INSIDE IE EDGE

Health Information Exchanges: Rebooting Healthcare

EXECUTIVE SUMMARY In their book "Macro-wikinomics: Rebooting Business and the World," Don Tapscott and Anthony Williams identify five principles for the age of networked intelligence: Collaboration, Openness, Sharing, Integrity and Interdependence. Each of those principles could apply to health information exchanges or HIEs, which on a community level represent the vision of networked intelligence in healthcare.

HIEs aren't the only or even the most important example in healthcare of this emerging global cultural milieu enabled by digitization, the Internet and social media. But HIEs represent perhaps most literally the idea of IT-enabled community collaboration built upon trust. Money is pouring into the HIE marketplace through federal channels like HITECH and the Beacon Program and, after Meaningful Use and account-able care organizations (ACOs), HIE just may be third in frequency of use in the healthcare executive's buzzword lexicon.

While federal funding waters the HIE garden, that doesn't mean HIEs will be an easy grow. In our snapshot of HIEs we find a lot of activity but not a lot of consensus—except that the picture is unclear. It's like a Polaroid shot that just may take years to develop.

Welcome back to the future

HIEs are both the proverbial trip back to the future and the future itself. Healthcare veterans of all stripes recall the community health information networks or CHINs of the late 1980s and early 1990s that failed for lack of a business case. Then, from 2004 to 2009 the Office of the National Coordinator (ONC) pushed regional health informa-tion organizations, or RHIOs, and their national counterpart, the nationwide health information network or NHIN.

"Communities started to self-organize as 501c3s" in the RHIO movement, says Greg DeBor, client partner for healthcare with CSC in Boston. "Today, almost none of those are sustainable. According to one recent report, of the 200-plus listed HIEs, only about 16 are financially self-sustaining." Most RHIOs have survived on grant money. In 2009, HITECH and Meaningful Use came along and through the ONC are pumping $560 million into HIEs at the state level.

To receive that funding, in 2010 states had to designate an entity to run their HIE initiative so they could steer fund-ing only to HIEs with stronger frame-

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works and more scale than in the past. Because states weren't quite ready to assume this role, he says, many have been slow to get up to speed in this area.

Greg DeBor, client partner, CSC

"That's been the big shift in the marketplace from early 2009 until now, from RHIOs living off grant money to federal money driving the state level," notes DeBor. Still, $560 million divided among 50 states amounts to only about $10 million per state, further reduced to $2.5 million per year over the four-year payout. State matching grants will help as they get phased in over the same period.

Attitude adjustment
This marketplace shift has eased hospital and health-system executives regarding HIEs, notes DeBor. "Their attitude in the past was that at some point somebody was coming to me for a handout. Now some of the pressure is released." However, many questions remain. Does anyone know what they want these HIEs to do? Will the solution have value for me? How will rules for ACOs affect HIEs?

Those are critical questions because an HIE facilitates information exchange required for an ACO to provide coordinated care. Answers to those and other questions are likely to be determined by local market dynamics. In some cases,

for example, HIE initiatives among state and local organizations have formed workgroups, governance and engagement of the state's HIE coordinator.

"Now, along comes the ACO under which the HIE function fits well," says DeBor. A health-system executive who views the ACO as a more immediate organizational goal may question whether the state will reliably meet its needs in that area, concluding, 'I might just have to do my own HIE.'" This tension between the business realities of an ACO and a state initiative may increase, depending on how much money begins flowing into the ACO.

"In the past, you had the feeling the HIE movement was trying to boil the ocean. There were lots of RFPs aimed at providing solutions for every use case for every type of provider," he says. In contrast, the ACO framework is quite focused on discrete tasks: care coordination, identification of patient populations, engagement of patients in their own health, metrics required for reporting and support of evidence-based medicine and clinical decision support.

One more meeting
Health-system executives may view a state-sponsored HIE initiative as competing for scarce resources. "A CEO may ask, 'Is this one more meeting I need to attend? I'm not sure about getting value from an HIE.' Or, 'I want to be my own so-called HIO instead—a standalone health information organization—and be off the grid. I'm going to build my own internal HIE,'" says DeBor.

CMS' latest proposed rules stipulate that an integrated health system can voluntarily form an ACO for a set population of Medicare beneficiaries and share in any savings accrued from well-coordinated care. States would likely develop similar P4P programs for Medicaid. With millions of dollars at stake, it would be critical for an HIE to support coordinated care. A major challenge for providers seeking an HIE model is the absence of a one-size-fits-all HIE.

One possible solution is what many small states are doing—build HIEs similar to the RHIOs of a few years ago that use off-the-shelf HIE technology from vendors like Axolotl and Medicity that offer a full suite of HIE functionality.

According to John Moore, managing partner at Cambridge, Mass.-based Chilmark Research, such HIE technology extends the horizon of an EHR by providing a suite of components that includes an enterprise master patient index (EMPI), a record-locator service, interface engines that provide the ability to exchange documents between one EHR and another and often a provider portal that can aggregate and display health information in a single view from diverse sources.

In a "pull" or portal-based HIE, participating providers send their data into a data base or repository; when somebody needs that data they "pull" it out. A key issue with such an HIE, according to CSC's De Bor, is that "somebody's got to manage that data." Health system executives might object to that model because they have to yield control of their data.

Thinner HIE

Another emerging model, especially for big states, has a vendor provide a basic set of core HIE services upon which value-added services can be added as stakeholder needs arise. Core services can include basic message processing for all providers, tracking of security certificates—a certificate authority ensures the integrity of a data request—an MPI or record-locator service and a central repository with patient-consent management.

The idea is that state governments would leverage economies of scale and provide the core services while allowing regions and participating HIOs within the state to deploy their own portals. "It allows a thinner communication infrastructure," says DeBor. CSC, for example, provides generic services for such an HIE, bringing together other vendors like Microsoft, Orion Health or InterSystems Corp. for interface and integration technology.

At the other end of the spectrum are clinical IT vendors like Cerner and Epic. Ambulatory vendors such as NextGen and eClinicalWorks also claim new HIE functionality. Generally such core HIT vendors have limited HIE solutions that work well with their own platforms, and less so with other systems.

Value-added services can include ePrescribing and public health and quality reporting. It's also possible to build a

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portal that provides a longitudinal medical record. "I see it going that way," he says. "Core HIT vendors are not built to be open like the web. There's no reason you can't break it all open. There's room for many more models before an end model becomes clear to us."

A watershed moment will occur when federal money runs out and HIEs will have to demonstrate sustainability, probably under post-reform payment and operational models like ACOs. Says DeBor: "Perhaps ACOs are the answer. This might be the real business driver for me as a health system executive to exchange information."

HIE from North Texas

Ed Marx, CIO at Texas Health Resources, is a social-media-savvy executive who writes blogs and uses Facebook and other social-media channels personally and professionally. One of the nation's largest faith-based, nonprofit health systems, Arlington-based Texas Health is an advanced user of medical informatics and EHRs. Over the past five years the system has implemented an EHR at 13 hospitals. Texas Health's EHR contains 4.7 million patient electronic records. So it's worth listening to Marx's take on HIEs.

He views HIEs at four levels. "HIE begins at home," says Marx, and so the first level is *internal,* or *local,* involving the hospital or health system. "If we can't even exchange data at Texas Health, then we won't be able to outside

of the system." Second is the *regional* level and addresses the question, "How do I exchange information beyond the walls of the health system?" This level draws in Meaningful Use, ACOs and medical homes, which require an HIE in order to be successful.

Ed Marx, CIO, Texas Health Resources

TEXAS HEALTH RESOURCES

"We've deployed HIE for some time now by exchanging clinical information with Children's Medical Center in Dallas," he notes. Also, Texas Health is able to push information out to its employed physician group and will soon be able to receive information back to meet healthcare reform requirements for such sharing among providers and stakeholders.

The third level is the state, which of course depends on federal HITECH grants if the state meets certain HIE administrative requirements. "In Texas we've identified a number of HIEs that will cover 85 percent to 90 percent of the state's hospitals and physicians by the end of the year," notes Marx, who chairs the Texas Health Services Authority, a state board appointed by the governor two and a half years ago to guide the state's HIE initiative. "They've doled out the grants according to a very rigorous application process."

A final and fourth level is the nationwide health information network or NHIN. Ironically, he believes that may be the easiest implementation of all because it will merely require connecting all the state HIEs.

Multitasking HIEs

Health systems must pursue both internal and regional HIEs simultaneously in order to stay out in front and not fall behind, Marx asserts. "There's no way you cannot not do both at the same time."

Under the aegis of the Dallas Fort Worth Hospital Council (DFWHC) Foundation, a not-for-profit trade organization based in nearby Irving, payers, providers and IPAs in the region have agreed to form an HIE. DFWHC Foundation, funded by grants from HITECH via the state and from the CONNECT program to assist physicians in EMR adoption, has been evaluating major HIE vendors for the past six months.

Marx notes the recent trend of payers acquiring HIE vendors—such as the Ingenix unit of UnitedHealth Group acquiring Axolotl—reflects a move by healthcare product and service vendors generally to meet the comprehensive needs of ACOs.

"What payers are attempting to do is to create an end-to-end offering to leverage their position within the enterprise. EHR vendors are trying to do the same thing," he says. Still, like many CIOs he is concerned about the advantage payers

would have in owning the technology platform across which patient data would flow. "It gives them a distinct advantage. It definitely gives us pause."

However, Marx is sanguine about likely cooperation among potential players in an as-yet unclear HIE framework, including the states. "States are providing lots of encouragement to hospitals and see lots of benefits to HIEs in terms of population health and cost reduction, especially in Medicaid programs by eliminating duplicative tests."

Patient satisfier

Patient satisfaction, he asserts, is the number one benefit that an HIE offers a health system. In interviews with patients Texas Health found that those patients hate being forced to undergo duplicative testing, redo paperwork or act as the "mail handler" carrying their records from doctor to doctor.

The second major HIE benefit is better quality of care. "We believe by sharing information in a secure, confidential manner we can improve patient safety because there's less room for error when information is available to everybody," says Marx. A third benefit is that an HIE positions the health system better for the unrolling of healthcare reform. "The ability to exchange information makes us more able to work in the new environment," he says.

Provider satisfaction constitutes the fourth benefit of a HIE. "We want to make sure providers want to work with

Patient satisfaction may be the number one benefit an HIE offers.

The proposed North Texas Accountable Health Partnership, a clinical HIE, will cover a 13-county region in North Texas with a population of six million, including 12,000 doctors and 140 hospitals.

us. There's nothing like being able to provide clinicians all the data they require to treat the patient, the ultimate in care coordination," says Marx. Fifth is the financial benefit that results from being able to reduce duplicative tests and provide the most efficient care.

Mobile IT will become an important factor of this new HIE-enabled world. "We're a big believer in mobile technology. In fact mobile health is a Texas Health key strategy," he says. "Everything is going to mobile—medical images, text, numeric lab results. We do this today with iPads and iPhones. Texas Health also has a web-based patient portal for patient health records. Mobile technology impacts quality. We've been providing OBs the ability to look at fetal-monitoring strips on a smart phone for a year."

Texas Health has a high adoption rate among providers and mobile technology is a huge factor in physician and patient satisfaction, Marx notes. "All the feedback is positive. We just had our 1,000th patient user pull down the iPhone application."

Early HIE
In a reflection of just how confusing the HIE landscape is, North Texas has two HIEs with different purposes. Only one is operational. Since 1999 the region has had a claims-based, all-payer HIE that links 75 hospitals for electronic submission of all inpatient and outpatient claims information. An EMPI allows member hospitals to conduct research

and analysis on readmissions and other patterns.

Kristin Jenkins, president, DFWHC Foundation

"We do not collect detailed clinical information," says Kristin Jenkins, president of the DFWHC Foundation which spearheaded the claims-based HIE. "But we do receive information about healthcare which allows assessment of population health and the ability to track readmission rates for patients accessing different hospitals in the metroplex. The Foundation's built-in analytics tools allowed hospitals to determine patients with the highest readmission numbers often suffered from conditions unrelated to the reason for readmission. This information can assist in identifying patients who need more intervention to prevent readmission."

Each hospital can view its own readmission rates for a 30-day period, according to Jenkins. "It's not a real-time HIE," she says. "But it has put us in a good position to support clinical information exchange among payers, employers and medical centers."

A new 501c3 organization applying for a state HIE grant, the North Texas Accountable Health Partnership was created in the Dallas-Fort Worth area.

The clinical HIE will cover a 13-county region in North Texas with a population of six million, including 12,000 doctors and 140 hospitals. The DFWHC Foundation made a strategic decision to support the creation of an HIE organization so governance could be shared among providers, patients, payers and employers.

Trying not to pay twice

The HIE steering committee has published an RFP for a vendor to provide a technology platform and business model. "One of our hardest tasks will be to develop a patient-consent process. We're working closely with patient representatives to do that," Jenkins says. "It may be possible to use some of the existing HIE technology so hospitals aren't paying twice."

The initiative has garnered strong commitment from area hospitals. "It's time for the creation of an HIE in our area," she says. "Healthcare providers and payers need the HIE as a tool to assist in the management of patients in the new Accountable Care Organization models proposed by CMS. That focus, coupled with funding and interest by leaders from the community can make this initiative successful."

The DFWHC Foundation also serves as the Regional Extension Center (REC) for North Texas and has assisted primary care physicians in 42 counties. "It takes a perfect storm to establish the trust necessary for an HIE initiative," Jenkins says.

That trust may be tested soon. The new HIE is required to perform some level of exchange by the end of the year. Following some initial exchanges with providers, the network expects to add more trading partners over time. "The more people link into the exchange, the more people will use it," says Jenkins, who predicts growth of the HIE will accelerate in about two years.

HIE in Chicagoland

"We're at an interesting point in the industry," says John Norenberg, VP of IS for Physician Services at Advocate Health Care, an Oakbrook, Ill.-based integrated delivery system with 10 acute care and two children's hospitals in the Chicago area. His perspective is unique. Prior to working in clinical IT at Advocate for the past seven years, Norenberg was involved in development of data exchanges in the manufacturing industry in the 1980s and the insurance industry in the 1990s.

"The business/clinical argument for exchanging data in healthcare is now becoming self-evident. All the previous arguments against such exchange are relegated to history. Now, the arguments are about how to do it," he says. For example, what should leaders like Advocate, Kaiser, Mayo and the big Catholic health systems do in terms of information exchange? The role of the state has also shifted from if we should do it to how we should do it.

Three decades ago the Big Three automakers changed the way manufacturing

exchanged information by implementing EDI to automate a supply chain that was typically eight vendors deep. Fast forward to healthcare today and substitute clinical information for business information and in nearly every case it involves similar push or pull of a fairly discrete message.

Advocate Health Care

John Norenberg, VP, Advocate Health Care

The difference with healthcare, Norenberg says, is that there are so many players and no straightforward industry oligarchy to make authoritative decisions. Other industries started out with middlemen to initially facilitate the information exchange but eventually eliminated them as the exchange matured. "In healthcare we still need middlemen," he says.

Biting the third-party bullet

Chicago is a case in point. "With 70 to 100 hospitals and an untold number of clinics in the Chicagoland region, for me to send queries to all parties and them to respond will require some kind of middleman. It raises the question of the role of leaders of the healthcare community versus the role of the state, especially the role of the state-sponsored middleman. Most people would opt for the state because the leaders happen to be competitors," says

Once a middleman provides the HIE infrastructure, the next step is to publish a standard subset of clinical data for exchange, one including key items like medications, problem list and allergies. That implies a third-party to manage the data. Hardcore IT theorists, notes Norenberg, want everybody to own their own data and be able to securely query and receive responses from other databases—eliminating the need for a third party. "But technology has not caught up yet, so we need to do something in the middle for the foreseeable future."

For a system like Advocate, it's a short jump from the idea of a community HIE to one of its own making that covers all patients in a broad geographic area like Chicagoland and central Illinois, which happens to be its service area. "We need to have an exchange among ourselves," says Norenberg. "We're reaching out to our employed and affiliated physicians by sending them hospital summaries and they'll send us updates on patients from the ambulatory side. The corporate-brand exchange can exist side by side with the community exchange."

The variability in clinical information among EHRs alone means there's no single, one-size-fits-all HIE. It may take as long as10 years, or a stunning technical development, to sort out. "Big organizations are clearly going to develop their own HIEs. We'll likely be on parallel networks for a while," he says.

Hedging the HIE bet

Given the ambiguous nature of the HIE movement, it's not surprising Advocate

is taking two HIE tracks. The first track is to create an internal exchange that offers physicians three options to work with Advocate: 1) a hospital-based Allscripts EMR for its 900 employed physicians; 2) an eClinicalWorks EMR For affiliated physicians, Advocate Physician Partners; 3) interconnectivity for a physician practice's own EMR.

Still, the internal exchange is a work in progress. "Our interconnectivity is not there yet," acknowledges Norenberg. "We're sending results to physicians, but our vision of bi-directional real-time information sharing among our entire medical staff is a multi-year journey." Advocate is also developing a physician portal to provide doctors with a longitudinal patient record whether they're in a hospital, medical group or clinic.

Advocate's second HIE track: community. "Advocate is the largest healthcare player in Chicagoland and we also sit on the advisory committee of the Metropolitan Chicago Healthcare Council (MCHC), which owns all the HITECH grants for developing an HIE," he notes. While those are real pluses, huge challenges remain. "A major concern is the HIE needs to achieve 100-percent participation of the players in the region to be effective, and that's a tough objective to achieve. Also, what's the timeline for deriving value from the HIE? The value to hospital A grows exponentially as more people sign on."

While MCHC plans to select a technology vendor this summer, the actual network architecture remains unclear. "Using the Internet with a secure tunnel is at worst a great place to start. On the other hand, with eight hospitals and a huge medical group accustomed to an advanced EMR, we could use our own connectivity to link with the community exchange. We wouldn't attach each hospital to the exchange, we'd attach the exchange to the exchange," says Norenberg.

Conclusion

After 20 years of starts and stops in health information exchange, with one acronym replacing another, it is reasonable to ask, "Why now?" Did we learn anything from RHIOs? Why is it so hard? Clearly the one-two punch of federal funding and Meaningful Use is compelling HIE development. The technology is there. The cultural milieu has arrived.

We are reminded of the fact that it traditionally takes 17 years for any revolutionary technology to become ubiquitous after being first introduced. Says Norenberg: "One reason EMRs took so long is because they chew up horsepower. They're incredibly processing-intensive. The early adopter organizations were out there figuring out how to make the vision work without a financial safety net. They believed it was going to happen. To that we owe them a debt of gratitude."

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