

White Paper

NEXTGEN
HEALTHCARE

Five Steps to Building a Successful Health Information Exchange

Insider tips to creating an HIE that improves clinical integration; enhances patient safety; and achieves enterprise, community, and statewide healthcare connectivity.

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Executive summary

As a concept, health information exchange (HIE) is currently on the fast track nationally. As an organizational strategy in health systems, however, it is just beginning to receive the attention it deserves as a core enterprise architecture to support clinical integration. The American Recovery and Reinvestment Act (ARRA) is a key driver. One of the criteria for meeting Stage 1 Meaningful Use requirements is demonstrating readiness for the electronic exchange of health information.

Fortunately, CIOs are in a unique position to develop cohesive HIE strategies for their organizations. Through the use of an HIE, CIOs can enhance and control the speed of deployment for EHR adoption—thus reducing chart abstraction time—regardless of regional or state initiatives. Enterprises should plan now for participation in HIE at three levels: private, regional, and national exchanges.

Because of the significant clinical and cultural transformation required, organizations cannot afford a wait-and-see attitude toward HIE; achieving community connectivity will be more complex than the “cloud connection” to some central repository that many envision. In addition, achieving a “meaningful” exchange of information to support care transitions across the healthcare delivery system will require the enforcement of enterprise standards that do not yet exist at the public HIE level.

Drawing on the knowledge and experience encountered by several large regional and national health systems regarding private, community, and state HIE connectivity, this white paper summarizes the benefits gained from moving toward a multi-layered architecture that enables HIE at multiple levels. Most importantly, the paper is designed to assist you in developing your own HIE strategies for deployment at the private level, connection at the regional level, and influence at the state and national levels. To help illustrate key steps in HIE strategy development, a case study on the experiences of BJC Healthcare is featured.

What is a Health Information Exchange?

Health information exchange (HIE) is defined as the mobilization of healthcare information electronically across organizations within a region, community, or hospital system.

HIE provides the capability to electronically move clinical information among disparate health care information systems while maintaining the meaning of the information being exchanged.

The goal of HIE is to facilitate access to and retrieval of clinical data to provide safer, more timely, efficient, effective, equitable, patient-centered care.

Why create a Health Information Exchange?

Achieving interoperability on the community, regional, and national levels is becoming increasingly necessary to the ongoing success of healthcare organizations.

Achieving this interoperability through HIE technology is crucial for several reasons. First, by effectively sharing information with other healthcare providers, care quality and coordination—along with patient safety—are greatly enhanced. What's more, to achieve true clinical integration of care around a Patient Centered Medical Home (PCMH) model, or to create a foundation for an Accountable Care model of delivery, using HIE technology is proving essential.

Throughout the healthcare industry, HIE technology is seen as the cornerstone to achieving the later stages of Meaningful Use with a certified EHR. It has also been seen to improve the value and velocity of EHR adoption, help improve patient and community relations, and help enhance referral management of networks. In addition, HIE technology can enable more efficient electronic prescribing and pay-for performance measurement and reporting.

To support a wide variety of business relationships that exist among and between healthcare providers—while focusing on the common goals of improved patient care—effective use of HIE technology has become a necessary business tool and a wise investment.

Types of HIE architectures:

Federated—Federated is a decentralized approach that emphasizes partial, controlled sharing among autonomous databases. Each stakeholder controls its interactions with others by means of an export and import schema. The federated architecture provides a means to share data and transactions using messaging services, combining information from several components, and providing the coordination of data exchange among autonomous components.

Centralized—Centralized architecture emphasizes full control over data sharing through a centralized repository. Components in a centralized architecture refer to the central data repository and the requester. The repository authenticates the requester, authorizes the transaction, and records it for audit and reporting purposes.

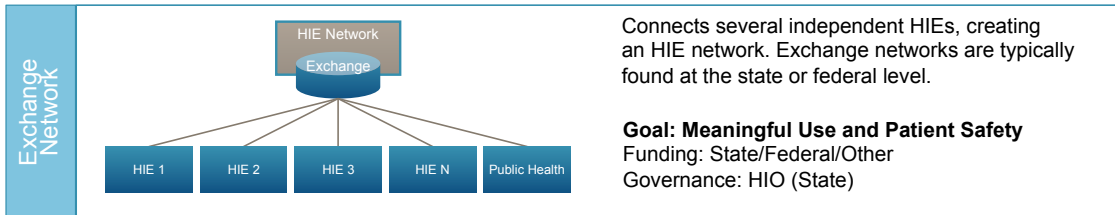
Hybrid—Hybrid is a combination of the two architecture types used to achieve the actual exchange of clinical data. For instance, pharmaceutical transactions may occur through the use of a federated model, while lab data are shared through a centralized database. Providers in a hybrid architecture may also decide to share patient data through a clinical data repository or via peer-to-peer means. Hybrid models are generally selected for their attributes normally associated with a consolidated data model, such as standardized terminology, business intelligence, profiling, decision support and quality analysis capabilities, and quick response times.¹

¹ "Clinical Data Exchange Models: Matching HIE Goals with IT Foundations," Beth Haenke Just and Stacie Durkin, *Journal of AHIMA*, February 2008.

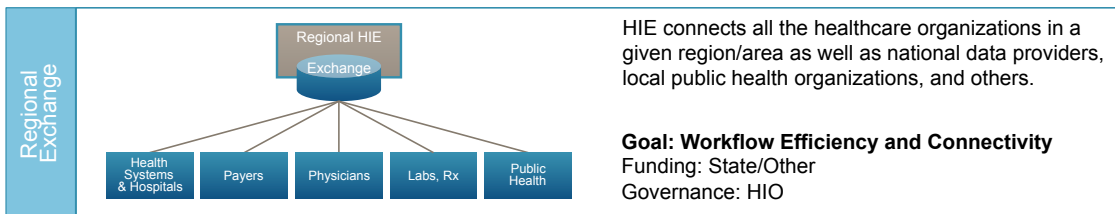
HIE deployment models

HIEs can be created at many levels—most marketplaces have three layers, which include an exchange network, regional network, and private network.

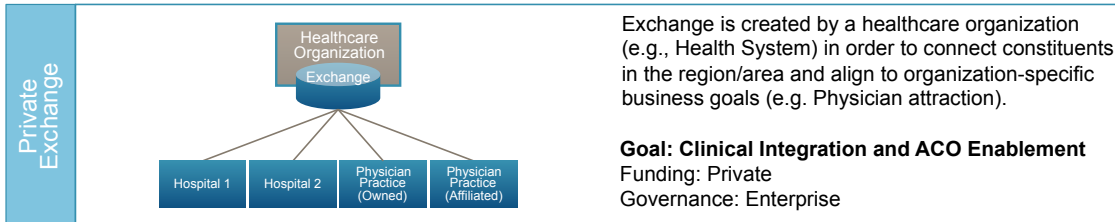
Exchange Network



Regional Exchange



Private Exchange



Case study: BJC and St. Louis HIE

Let's look at a real-life example to provide a more in-depth examination of your key considerations as you plan for your HIE. See how BJC HealthCare, St. Louis, Mo., has created an approach to HIE technology that places the organization on the forefront of participation at the private, community, and statewide levels. With the support of NextGen Healthcare, BJC has been on the front lines of building a health information exchange that has achieved significant improvements in clinical integration, while enhancing patient safety.

It's important to note:

BJC plays a role in each of the HIE deployment model layers detailed above:

- BJC – Private Exchange
- Integrated Health Network – Regional Exchange
- Missouri Office of Health Information Technology (MO-HITECH) – Exchange Network

BJC Background Information

BJC Health System:

- 13 Hospitals
- BJC Medical Group = 250 physicians
- 800-1000 medical school full-time faculty
- 4000 private physicians throughout region
- Serving roughly 3 million patients

BJC Private Exchange:

- BJC Medical Group expanding to include independent private practices in referral network

Regional Exchange - Integrated Health Network (formerly St. Louis Health Information Network):

- Connects emergency departments and Federally Qualified Health Centers to provide specialized medical home services for uninsured patients.
- 3 Major Health System providers
- 20 Emergency Rooms
- 5 Federally Qualified Health Centers
- Public Health and Community Health Networks

Missouri Exchange Network HIE Timeline

- Nov 2009—MO-HITECH created
- Dec 2009—MO-HITECH Advisory Board created—this board became instrumental in state planning to obtain federal funding
- Feb 2010—Notice of federal grant application approval (\$13.8 million)
- March 2010—strategic plan delivered to the Office of the National Coordinator
- June 2010—operational plan delivered to The Office of National Coordinator
- July 2010—Missouri Health Information Organization (MHIO) Board of Directors appointed
- August 2010—MHIO formed as a 501c3 not-for-profit organization (private company with limited state government oversight)
- Ongoing—working on how the architecture will connect to regional and state networks and how consent will be managed.

Building a Successful HIE in Five Steps

Creating an HIE is a complex, multi-faceted process. That said, there are five important steps along the way that can make the difference between setting up an HIE that effectively improves clinical integration; enhances patient safety; and achieves enterprise, community, and statewide healthcare connectivity versus one that doesn't.

1. Step one—Map a strategy for the market.

BJC started down the HIE path in 2005, when it implemented an integrated Electronic Health Record and Practice Management solution. The group understood the potential patient safety benefits offered by a unified record, but was challenged by its sheer size: 101 multi-specialty locations. It turned to HIE software to connect its enterprise.

Key action items at this stage:

- **Create an accountable care delivery model.**
As BJC did, you will need to create an organizational charter, define your quality and performance objectives, consider your payer mix, and assume responsibility for the health status of a defined population of patients.
- **Evaluate your market share.**
In the early stages, BJC considered how it could improve the value of its franchise. In our highly competitive healthcare environment, you need to build, manage, and sustain physician relationships—as well as value in the health system “brand.”
- **Put together a sustainable business model.**
Determine what market participants want in terms of services and put together an appropriate pricing structure.
- **Take a leadership position in your community.**
As BJC demonstrates, you can lead through quality and performance improvement—and by providing better services to physicians.

2. Step two—Form a viable entity.

The biggest challenge for BJC and Integrated Health Network is that they are currently at the private exchange level. Their goal is to network among employed physicians. As interest in pay-for-performance reporting and PCMH has evolved, they are looking to expand their HIE with both affiliated and independent physicians.

Important components of forming a viable entity include:

- **Support organizational goals.**
 - Do you need a private or regional network?
 - Consider the reason you're exchanging data. In BJC's case, they needed a more complete patient chart.
 - Will you have a clinical or economic focus?
 - BJC's focus was more clinically based.

- **Decide what's realistic with available technology.**
You need to determine the type of clinical information being exchanged, the ability of the connected systems to exchange clinical data, and the workflow needs of your care providers.

EHR Medical Director for BJC Medical Group, Dr. Amanda Heidemann, provides her perspective: “We looked at the technology available from our chosen vendor at the time we wanted to implement our HIE and stayed within that framework. Our vendor’s offering addressed our core needs in the near term—but, we also partnered with them because we anticipated they could fulfill our future HIE feature and functionality requirements.”

David Weiss, BJC Senior Vice President and Chief Information Officer, adds, “Finding early wins is essential. For example, instead of requiring the integration of patient data between the Emergency Department and Federally Qualified Health Centers (FQHCs) —or requiring data to be enabled with ‘CCD standards’— allow simple exchange of ‘visit/discharge summary documents’ as a means of getting providers engaged in the benefits of having access to other community data.”

- **Address data integrity issues.**
Make sure data is interoperable, but also that it maintains its clinical context—in other words, what means “apple” here, means “apple” there.

Weiss contributes, “It’s important to allow data standards (definitions and formats) to evolve with the technical capabilities of key HIE partners.”

Dr. Heidemann comments about BJC’s experience: “We addressed data integrity by confining our initial scope to exchanging data between practices that were all on the same EHR version. This way, we could obtain real provider feedback, without the noise associated with mapping different systems. However, we’re evolving this by bringing on EHRs (other than the one provided by our existing vendor) as part of our affiliation strategy with community physicians.”

- **Evolve with changing landscape.**
As the integration, dataflow, and workflow requirements for the connected entities and providers evolve, you must adjust the existing plan. You’ll need to continually enhance the exchange to support new users, more data sources, and increased functionality—such as referrals, and analytics.

Dr. Heidemann comments, “BJC has evolved our strategy in terms of the breadth of data we exchange.”

- **Proactively address patient privacy, security, sensitive data, consent, and access structures.**
Patients need to feel confident that their data is secure, complete, up-to-date, and available to the extent desired for their care. Decisions need to be made on participant opt-in and opt-out options, treatment of sensitive data, access to data for personal health records, potential review, and correction.

As Dr. Heidemann comments, “One action BJC took to address patient concerns was to post information in our practices, which physicians could also leverage in HIE-related discussions with patients.” Weiss adds, “When it comes to patient consent, there are many facets to consider, such as state case law, consumer advocacy, state HIE direction, and more. BJC, St. Louis Integrated Health Network, and Missouri HIE have all gone down the path of the ‘opt-in’ alternative.”

- **Proactively address secondary use.**

Address potential secondary use of patient data—research, population health, disease and wellness management, clinical quality improvement, and public health.

For BJC, there is tremendous interest in proactive public health management—such as syndromic surveillance, mining data for population-based disease management registries and studies, and management of public health issues like H1N1. Storage, institutional access, and de-identification/re-identification need to be taken into consideration.

- **Address constituencies.**

These include clinicians, patients, advocates, and payers.

BJC’s private exchange launched with a clinician focus. Weiss further explains BJC’s approach: “Membership and participants vary depending on specific HIE being addressed. Missouri HIO will include physician providers, hospitals and health systems, FQHCs, payers, labs, post-acute care providers, and more.”

- **Define the scope and terms of membership.**

Decide who should really control the exchange and if there will be a varied number of slots on the board. These issues have sabotaged exchanges in the past.

- **Recruit experienced participants.**

If you’re looking for a Board, you *absolutely* need experienced members. An external board in addition to an internal board provides fresh insight and credibility.

- **Build a support structure that will grow and sustain the organization.**

People, process, technology, and a reliable resource stream are all cornerstones for success. This includes staff dedicated to acquiring and supporting members. Many HIEs have started out with weak infrastructures and failed as participant confidence in the ability of the HIE to deliver waned. A proven management team is part of this formula.

3. Step three—Build a technology road map

As BJC has demonstrated, it understands that a scalable technology road map is essential as its needs—and the healthcare landscape—evolve.

Things to consider when building a road map include:

- **Create a scalable approach.**

This is at the forefront for BJC right now as its private exchange grows. Whatever architectures BJC selects need to be able to go in a number of different directions. Scalability and external HIE connections are crucial considerations.

- **Scope participation.**

Consider the client experience and vendor involvement—BJC has several vendors involved.

- **Leverage your existing infrastructure.**
At BJC, as is the case for most healthcare organizations, money isn't available to continually re-invent the infrastructure.

4. Step four— Build and deploy a clinical model and gain physician acceptance.

For physicians accustomed to working within their own patient charts, data sharing is a fairly new concept. So to gain provider confidence and buy-in, BJC decided to start with a small, defined HIE strategy and grow over time. The initial system configuration allowed physicians to screen all repository data before deciding whether to import it into their record. Physicians appreciated the ability to review information before importing it, but soon found they didn't want to wade through the large volume of data. So, with a few mouse-clicks here and there—no need to reconfigure the HIE architecture—BJC's private exchange smoothly transitioned to an auto-import strategy. Now, all medications, allergies, diagnoses, and labs are automatically imported into the patient chart.

Weiss adds, "BJC uses a standard EHR based on care delivery function and discipline. Examples include BJC Medical Group, our academic and community hospitals, BJC Home Care, and BJC Behavioral Health. We use HL7 transaction triggers to populate a BJC central clinical repository, which is the baseline for HIE linkage outside the BJC enterprise. There is very limited use of any physician participation payments in the evolution of these BJC solutions."

Key considerations at step four include:

- **Define the scope of data exchange—a key component in getting clinicians to use the exchange.**
 - Will you use a centralized patient record? This is what BJC chose.
 - Will you use a message broker/locator service?
 - Will you have an automatic versus triggered exchange?
When it started planning 3 years ago, BJC had to decide. Some doctors were concerned about other providers' data flowing into their chart. As the system and thought process has matured, BJC is changing some of its earlier settings. Now, it's more comfortable with automatic exchange changing larger amount of data. Dr. Heidemann comments, "Our initial settings for our HIE allowed providers to choose what data flowed into their charts from other practices. Gradually, providers became accustomed to having this information available. We recently made the change to have this data automatically flow into patients' charts without provider intervention."
- **Identify and manage roadblocks.**
 - At BJC, longtime providers needed convincing that this would benefit patients.
 - Change management—when situations came up with providers and office personnel, BJC needed techniques to handle it.
 - Sensitivity to existing market factors—one reason healthcare providers sometimes don't want to exchange data is because of competition with one another.

Dr. Heidemann comments, "We haven't seen competition as an issue—a key focus of our Medical Group is providing coordinated high-quality care and having these tools just makes that easier."

- **Engage key constituents.**
 - Medical staff and Department Chairs
 - Informal medical leaders—identify them and get them on your side up front
 - Practice staff, such as nurses and medical assistants, need to have understanding and buy-in because they answer patients' questions and have more face time with clinicians.
 - Operations leaders

Dr. Heidemann provides more perspective on BJC's experience: "To help our physicians understand why utilizing HIE technology is important in the coordination of care, we shared actual scenarios that their colleagues encountered while treating patients—and we showed how the HIE technology has made a difference. For example, patients who were obtaining controlled substance medications from multiple providers were easily identified through clinical data exchange, as were health factors that individual patients may have forgotten to include on their intake questionnaires. These powerful examples aided the acceptance of the HIE. Plus, Regional Managers, Office Managers, and other key staff received communications regarding the HIE we were implementing—and why—so they could address patient questions and concerns."

- **Understand and incorporate workflow.**
Master the development of practical use cases that are easily defined and implemented.

Dr. Heidemann provides more detail regarding BJC's experience: "During our initial rollout, we had the support of Medical Group leadership, as well as our EHR Advisory Board. This helped clarify the scope and expectations for our implementation, as well as the workflow requirements."

- **Conduct pilot testing.**
 - Leverage physician champions.

Dr. Heidemann comments, "As the EHR Medical Director, I performed one-on-one training for many of the early adopters. This way, questions and concerns could be addressed immediately."

- Reassess strategy based on physician practice patterns and learning styles—BJC based this on feedback received, adjusted as they went along, and didn't try to do everything at once.
- **Execute a phased implementation.**
 - Focus early on low-hanging fruit and quick wins to demonstrate ability to deliver and add value. Moderate based on physician response.
 - BJC initially shared too much and providers were overwhelmed. They scaled back, then worked their way up again.

- **Set and manage to goals that align interests.**
 - Delivery of value needs to be manageable.
 - Communication is key to develop awareness of goals, and delivery that is in accordance with standards.
 - Actively embrace CQI (Clinical Quality Improvement). Engage providers that want to be at the forefront of healthcare.
- **Also important:**
 - Share best practices and success stories.
 - Turn challenges into education.
 - Celebrate successes and milestones.

5. Step five—Build your regional and statewide HIE strategy.

BJC carefully considers how its HIE integrates on a regional and statewide basis, while simultaneously placing a high priority on how its organization goals and values factor into its HIE plans. BJC’s size and technical infrastructure will allow it to connect to the MHIO as a “qualified organization.”

Important elements at step five include:

- **Directly connect to your statewide health information organization.**
BJC is large enough to connect to Missouri’s Statewide Health Information Organization (MO-HITECH)—and also has the necessary capacity and qualifications.
- **Develop a regional health information organization with connectivity to your statewide HIE.**
BJC realized that by connecting to MO-HITECH, it could be very proactive and use the regional health information organization, Integrated Health Network, as a primary connection point.
- **Integrate with Physician-based Health Information Exchange(s).**
Much of the focus in the early days of HIEs was about hospitals because that’s where the data resided. This is changing—there’s a broader array of information now.
- **Other considerations:**
 - Take your organizational “drivers” into account.
 - BJC is not purely driven by economic drivers. First and foremost, its mission is to do what’s right for the patient and effective patient care delivery.
 - Start basic and expand an array of integration offerings over time. If you make it too complex and cumbersome, providers may lose interest rather than buy in. Remember, the stronger your HIE participation, the more robust your clinical data will be, and thus the higher probability for effective patient care.

Taking necessary action

Based on how our healthcare landscape is continually expanding and changing, it is clear that enterprises should plan now for participation in HIE at three levels: private, regional and national exchanges. Consumerism and evolving standards will require a flexible and responsive HIE platform for ongoing success. Your organization cannot afford a wait-and-see attitude toward HIE.

With over 50 licensed client organizations utilizing its HIE offerings—including BJC—NextGen Healthcare is a recognized industry leader capable of helping you create your comprehensive HIE solution. To set up your HIE strategy consultation today, please contact sales at 215-657-7010 or sales@nextgen.com.