 21 Jan. 2012. Web. 21 June 2012.

<http://jamia.bmj.com/content/early/2012/01/21/amiajn1-2011-000442.full>

⁵ See note 1

⁶ See note 1

⁷ See note 1