information *edge*

RHIOs: The Learning Curve is Local

EXECUTIVE SUMMARY Regional Health Information Organizations, or RHIOs, have generated increasing attention in the last two years because of the federal government's emphasis on the need for interoperability in healthcare and its vision for a national health information network to reduce medical errors, improve clinical quality and increase efficiency. This effort has been embodied by National Health IT Coordinator David Brailer, MD, and fueled by government seed grants doled out with the help of the e-Health Initiative, a Washington, DC-based non-profit organization established to further regional and national connectivity.

The compelling concept behind RHIOs is standardized electronic information sharing among all healthcare players in a community or region so that mobile patients and physicians can seamlessly access complete clinical information anywhere anytime. A true RHIO represents multiple stakeholders in a community—hospitals, health plans, laboratories, physician groups, public health and consumers; it is not simply an extension of a single integrated delivery system. Skeptics recall the ill-fated CHIN [community health information networks] initiatives of 15 years ago that died from proprietary conflicts, immature technologies and lack of a clear business case. However, much has changed in the interim in terms of technology, finance and, perhaps most importantly, national will.

Still, nothing proves the old axiom that all healthcare is local better than the RHIO movement. More than 20 RHIOs are working and more than 100 have been launched across the country, but there is no consistent model. Some have been spawned by physician groups, some by health plans and others by integrated delivery systems. Many have seed grants and have developed under the if-you-build-it-they-will-come philosophy—and some are still waiting for physicians and other players to come and participate. Many have succeeded at the difficult job of establishing governance. Nearly all struggle with how to become self-sustaining financially.

However, a few RHIOs have succeeded at all of these challenges on some level, even if on a small scale. With the understanding that this remains an embryonic movement and much will change as the learning curve continues, we highlight a few of these efforts in this issue of Information Edge: a California RHIO that uses messaging technology for what might be called RHIO lite; an upstate New York RHIO that uses a robust, web-based clinical data repository and an Indiana RHIO that uses its own private virtual network. We also talk to some physician experts on key issues surrounding this trend, whose mantra might be a well-worn Baby Boomer adage: "Think globally, act locally."

Improving Healthcare Performance Through Information Management and Process Improvement

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Connecting in Santa Cruz

Robert Keet, MD, an internist and president of a 30-member physician group in Santa Cruz, Calif., became involved early on with development of a RHIO before they were even called RHIOs. Ten years ago, as medical director of an IPA, Physicians' Medical Group of Santa Cruz County, seeking to improve overall clinical efficiency and quality, he helped lead the charge to build a community health data network that embraced an EMR core. It became fully web-based in 1998, added e-prescribing in 2001 and e-ordering in 2003. "It has been progressively enhanced in the community," he says.

Robert Keet, MD, internist and president Physicians Medical Group, Santa Cruz, Calif.

The Santa Cruz RHIO extends outward from the city itself, a northern California coastal community of 40,000, to several agricultural towns which dot the area and bring the total regional population to 280,000.

An advantage was that the IPA had good relationships with the two hospitals in the community: Dominican Santa Cruz (part of Catholic Healthcare West) and Watsonville, a for-profit 100-bed hospital. The IPA was also able to recruit several outpatient clinics, radiology centers and clinical laboratories, as well as 300 physicians in various groups. Keet's 30-physician group is the largest in the Santa Cruz network but most are one or two doctors, totaling 77 independent physician groups. A year ago federally funded clinics like Planned Parenthood and the county healthcare department joined the network.

The IPA was the original source of network funding and physician costs. Hospitals, laboratories and other data feeders also pay a piece. Governance was originally a committee with representation from hospitals, laboratory and the IPA but then it "fizzled out," says Keet, and is currently being reconstituted as a community management group largely to focus on security issues. "That's mainly because there's not much to manage," he says. Most of the management is done by the IPA and Axolotl, the technology vendor. The data feeders pay Axolotl for not only the technology but for hosting the ASP service.

Today the network, which has never been christened with a name beyond the product name "Elysium," carries all the outpatient data from physician visits plus radiology and laboratory tests. About 75% of transcribable data comes across the system and is accessible on a web site for physicians, who have the ability to electronically sign a web-based patient record.

"The network has free flow across all providers, from all sources," says Keet. Considered an "EMR lite," it lacks decision support or elaborate encounter management capabilities, but it consolidates patient information into a basic EMR with e-prescribing and some care management functions. "It would look like I'm using email. Being web-based, I can do it anywhere," he says.

As easy as paper

Technically, the system captures data at sources such as laboratories, radiology centers and doctors' offices and then distributes it like an email message, uniquely identifying it using a community-wide master patient index. Data is delivered with the same security model as paper, says Keet. Electronic data is delivered into the work group of physicians that would normally have access to the paper. If a patient is transferred to another physician then the data is electronically forwarded into that physician's space. While all of the data exists on a single server, each provider group has its own private space.

Santa Cruz has chosen not to implement a common database. However, other communities using the same system have also implemented such a database for use by ER physicians and other physicians needing immediate access to all of the community-wide data. How to set up the system comes down to local concerns for security and politics, according to Keet. Even without a single central repository, he can look at nine years of clinical data from all his patients.

Access to data is denied to anyone but authenticated users on the "copy to" list. "The longest conversation we had in planning the system was on data security," recalls Keet. In Santa Cruz the decision was made that physicians who would normally have access to the paper copy should have access to the electronic copy, rather than implementing a single database that all could access.

He likes the system's flexibility. "Some doctors use it as an EMR. Others still use paper charts and use the messaging network as a workflow tool to help manage their practices. That's important," Keet says, because most doctors are not yet ready to move to a fully electronic environment. "It's a push technology rather than a pull. Data is pushed out to me. I can't go in and pull data unless I go and ask another doctor. [But] all the data I need to work with I have. The technology is there if we want it."

Taking it on the CHIN

RHIO advocates dismiss any similarities to the CHIN movement.

"Compared to the CHINs, the RHIO is a much more workable model," says Jonathan Teich, MD, CMO at Irving, Texas-based HealthVision, which provides web-based electronic health records and integration services for community networks. "The environment has changed. Today there's support from the executive branch of government on down; patient safety is also a driving force," he says. Also, better organizational and financial models exist today than a decade ago. All these factors will continue to push RHIOs to the forefront of healthcare.

Jonathan Teich, MD, CMO, HealthVision, Irving, Texas

"This has become a direct priority and is not likely to go away soon," says Teich.

To play in this space, technology vendors must provide integrating software that can combine all kinds of disparate EMRs, accurately identify patients over all the systems and ensure that data makes sense. This kind of integration is what the healthcare marketplace has been demanding for years—and it requires a new kind of collaboration. In developing RHIOs, "We work with all kinds of vendors that we'd otherwise compete with," says Teich. Under new agreements forged with several leading—and competing—EMR and eRx vendors, HealthVision is providing a common interoperability exchange, allowing them to move information securely back and forth among their applications.

And, while interoperability is key, it isn't sufficient. "Interoperability must be configured to deliver value. It has to be what we call 'stunning interoperability' that creates data in standardized, machine-usable form," he says. That helps achieve what the Center for Information Technology Leadership calls "Level 4" integration in which discrete data is created that can be manipulated for better outcomes.

Only when data is machine usable can there be useful displays and alerts based on that data. As a result, "In stunning

interoperability, systems can affect each other," says Teich.

Three aspects are integral: 1)Systems need to act in concert, to be able to affect each other, such as a new result from a lab system causing an alert to fire in an order entry system; 2) Any number of vendors must be allowed to interact, as long as they follow the basic conventions: "Anyone can play;" 3) When possible, the combined information should be viewable and editable in the user's native application.

Teich cites the Fishkill, NY-based Taconic IPA's THINC (Taconic Health Information Network and Community) as an example of such a successful RHIO. THINC, which uses HealthVision as a technology platform, is a multi-stakeholder, community-wide data exchange among community physicians, hospitals, reference laboratories, pharmacies, payers, employers and consumers in the eight-county mid-Hudson River region north of New York City.

Building to scale
The specific technical architecture of a RHIO depends on whether it covers a small to moderate region or approaches national scale. Small to moderate regions—ones in which a patient, without going on vacation or changing address, routinely sees several doctors within the region—work best with a data-repository architecture that is highly secure but allows lots of data exchange, lots of different functions and applications as well as surveillance ability and clinical decision support for disease management. "These regions might have a radius of 10 miles in New York City or 200 miles in Maine," says Teich. As long as the health systems and providers in a region can meet and plan together, the repository model is likely to provide better results and faster performance.

On the other extreme, a national scale, it's necessary to sacrifice speed and data functionality in order to make national data exchange organizationally manageable across hundreds or thousands of health systems. An example might be the case of a New Yorker traveling in Colorado who needs to see a doctor. Such information sharing does not require continuous data exchange so much as a single transmission of patient data to support a discrete episode of care. This kind of task calls for a more federated model built upon peer-to-peer architecture. It's slower and has less-advanced functions but solves the long-distance need. In between the two region sizes, a hybrid architecture—local or regional repositories that can communicate as peers along the national network—is likely to be the most viable answer.

Adhering to that kind of IT logic is one reason why Taconic IPA has been successful. "They have a community repository and access is tightly protected—only caregivers who have a relationship with a patient can see that patient's data," says Teich. It allows more emphasis on clinical quality efforts. "We still keep data logically separated. One of the biggest problems with RHIOs is identifying the patient across multiple systems. There may be several different Ralph Johnsons and to keep them separated you need patient-matching algorithms. One of the benefits of the repository model is that you can do that when data arrives, and resolve questionable matches in advance, rather than trying to match up patients in different peer systems while the physician is waiting for results," he says.

Payment please
In terms of payment models, a factor significantly influencing RHIOs is pay for performance (P4P), which is continuing to expand and for which the Bridges to Excellence program is the standard model.

Relief from Stark provisions is also necessary. "Many hospitals and health systems do want to provide IT and data networks that make up RHIOs as a service to doctors, but Stark and anti-kick-back regulations sometimes stand in the way," says Teich.

Two bills pending in Congress, one introduced by Reps. Tim Murphy (R-Pa.) and Patrick Kennedy (D-R.I.) focused specifically on RHIOs, and another introduced by Sens. Debbie Stabenow (D-Mich.) and Olympia Snowe (R-Maine) aim to provide some safe harbors for these activities. Also, Sen. Hillary Rodham Clinton (D-N.Y.) and Senate Majority Leader Bill Frist (R-Tenn.) have introduced a bill to establish a national health IT network.

Seed funding can help get a RHIO off the ground. "It gets a region psyched up," says Teich. Then there's differential reimbursement, which provides a different code or payment for a doctor's visit when there's IT used. A key is for large payers in a region to work with providers. Payers can then contribute through the RHIO. It helps if there's a significant industrial payer like IBM Corp. in Armonk, N.Y., which participates in the Taconic IPA.

The number one factor in a good RHIO is organization and governance, which makes the decisions about who is going to pay for a RHIO and determines what stakeholders will get out of it. In the case of Taconic, "They've done it all well," says Teich, providing good leadership and engaging all of the players.

Michiana Health Information Network

Centered in a 10-county region of north-central Indiana and southwestern Michigan with a population approaching one million, the Michiana Health Information Network (MHIN) was launched in 1999. It is primarily a community data repository in which initially data providers like radiology groups and laboratories "sponsored" community

physicians for results viewing. Today, a mix of independent physicians pays subscription fees to be part of the network, which operates on a local ASP model.

Alan Snell, MD, chairman, MHIN Board and CMIO, Saint Joseph Regional Medical Center, South Bend, Ind.

Not a web portal, MHIN runs through a secure Citrix-based system in which users have access to applications running on local servers over a secure private network. "It's basically a private community intranet," says Alan Snell, MD, Chairman of the MHIN Board and CMIO at Saint Joseph Regional Medical Center in South Bend, Ind., a three-campus system that is part owner of the RHIO and part of Trinity Health, Novi, Mich.

The other owner is the South Bend Medical Foundation, a non-profit laboratory organization owned by the community physicians. While the foundation has always had a large presence in north-central Indiana, it has expanded rapidly in recent years to serve as a reference laboratory in several states. "The lab's interest was to get results out faster to customers and putting that information into the database," says Snell.

Both institutional owners of MHIN are long–time Cerner clients. Applications, while lacking practice management software, include basic results viewing for all physicians, and an integrated EHR for $400 to $500 a month plus an installation fee. Snell says the EHR service can cut transcription costs by 90%, eliminate time-consuming chart pulls and greatly improve the information work flow inside a practice: No lost charts.

Other functions include e-prescribing, internal messaging, documentation and scheduling.

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Private network

"This is a private community intranet—it's not a peer-to-peer messaging system. We have a community data repository with personal patient identification. Plus it has the ability to manipulate data because it is discrete and not scanned in. So, you can take a person's lab values and graph trends, and you can do queries," Snell says. The repository also includes inpatient documents like histories, physicals, discharge and consult notes that are viewable in the EHR.

MHIN is now involved in a project to connect additional physician practices, hospitals, public health and other stakeholders in a community Health Information Exchange (HIE). The goal is to find ways to increase the population of data coming into the community repository, identify cost savings/avoidance and continue to find ways to integrate and interface with disparate systems (some have already implemented the same vendor as the two institutional owners.)

To date MHIN connects about 400 physicians, nearly 800 practice and clinical staff, 300 hospital staff and 47 outpatient clinics or physician offices. MHIN manages electronic records for more than 200,000 patients with more than five years of data. Participants conduct more than 120,000 transactions a week using data from more than 16 sources, including hospitals, laboratories and imaging centers.

"We're not building a lot of expensive interfaces; we plan to build interfaces for disparate systems, but we want to build them once and share them as a community. We therefore can avoid lots of cost trying to connect all the physician practices with the data providers," says Snell. The result: every connected primary care office can make electronic referrals of patients to specialists, including all clinical data and all authorization information.

Another key initiative being launched later this year is the Chronic Care Coordination Program, which will allow care coordinators to use the system's powerful data base to monitor diabetes patients, for example, eventually connecting home-monitoring devices to the community data repository.

Planting EHRs

Obstacles include the fact that penetration of EHRs among physicians still lags. Of the 400 physicians who have access to MHIN, only about 80 have an EHR. "Our intent is to grow that number to all 400, and within five years bringing 600 community physicians to electronic mode—at a minimum to have each of them receive all their information electronically and turn off paper," says Snell. While MHIN is evaluating electronic in-box models for community doctors it continues to try to solve the issue of integrating disparate systems in order to achieve its goal.

"ROI will occur when data providers can shut off paper, telephone and fax and the physician practices accrue savings from efficiencies gained when not handling all the paper," he says. The provider stakeholders and MHIN have hired a consultant this year to study community clinical data flow and workflow at five practices before and after HIE to determine hard cost savings.

Until recently, financing rested heavily on capital from the two owner institutions. "Now we're moving to incoming revenue from physician subscribers and other sources, such as radiology groups paying fees for submitting data to the repository," says Snell, who quickly adds that "the purpose of MHIN is not to make a lot of money but to become a community utility so we can hold costs down for all stakeholders and maintain a very secure system."

He cites three major factors to MHIN's success: 1) The role of a non-profit regional laboratory that has served the area for nearly a century and already had a large

database. "About 50% to 60% of the patient's chart is lab," notes Snell; 2) Collaboration between St. Joseph and its competitor hospital Memorial, and with the South Bend Medical Foundation, including a program to care for the uninsured; 3) Progressively-minded physician practices that are unafraid of IT. While less than 100 actually have an EHR, he says, nearly 300 are planning to do so. "This has to be physician driven."

Such a solid foundation has made it possible to begin expanding the vision. MHIN just landed a grant from the state health department to connect with the state registry for immunizations. That will promote more connectivity with the public health sector and other collaborative efforts. MHIN is also in discussions with the Regenstrief Institute in Indianapolis to explore how to connect with the state's large RHIO initiative, the Indiana Health Information Exchange, in order to extend the benefits statewide. "Nobody knows just yet what a RHIO is from the standpoint of statewide connectivity," says Snell.

Continuity of Care Record

That varying local/regional factor is what endlessly complicates RHIOs, says David C. Kibbe, MD, director of the Center for Health Information Technology, American Academy of Family Physicians in Chapel Hill, N.C., and co-chair of the Physicians' EHR Coalition. The academy just completed a survey of physicians in Virginia in which it found that, of 600 physicians connected to the Internet, only 20% have EHRs. "If you go to the San Francisco Bay Area, it would be an entirely different situation, a function of California's unique penetration of IT, which would be absent in Ohio, Tennessee or Texas," he says.

"It's difficult to generalize about physician use of IT. However, if you're going to build a RHIO, small medical practices have to be taken into account," says Kibbe, because they still constitute the workplace for the majority of physicians in this coun-

try, and connecting will prove a key to any RHIO's success. To assure this happens, Kibbe has helped develop the Continuity of Care Record (CCR), a new XML standard for patient health summary data capable of making inexpensive and interoperable exchange among many different EHRs and repositories.

David C. Kibbe, MD, Center for Health Information Technology, American Academy of Family Physicians, Chapel Hill, N.C.

The CCR contains summary health data—patient demographics, problem and diagnosis list, allergies, medications, and procedures—and once exported from an EHR or repository can be emailed, carried by the patient on a USB drive or smart card, or printed out as a PDF or Microsoft Word file. "To transfer this core data from the family physician to the referring cardiologist, all the downstream practice needs is a computer with basic desktop software running on it. We know that RHIOs need to help make CCR data available even to doctors who don't have EHRs," he says.

Developed by physicians with the AAFP, AMA, AAP, and Mass Medical Society as co-sponsors, under the standards development organization ASTM International, the CCR is the "messenger RNA for the RHIO movement," says Kibbe, adding, "Every RHIO will need an efficient and standards-based way of sharing summary clinical data from their repositories or logged into their registries, and an equally cost-effective way of making these summaries available to authenticated users."

He asserts, "You almost can't have a low-cost RHIO effort without something

For more information about RHIOs, visit our website for presentations by Janet Marchibroda, CEO e-Health Initiative, at the Winter (Feb.3-4) and Spring (Apr. 20-22) conferences.

akin to the CCR. Otherwise it's like having the Internet with private e-mail protocols. While the CCR is not a panacea, it may turn out to be a very useful step in affording interoperability to many RHIOs."

Conclusion
In the end, whether it's called a CHIN, RHIO or HIE, the idea of community interconnectivity in healthcare seems intuitive and inevitable. The excuses have vanished: the technology has arrived, governance structures have been formed in the crucible of hard experience and financial models have been and continue to be tested. Still, funding and Stark remain significant obstacles. And like IT implementation in the hospital or clinic setting, the devil is in the details—and many of those details lie in politics involving entities traditionally at odds with each other.

Of course leadership ultimately makes such efforts work. Fortunately, a generation of physician and CIO leaders with experience from different sides of the fence have emerged.

Both Santa Cruz's Keet and MHIN's Snell were inspired by the vision of community connectivity when they were medical directors at health plans and IPAs

trying to identify better ways to practice medicine. Snell said his experience coincided in the mid-1990s with a widespread desire to put results viewers in physician offices. "In my practice I would have had six of them," he recalls, which helped fuel his vision for a single interoperable community network.

Now, capabilities like automated medication lists have made it possible to act quickly when, for example, the drug Vioxx was pulled from the market. "The next day 760 patients were sent a notice about the recall. There's no way you're going to do these quality initiatives in a paper system," says Snell, adding, "In chronic disease management, P4P and quality outcomes you'll be better supported if you have an electronic community network.

"This is very complex. I've been working at this for 12 years but we kept our compass pointing toward the vision and just kept going. Now we are being asked whether you can take a model like ours and scale it up. Much of this has to be determined on a local level. There will be a learning curve for the next three to five years." In an industry that has always been 10 years away from an EMR, that's good news.

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