

**Spotlight on: Health Information Exchange in Rural America**

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*Nora, an elderly woman in Morehead – a town of 6,800 residents in rural northeastern Kentucky – began having memory problems last year. Her family was concerned about the 90 miles she needed to travel to see a specialist in Lexington. After all, someone suffering from memory loss is liable to forget why they are traveling in the first place. Until recently, there were few alternatives to making the trip, but advancements in how patient data is shared and the ability of urban physicians to engage with rural patients has changed the rural health care experience for people like Nora. The availability of telehealth made it possible for Nora to receive treatment from specialists remotely through her local physician’s office – dramatically improving her quality of life and her family’s ability to manage her care.*

The story above highlights one of the challenges of health care delivery in rural America, and how health information technology (HIT) can be used to improve that care. Rural health care providers and patients often face obstacles different from those experienced in urban areas—including geographical, cultural, and economic factors—that impact how providers deliver care and how patients receive it. These differences can affect adoption of and attitudes toward HIT and health information exchange (HIE) in rural areas.

To understand the unique challenges and opportunities of HIT and HIE in rural settings, as well as tactics that State HIE Cooperative Agreement Program grantees and others are using

to increase exchange in rural communities, we conducted thirteen interviews with State HIE grantees, regional health information organizations (HIOs), and rural health care experts and administrators. [See **Appendix A** for a list of interviewees.]

**Health Care in Rural America**

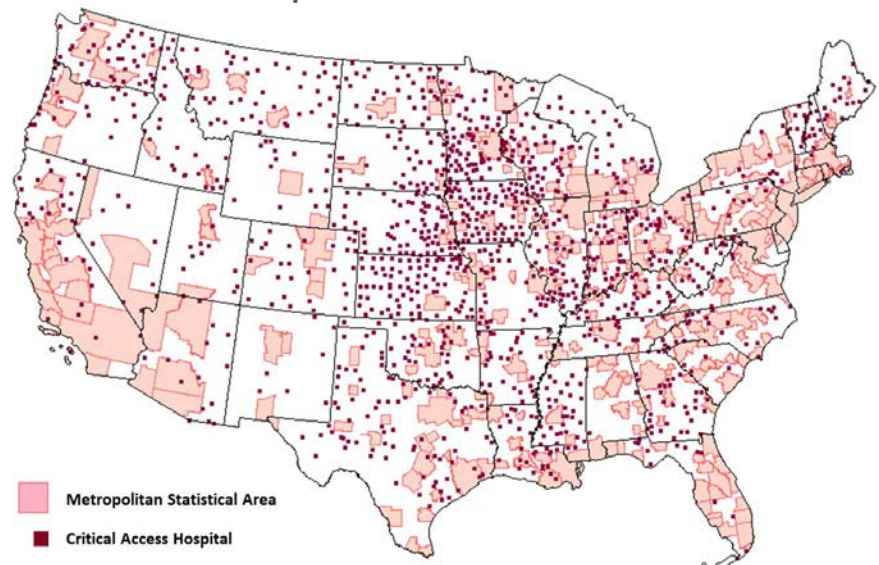
Rural America represents about one-fifth of the country’s population, spread across 95 percent of its land mass, and includes regions as geographically and culturally distinct as Appalachia, the Great Plains, Pacific islands, and Southwestern deserts.<sup>1</sup> Despite the diversity of rural communities, many experience similar benefits and challenges associated with a large amount of physical space between individuals, families, communities, and important resources like health care practitioners.

The ratio of health care providers to residents is lower on average in rural communities than in urban ones.<sup>2</sup> As a result, rural practices are often small and staffed by a handful of clinicians who frequently serve in multiple roles and/or organizations in the community. Patient flow can be different in rural care settings, as well. For instance, the national average daily census of critical access hospitals<sup>1</sup> (CAHs) in 2011 was only 4.2 patients.<sup>3</sup> [See **Figure 1** for a map of CAHs across the US.] Those patients that do present to rural facilities are more likely to be insured through public programs or uninsured than non-rural patients, which can adversely affect provider finances.<sup>4</sup>

Further, the challenges listed above—long distances, low-patient volume, and thinner operating margins—can affect the size and scope of rural health care services. Rural hospitals often act as community anchors and

providers of tertiary services, such as ambulatory care, long-term and post-acute care, and community health education, but are more limited in their ability to provide specialized care (e.g., cardiology).<sup>5</sup> These characteristics have important implications for the feasibility and value of HIT and HIE in rural areas.

**Figure 1. Critical Access Hospitals and Metropolitan Statistical Areas**



Source: Rural Assistance Center, 2012

## Approaches to Increasing HIE in Rural Areas

HIT and HIE have the potential to improve health care provided in rural America by connecting rural providers to faraway specialists, helping CAHs save money through electronic document exchange, and enabling patients to receive coordinated care in their own communities. Yet rural providers still lag behind urban ones in the level of HIT adoption<sup>6</sup> and HIE<sup>7</sup> (though rural hospitals have posted impressive increases in electronic health record (EHR) adoption).<sup>8</sup> Indeed, interviewees indicated that many rural clinics continue to exchange information exclusively by fax and mail. Our research revealed several factors that may contribute to this gap: financial barriers, workforce issues, and technological challenges. State HIE grantees and other HIT leaders (e.g., regional extension centers (RECs) or hospital associations) are helping rural providers realize the benefits of HIE by addressing these challenges and capitalizing on opportunities.

## Lowering technology, implementation, and maintenance costs to improve adoption

As Brian Braun of the **Colorado Regional Health Information Organization (CORHIO)** noted: “**The first challenge [to HIT and HIE] is an economic one, which is faced by almost all rural facilities.**” These facilities typically have smaller budgets and tighter margins than their urban counterparts, limiting their ability to finance capital projects with large, up-front costs.<sup>9</sup> Laura McCrary of the **Kansas Health Information**

<sup>1</sup> Critical Access Hospital (CAH) is a specific designation involving unique Medicare Conditions of Participation and specific facility characteristics for eligibility, including no more than 25 inpatient beds and a physical location of more than 35 miles from the nearest hospital or CAH (15 miles in mountainous areas) or certification as a necessary provider. For more about Critical Access Hospitals visit: <http://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNProducts/downloads/critaccesshospfctsh.pdf>

More information regarding CAH utilization of HIT can also be found in Office of the National Coordinator Data Brief no.5 “Progress towards the meaningful use of electronic health records among critical access and small rural hospitals working with Regional Extension Centers.” [http://www.healthit.gov/sites/default/files/databrief05\\_cahandsmallrural.pdf](http://www.healthit.gov/sites/default/files/databrief05_cahandsmallrural.pdf)

**Network (KHIN)** said that an interface between an EHR system and the HIE entity can be thousands of dollars – in some cases as high as \$20,000 per organization – which is much more than the typical rural practice can afford. Even when rural practices do have funds to commit to capital upgrades, HIT initiatives often compete with other demands, such as computed tomography (CT) scanners or facilities improvement.<sup>10</sup> Additionally, smaller patient loads mean that the fixed costs of HIE (e.g., interface, maintenance) are spread over a smaller population, making HIE more expensive on a per-patient basis than in larger urban care settings.<sup>11</sup>

Interviewees have developed several approaches to overcome cost barriers preventing wider adoption of HIE among rural facilities. The **Louisiana Health Information Exchange (LaHIE)**, for example, has instituted a tiered participation model based on a hospital's net patient revenue, which has helped make participation affordable for smaller facilities. Moreover, the HIE entity doesn't levy a connection charge for providers who are credentialed or have a relationship with an already-connected hospital. The only initial cost is the EHR vendor interface. To address these costs, LaHIE has worked with several EHR vendors to bring down interface prices across Louisiana, which has made HIE more affordable for rural providers. In one notable example, LaHIE negotiated with two small, but prominent rural hospital vendors in the state to halve the price of a standard set of interfaces for all their customers in the state. In other cases, LaHIE was able to negotiate free HIE integration, lower maintenance fees, or discounted interface packages.

Chris Jioras of the **North Coast Health Information Network (NCHIN)** in California suggested that smaller, local EHR vendors and implementers can sometimes be more responsive to the needs of rural practices, while offering lower prices. One such vendor in NCHIN's service area charges around \$1,000 per interface (compared to the local going rate of \$5,000 per interface for larger vendors), and is generally considered to provide excellent support.

**CORHIO** has taken a different tack in making HIE affordable for rural facilities by coming up with a range of services for different price points and institutional needs/capabilities. For a small monthly subscription fee (ranging from \$50-\$250 based on a facility's average daily census), providers can obtain Patient Care 360°, a basic exchange service that allows providers to query for and view patient records from other CORHIO participants through an internet portal, as well as send and receive Direct secure messages. It does not require the use of an EHR, which allows rural providers with limited or no EHR capabilities to participate in HIE. Five of Colorado's twenty-nine CAHs have adopted Patient Care 360° to date, and five more are considering adoption. CORHIO has also reduced the cost structure for more advanced services, e.g., data exchange through an EHR interface, by lowering the per-provider price for a monthly subscription to its HIE network and providing a capital lease option that spreads implementation costs over two years, making the investment more manageable for CAHs.

Other State HIE grantees are helping rural providers obtain public grant funding for HIT and HIE infrastructure. The **Nebraska Health Information Initiative (NeHII)**, for instance, has worked hand-in-hand with the state's CAH community to obtain public funding for HIE services. In one recent case, NeHII

### HIE: Delivering Value in Rural Areas

To illustrate the value of HIE in rural areas, Konnie Martin of **San Luis Valley Regional Medical Center** in rural Colorado said: **"We have a lot of patients who go out of the Valley for specialty care, especially nephrology or cardiology. It's very frustrating for the patient to drive out to their appointment in Pueblo or Colorado Springs [both more than two hours drive] only to be told, 'We never got your lab results. You're going to have to sit here for a couple of hours until we get that information.'"** In a rural environment, this can involve the use of expensive couriers or simply running duplicative tests. HIE can reduce this type of waste by making the patient's data available where and when it is needed.

representatives developed a funding request for thirty-five CAHs in Nebraska to collectively apply for 90/10 funding through the Centers for Medicare and Medicaid Services (CMS).

## Supporting planning, implementation, and use through training and other resources

Rural hospitals and practices face workforce-related issues that hamper adoption and use of HIE. Among the most significant is that rural areas frequently have a hard time attracting the technologically-skilled workforce necessary to plan for, implement, and maintain significant HIT infrastructure.<sup>12</sup> As Krista Postai of the **Community Health Center of Southeast Kansas** observed: **“In small-town America, the depth of [technical] knowledge isn’t there like it is in urban America.”** While skilled informatics workers are in short supply nationally, this is especially true in rural areas.<sup>13</sup> It is difficult for existing clinical and administrative staff to fill these roles, as the small size of rural care facilities already leaves them wearing multiple hats at once.<sup>14</sup>

Rural providers frequently rely on consultants or HIT vendors to fill the gap. However, many vendors also suffer from personnel shortages because they are engaged in a high volume of implementations and must devote resources to ensuring their EHR products are certified under ONC standards.<sup>15</sup> Given these constraints, vendors may focus on larger urban customers at the expense of smaller rural ones. Compounding the problem, according to Terry Hill of the **National Rural Health Resource Center**, is that rural practices often lack the experience needed to construct appropriate contracts and keep the vendor on track.

In this environment, successful HIE depends on working closely with clinical and administrative staff throughout the implementation process. The **Idaho Health Data Exchange (IHDE)** started its engagement early by teaming with the Idaho Office of Rural Health, Washington and Idaho Regional Extension Center (WIREC), and the Idaho Hospital Association (IHA) on a number of boot camps on EHR implementation in rural health care facilities. An initial needs assessment of CAHs found that workflow issues are a major barrier to EHR adoption. To help CAHs develop staff skill in workflow redesign and overcome this barrier, IHDE and its partners sponsored a LEAN methodology workshop to help CAH staff restructure workflows with EHRs and HIE in mind. LEAN was a particularly useful approach because it emphasizes the participation of all stakeholders affected by a redesign, which helped achieve the buy-in among clinical and administrative staff needed for HIE to take root.

On getting rural providers to adopt and use HIE: **“Become their best friend. Do everything you can to help them. Know that [rural providers] don’t have the time, staff, or money...to do it on their own.”**

Chris Jioras, North Coast Health Information Network (NCHIN)

The training team conducted a second round of sessions across Idaho in May and June 2013 on privacy and security issues – a topic of concern for Idaho’s CAHs. These sessions were attended by the vast majority of the state’s CAHs, and feedback was positive. According to Stacey Carson of the Idaho Hospital Association, **“[CAHs] felt as if there was a concerted effort by multiple players to collaborate and deliver training that was timely, relevant, and engaging.”**

In addition to workshops and trainings, State HIE grantees are facilitating implementations in rural communities through technical assistance and staff support. **CORHIO**, for example, provides rural hospitals with staffing resources (on-site where possible) to move projects along. According to Brian Braun of CORHIO: **“It’s not just about selling [rural providers] on the value of HIE connectivity. On the rural side, CORHIO has to take more ownership of the implementation. And you can’t just walk away from them once HIE is up and running. Success requires maintaining the relationship - following up with technical assistance staff and making sure the providers are using HIE.”**

## Delivering innovative HIE solutions through high-speed internet

Technological challenges can hamper the ability of rural providers to meaningfully participate in HIE. Mike McPherson, Deputy HIT Coordinator for **Kansas**, pointed out that rural providers' EHR systems tend to be less sophisticated than those in urban settings, meaning they may not be capable of interfacing with an HIE entity without expensive upgrades. This limits the potential for adoption and integration of more advanced exchange functions (e.g., patient-record queries) into provider workflows.<sup>16</sup> Indeed, a study of HIE in the United States found that rural providers were more than 13 percent less likely to meet a representative set of Stage 1 meaningful use measures than urban hospitals (32 percent vs. 46 percent, respectively).<sup>17</sup>

Limited broadband access can also be a barrier to the use of HIE in rural areas. In rural **Louisiana**, for instance, “**having a good T1 line is very rare – a Metro Ethernet line is unheard of. You work on a business-type digital subscriber line (DSL) most of the time. When you start transferring CT images, it’s just eating up your bandwidth.**”<sup>18</sup>

Efforts to improve broadband access are underway at the federal, state, and local level – connecting rural providers to their colleagues and improving their ability to meaningfully use HIT. The Federal Communications Commission’s (FCC) Healthcare Connect Fund (HCF) supports broadband connectivity for rural providers and affiliated partners (e.g., local health departments).<sup>19</sup> In **Kentucky**, the HCF’s sixty-five percent subsidy on broadband, available to health care providers, including those in rural areas, will make high-speed internet much more affordable and increase the ability of rural providers to participate in telehealth programming and HIE. Without access to reliable broadband services, it is impossible for rural health providers to connect to their urban counterparts using emerging tools like telehealth. By employing secure videoconferencing and HIE, rural providers can tap into the expertise of specialists in urban medical centers. According to Rob Sprang of the **University of Kentucky Chandler Medical Center’s** telemedicine program and the state’s **Kentucky TeleHealth Network**, this allows rural providers to expand the range of services they offer and helps to minimize patient travel – saving patients time and money. It also means that complimentary services, such as laboratory work and radiology, are more likely to be performed in the community, generating revenue for rural hospitals that are often under financial pressure.

**“It’s hard to adopt HIE if you don’t have broadband. That’s where the rubber meets the road. Exchange is almost impossible otherwise. We have providers across the state wanting to achieve meaningful use but if you don’t have broadband, you can’t even get to step one.”**

Polly Mullins-Bentley, Kentucky Health Information Exchange (KHIE)

Several states, including **Alaska, Colorado, Georgia, Kentucky, Louisiana, and Nebraska**, have or are developing telehealth networks. While these are sometimes separate from the HIE entity, State HIE grantees can help advance telehealth by partnering with telehealth organizations to provide HIE services. Kentucky has been a leader in this regard, with state organizations (including **KHIE** and the **Office of Broadband**) working closely with established programs at academic institutions (e.g., University of Kentucky Chandler Medical Center) to promote telehealth through grant programs and outreach initiatives. Polly Mullins-Bentley of KHIE reports that telehealth and HIE have been complementary, enabling rural providers to work closely with both rural and urban colleagues. In Colorado, **CORHIO** is teaming with the Colorado Telehealth Network (CTN) to make CTN’s existing medical image repository available through CORHIO, including the Patient Care 360° portal. This will give rural providers access to images produced by CTN’s major hospital and delivery network partners. Given the difficulty of manual health information exchange in rural environments (e.g., slow transport times and lost records), this initiative is expected to save patients the significant cost and radiation exposure of unnecessary scans.

## Bringing HIE to Rural Areas

State HIE grantees, RECs, and other leading HIT entities are helping rural hospitals, clinics, and providers get connected by tailoring their HIE approaches and solutions to the rural health care environment. To help make HIE affordable, grantees are lowering costs by waiving connection fees, instituting favorable pricing models, developing “light” entry services, and assisting with grant applications and vendor negotiations. They are offering rural providers support through training and hands-on technical assistance throughout the implementation lifecycle. This combination of efforts in conjunction with improvements to internet access across rural communities will help ensure rural providers are able to reap the benefits of HIT and HIE for their patients.

## Appendix A: List of Interviewees

Interviewee	State	Date
HHS HRSA Office of Rural Health	N/A	2/27/2013
Colorado Regional Health Information Organization	Colorado	3/21/2013
Idaho Health Data Exchange	Idaho	3/21/2013
Louisiana Health Information Exchange	Louisiana	3/21/2013
National Rural Health Resource Center	N/A	3/21/2013
Nebraska TeleHealth Initiative	Nebraska	4/08/2013
Kansas Health Information Network	Kansas	4/14/2013
Community Health Center of Southeast Kansas	Kansas	4/15/2013
Nebraska Health Information Initiative	Nebraska	4/16/2013
North Coast Health Information Network	California	4/23/2013
Avera Creighton Hospital	Nebraska	5/01/2013
San Luis Valley Regional Medical Center	Colorado	5/03/2013
Kentucky Health Information Exchange	Kentucky	7/25/2013

<sup>1</sup> “Defining the Rural Population,” U.S. Department of Health and Human Services, Health Resources and Services Administration, [http://www.hrsa.gov/ruralhealth/policy/definition\\_of\\_rural.html](http://www.hrsa.gov/ruralhealth/policy/definition_of_rural.html).

<sup>2</sup> “Modernizing Rural Health Care: Coverage, Quality and Innovation,” United Health Center for Health Reform & Modernization (2011), [http://www.unitedhealthgroup.com/hrm/unh\\_workingpaper6.pdf](http://www.unitedhealthgroup.com/hrm/unh_workingpaper6.pdf).

<sup>3</sup> “Critical Access Hospital Organizational Conditions”, Center for Rural Health (2012), [http://ruralhealth.und.edu/pdf/critical\\_access\\_hospital\\_org.pdf](http://ruralhealth.und.edu/pdf/critical_access_hospital_org.pdf).

<sup>4</sup> “Trendwatch: The Opportunities and Challenges for Rural Hospitals”, American Hospital Association (2011), <http://goo.gl/6rWFh>.

<sup>5</sup> “Modernizing Rural Health Care: Coverage, quality, and innovation,” UnitedHealth Center for Health Reform & Modernization (2011), [http://www.unitedhealthgroup.com/hrm/unh\\_workingpaper6.pdf](http://www.unitedhealthgroup.com/hrm/unh_workingpaper6.pdf).

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- <sup>6</sup> Samuel CA, King J, Adetosoye F, Samy L, Furukawa MF. Engaging providers in underserved areas to adopt electronic health records. *American Journal of Managed Care*. 2013;19(3):229-34, <http://www.ajmc.com/publications/issue/2013/2013-1-vol19-n3/engaging-providers-in-underserved-areas-to-adopt-electronic-health-records/1>
- <sup>7</sup> “Quality Incentive for Federally Qualified Health Centers, Rural Health Clinics and Free Clinics: a Report to Congress,” Department of Health Policy, The George Washington University (2006), <http://www.healthit.gov/sites/default/files/pdf/quality-incentives-final-report-1-23-12.pdf>.
- <sup>8</sup> “Health Information Technology in the United States: Better Information Systems for Better Care, 2013”, Harvard School of Public Health, Mathematica Policy Research, and Robert Wood Johnson Foundation (2013).
- <sup>9</sup> “Trendwatch: The Opportunities and Challenges for Rural Hospitals in an Era of Health Reform”, American Hospital Association (April 2011), <http://www.aha.org/research/reports/tw/11apr-tw-rural.pdf>.
- <sup>10</sup> Julie Hook, Erin Grant, and Anita Samarth, “Health Information Technology and Health Information Exchange Implementation in Rural and Underserved Areas: Findings from the AHRQ Health IT Portfolio,” AHRQ Publication No. 10-0047-EF (2010), [http://www.himss.org/files/HIMSSorg/content/files/AHRQHITHealthInforural\[1\].pdf](http://www.himss.org/files/HIMSSorg/content/files/AHRQHITHealthInforural[1].pdf).
- <sup>11</sup> “Trendwatch: The Opportunities and Challenges for Rural Hospitals in an Era of Health Reform”, American Hospital Association (April 2011), <http://www.aha.org/research/reports/tw/11apr-tw-rural.pdf>.
- <sup>12</sup> Ibid.
- <sup>13</sup> RCHN, “Training an HIT Workforce for CHCs and HCNs,” RCHN Community Health Foundation (2011), <http://www.rchnfoundation.org/?p=3123>.
- <sup>14</sup>Carolyn Krapour, “Med Schools Seek Right Fit for Rural Practice,” Amednews.com (2011), <http://www.amednews.com/article/20110808/profession/308089944/2/>
- <sup>15</sup> Kathleen Roney, “6 Biggest Meaningful Use Challenges for Rural Hospitals,” *Becker’s Hospital Review* (2012), <http://www.beckershospitalreview.com/healthcare-information-technology/6-biggest-meaningful-use-challenges-for-rural-hospitals.html>.
- <sup>16</sup> “Quality Incentive for Federally Qualified Health Centers, Rural Health Clinics and Free Clinics: a Report to Congress,” Department of Health Policy, The George Washington University (2006), <http://www.healthit.gov/sites/default/files/pdf/quality-incentives-final-report-1-23-12.pdf>.
- <sup>17</sup> “Health Information Technology in the United States: Better Information Systems for Better Care, 2013”, Harvard School of Public Health, Mathematica Policy Research, and Robert Wood Johnson Foundation (2013).
- <sup>18</sup>Lonnie DuFour, Interview with Louisiana Health Information Exchange (April 21, 2013).
- <sup>19</sup> “Healthcare Connect Fund,” Federal Communications Commission (February 2013), [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-319092A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-319092A1.pdf).

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