



# INTEROPERABILITY IN HEALTHCARE.

There's a lot of buzz and speculation about how stimulus dollars spent on health information technology will transform the industry, with direct incentives and other federal funding priorities driving adoption of electronic medical records (EMRs) across the physician, hospital, and ancillary provider marketplace. This spate of investment is meant to address some of the significant challenges facing the U.S. healthcare system, namely inefficiencies, quality and patient safety concerns, and growth in spending.

Quality and efficiencies we take for granted as consumers in competitive industries are severely lacking in healthcare. In response, the federal government has made it a priority to foment the increased adoption of clinical support technology, including EMRs. Additionally, and maybe more importantly, the government wants to promote the development and utilization of a truly interoperable network of health information exchanges.

## The Promise of a Health Information Ecosystem

By Don McDaniel; Paula Infeld, R.N.; Claire Hutchinson

This policy goal will address what is widely recognized as a limitation in our current construct. Even if every healthcare provider in America owned an EMR, these discrete applications would not facilitate information exchange without a standard platform to facilitate the sharing. A far higher EMR adoption rate, therefore, is necessary but not sufficient for health system improvement.

To drive adoption of health information technology, the federal govern-

ment passed the HITECH Act of the American Recovery and Reinvestment Act, which will assist providers in the purchase of EMRs, and to support the build-out of a system of information exchange. These dollars are being made available through incentives to eligible professionals serving patients in Medicare and Medicaid, and through a series of priority funding initiatives.

Included in the targeted health IT initiatives are incubation funding for communities already exhibiting ad-

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vanced health IT attributes (through the Beacon Cooperative Agreement Program), funding for the development of state-level health information exchanges (HIEs), and funding to support the creation and early operation of Regional Extension Centers (RECs), which help small medical practices, safety net providers, and Critical Access Hospitals adopt EMRs. All of these

ing the quality, safety, and efficiency of healthcare delivery in their various markets. Today, RHIOs are viewed as the foundation of a proposed National Health Information Network (NHIN), comprising a so-called “network of networks.” The vision is a national network that will drive true continuity of care across regions, providers, and information systems.

was built out, it allowed for movement away from congested cities. As more people had access to a wider geography, the network simply became larger. Similarly, a broad information highway in healthcare — whether it’s ultimately NHIN’s “network of networks” vision, or some other standards-based configuration — must make it easy for individual providers and provider organizations to get on the on ramp and realize the value of participation.

In addition, achievement of meaningful use in adoption stages two and three will require providers to participate with some form of electronic health information exchange.

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efforts attempt to drive the delivery system to achieve meaningful use — a term that has now become part of the healthcare lexicon, referring to an environment in which IT enables dramatic process and clinical outcomes improvement.

This white paper, the third in a series of three, will address the promise of clinical information exchange and system interoperability; provide examples of viable, albeit early-stage, information exchange markets; and offer direction on what to consider when selecting a viable partner.

### **LINGUA FRANCA**

It always helps to start by defining terms. As the effort to share healthcare information across discrete, disparate information systems has evolved, different terms have come to describe similar processes. The terms interoperability, information exchange, or health information exchange (HIE) are often used interchangeably. Organizations created to facilitate clinical information exchange have been called, at various times, community health information networks (CHINs), regional health information organizations (RHIOs), and health information organizations (HIOs). All typically share an interest in providing some level of information access at the point of care as a means of improv-

ing the quality, safety, and efficiency of healthcare delivery in their various markets. Today, RHIOs are viewed as the foundation of a proposed National Health Information Network (NHIN), comprising a so-called “network of networks.” The vision is a national network that will drive true continuity of care across regions, providers, and information systems.

It is also important to understand the layering of the health information ecosystem. At the foundation of an efficient system will be the deployment and broad adoption of clinical decision support technologies, with the EMR at the core. Currently, adoption is not sufficient in this layer, with a less than 20 percent ambulatory EMR adoption rate — and an even smaller rate of meaningful use of the EMRs, as recently defined by the CMS.

The idea is that the federal incentive payments to eligible professionals will fuel growth in adoption. As adoption grows, the ability for providers to share information within their respective organizations will increase, giving visibility to the virtues of interoperability. In some fragmented way, physicians may already be participating in interoperable healthcare; they may be ordering tests or prescriptions electronically and even possibly receiving results electronically from local partners like community hospitals and labs.

### **THE PROBLEM AND THE PROMISE**

As described, our current healthcare system is lacking in significant ways, and one particularly problematic outcome is the risk that patients face from medical errors. According to a 2006 Institute of Medicine (IOM) report, some 1.5 million Americans are injured every year from drug errors. This was in addition to IOM’s earlier estimate that about 100,000 patients die each year from a series of iatrogenic errors. IOM and others have been calling for electronic systems to prevent errors resulting from a reliance on humans alone to manage complex, multi-factorial processes.

The system is also fraught with inefficiencies, the provision of medically unnecessary care, and the growth in expenditures tied to services that add little or no value to the patient’s well-being. David Cutler, an economist at Harvard and a former advisor to President Obama, has estimated that services that provide little or no clinical value amount to approximately \$700 billion per year, which accounts for almost 30 percent of the country’s healthcare tab, according to the November/December 2009 issue of *Technology Review*.

Safety concerns and waste are clearly exacerbated by the absence of an interoperable healthcare information ecosystem. This plays out



every day in emergency departments across the country, where patients are often seen by caregivers who have little or no access to prior medical history, diagnostic tests, or inventory of medications; the patient is treated *de novo*, which forces the provider to start from scratch. This results in the order of redundant (expensive) unnecessary tests, lost time spent recreating the patient's medical history, reduced efficiency, and most critically, potential medical errors and adverse drug events.

Interoperability and information exchange offer a promise to support dramatic and continuous quality improvement in patient safety and system efficiency, and dramatically reduce costs — but there's a lot of work to do. Building connectivity is feasible today from a technology perspective, but early efforts have proven few and far between. These attempts are expensive, have yet to secure a viable business model, and are faced with the need to secure patient information which is still deemed to be a competitive asset.

### SOME BELLWETHERS

The market for viable health information exchanges is still very immature. There are currently only 89 "live" HIE organizations being powered by technology from 22 vendor organizations, according to a recent report by KLAS entitled "Health Information Exchanges: The Reality of HIE Adoption." It's clear that although health information exchange is a necessary path to full interoperability, operating models of sustainable HIEs are hard to find.

Two viable HIE organizations stand as examples of what is available today and how the market might evolve. These entities, which are in many ways trailblazers, exhibit a strong clinical improvement focus, have taken steps to include independent community physicians, have utilities built on a standards-driven backbone, and have started to tackle the issue of sustainability in their business model.

The first example is Boston Health-

Net (BHN), formed by Boston Medical Center (BMC) and a cadre of community providers. BMC is a 626-bed academic medical center for Boston University Medical School and a founding member of BHN, which along with 15 federally qualified health centers (FQHC), serves more than 250,000 patients annually.

BHN received seed funding in 2001 from an anonymous donor to deploy EMRs at each site, and in 2007 won a federal grant from HRSA to develop a platform for interoperability via a health information exchange. EMR adoption is at the core of its interoperability success, and the EMR adoption rate across its community health center partners is over 90 percent. "Boston Medical Center and its community health center partners use a vendor ambulatory EMR with a vision to achieve interoperability among the EMRs from these partnering sites," said Joel L. Vengco, director of IT and chief applications officer of Boston Medical Center. Vengco explained that BHN's members have four different types of EMRs, allowing BMC and 11 community healthcare centers to electronically exchange health information for the patients they share.

BMC has played an active role in supporting the network and encouraging EMR adoption, and today, the most widely utilized HIE applications include finding patient medication lists, sending and receiving electronic referrals, ensuring the exchange of referral and specialist notes, and accessing vaccines administered. BMC's involvement and leadership extend beyond pure data exchange; the HIE is the cornerstone of its enterprise integration, clinical work flow enhancement, and community outreach. These efforts are helping to increase efficiency and ensure that quality care is driven by the visibility of patient care among all providers.

The second bellwether organization is the Keystone Health Information Exchange (KeyHIE), located in Eastern Pennsylvania. KeyHIE was formed in April 2005 when Geisinger Health System invited hospitals in Central and Northeastern Pennsylvania to discuss the benefits of sharing healthcare information. According to Jim Younkin, KeyHIE's IT program director, this initial salvo led to securing a planning grant from the Administration for Healthcare Research and Quality (AHRQ), and finally an implementation grant, which had a matching requirement that Geisinger funded. Currently, KeyHIE connects physicians, healthcare professionals, and more than 50 hospitals covering a 31-county region of Pennsylvania.

The information exchange has become an indispensable tool in supporting Geisinger's patient-centered medical home initiative, among other initiatives. A key component of this program has nurses and case workers who are assigned to a physician involved in the program, including independent physicians not employed by Geisinger. The case manager has come to rely on the ubiquitous access to mis-

sion-critical patient information offered by the KeyHIE exchange.

This model is currently in place in eight Geisinger community-practice sites, and five non-Geisinger practice sites, and already boasts some powerful quality improvement indications, according to Patricia Urosevich, director of national media for Geisinger Health System. The most successful pri-

mary-care sites reported 50 percent decreases in patient admissions and an 80 percent reduction in readmissions following discharges, Urosevich said. This is evidence of the transformational capability of interoperable health information.



## THE RIGHT PARTNER

There are a number of technology vendors and systems integrators that are, or will soon be, in the clinical information exchange business. These vendors are predominately targeting three types of health exchange organizations:

- Private Integrated Delivery Networks (IDN) that have taken a leadership position in their communities;
- Independent exchange organizations — such as RHIOs — comprised of and building a governance model around various community stakeholders; and
- State-designated organizations charged with building interoperability in their respective areas.

Regardless of the type of organization and their choice of technologies, potential participants should look for certain key attributes, including:

- **Market staying power** and a record of (at least some) success. Although some exchange organizations, such as those that were started by IDNs, may have a fully subsidized model today, this will be the exception, not the rule. It is the exchange's job to create value that a participant will pay for. In absence of this, failures have and will abound. So inquire about the long-term business model. And remember, if it sounds too good to be true, it probably is.
- **Scalability.** The process of building an HIE organization is a marathon, not a sprint, and will be dynamically iterative. Therefore, the exchange has to have the bandwidth to accommodate new services, growing and diversified data sources, and scaling transactions, all without degrading the processing performance or response time.

Additionally, the management and governance structures of the organization have to be equally flexible and adaptable.

- **Strong data governance model.** The exchange entity one contracts with must have a clearly defined data management and governance model in place. For example, will all source data reside in the organization supplying the data, and be available when requested — called a federated model — or will all relevant data be integrated into a single data store — called a centralized model? Or, will there be some combination of both? Regardless, look for a clear and concise strategy.
- **Standards-driven integration.** Remember, EMRs are the building blocks of the health information ecosystem, so seamless integration will be an absolute necessity for the success of the exchange, and the value proposition for physicians and other caregivers. Specifically, the exchange should demonstrate compliance with the Integrating the Healthcare Enterprise (IHE) profiles and the Health Information Technology Standards Panel (HIT-SP) standards as the foundation for their interoperability architecture.
- **A map to meaningful use.** Healthcare professionals eligible for economic stimulus incentives through the HITECH Act are strongly encouraged to achieve meaningful use by 2015. Securing meaningful use in adoption stages two and three will require access to and use of a viable exchange. So, inquire as to the plans of the exchange to help its subscribers achieve meaningful use.

As health information exchanges continue to develop, providers will have opportunities to play a multitude

of roles in the evolution of the system. Here are a few options for where your practice can get involved:

- First, if you're still dragging your feet in adopting an EMR, now's the time to do so, but with a keen eye on interoperability. When selecting your vendor, consider a partner that is well-suited to advance the mission of interoperability. If you have a system in place, communicate with the vendor that interoperability is a top priority for your practice.
- Link up with health IT advocacy organizations whose goals focus on driving healthcare improvement through technology. Achieving interoperability will require vocal support and collaboration.
- Finally, get on board with an HIE organization, either by participating in the planning of a start-up entity or as a consumer. Each state has a designated HIE organization, and a list can be found at the eHealth Initiative's Web site, [www.ehealthinitiative.org](http://www.ehealthinitiative.org). Success will be defined by a balance between gathering enough information on the options and recognizing that the market will migrate to the health information ecosystem described in this white paper — and that there's some inherent advantage in being a first mover. ■

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