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FEATURE ARTICLE

RURAL TELEHEALTH NETWORKS: SAVING LIVES THROUGH INCREASED CONNECTIVITY

by ANN WEILBAECHER

In November 2007, the Federal Communications Commission (FCC) authorized $417 million to fund rural telehealth networks across the United States.[1] This three-year allocation will provide construction of 69 statewide and regional broadband telehealth networks in 42 states and three U.S. territories, and it will fund connectivity for more than 6,000 public and non-profit health care providers nationwide.[2] The funding also will defray up to 85 per-

cent of the costs of building and deploying dedicated broadband health care networks and connecting those networks to Internet2, National LamdaRail (NLR) or the public internet.[3]

Recognizing the growing need for increasing rural access to health care, the FCC quadrupled its budget from $100 million to more than $400 million to fund the Rural Health Care Pilot Program (Pilot Program).[4] The broadband deployment will allow isolated rural clinics to "save lives by using advanced communications technology to tap the expertise of modern urban medical centers."[5]

This may seem like one of many examples of rural America being subsidized by the country's wealthier cities and suburbs. However, there is a good chance that rural communities will more than repay the rest of the country for the favor. This is because rural telehealth is teaching a whole nexus of doctors, IT specialists and medical providers some crucial lessons about health care technology. Given the push for electronic medical records and other cost savings through information technology, it probably will not be long before many less remote communities—i.e. most of America—will be able to emulate these advances and save money.

ACCESS TO CRITICALLY NEEDED SERVICES AND SPECIALISTS

The FCC funding is a huge boost to telehealth services in rural communities, enabling access to crucial medical imaging, remote monitoring and videoconferencing technologies as well as critically needed medical specialists.[6] According to Ronald Weinstein, MD, founder of the Arizona Telemedicine Program and considered the "father of telepathology,"[7] the increased bandwidth capabilities from the FCC grants will allow broader use of more sophisticated medical imaging technologies like higher resolution ultrasound.[8]

"We've done over 600,000 patient studies to date," said Weinstein. "Some of those applications are more demanding on bandwidth than others. For example, we've done over 7,000 digital mammography cases from our Navajo reservation, where patients actually get their final diagnosis in less than two hours."[9]

Mark Ansboury, chief operating officer for the Northeast Ohio Regional Health Information Organization, which was awarded $11.3 million in FCC

funding, notes, "the nice thing about broadband technology, it's not limited to someone looking over a TV screen at someone on the other side; they actually have access to all kinds of instrumentation . . . they have electronic stethoscopes so the heart surgeon or specialist can actually listen to the heart remotely."[10]

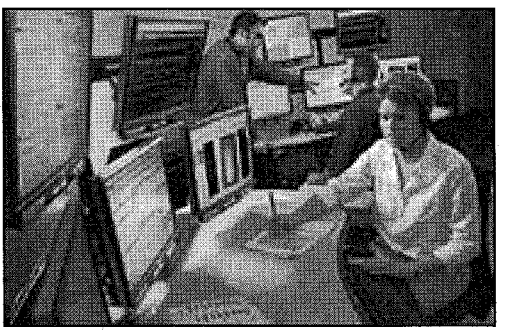
Isolated rural clinics can have access to over 60 different medical specialists through rural telehealth networks including cardiology, radiology, pathology, dermatology, pediatrics, ophthalmology, psychiatry and intensive care.[11]

Access to these specialists saves lives, said Mary DeVany, director of Avera McKennan Telehealth Network and board member of the Center for Telehealth and E-Health Law (C-Tel).

"[W]e had a baby born prematurely in a blizzard in the middle of South Dakota in a small town, [and] nobody could get to [the baby and mother] because of the weather," said DeVany. "We connected via telehealth (interactive videoconferencing). That baby is here today because telehealth was available in that community."[12]

As a result of that intervention, the pediatric and neo-intensive care units established a standardized telehealth program called "Care View," so that any rural facility with telehealth capabilities in a similar situation can connect to the pediatric or neonatal intensive care units to receive guidance.[13]

Trauma networks also can be created through telehealth networks. "[O]ne of our trauma physicians has organized the Teletrauma Program in Southern Arizona involving nine hospitals," said Dr. Weinstein. "Of his first 21 cases, five lives were saved. That's indicative of what can happen."[14]



The use of Electronic Intensive Care Units (eICUs) reduced ICU mortality by 25 percent within the Avera Health System.[15] Matt Michels, General Counsel for Avera Health said the Avera eICU (pictured above) uses the latest technology in telemedicine to connect rural critical care patients with a team of emergency room specialists who provide around the clock distance monitoring and who can react in real time to any changes in the condition or vital signs of the patients.[16]

TELEHEALTH IN RURAL PRISONS

A less heralded application of rural telehealth is within the prison system. Sixty percent of U.S. prisons are built in rural counties even though only twenty percent of the prison population lives in rural communities.[17] The 1976 U.S. Supreme Court decision, *Estelle v. Gamble,* guaranteed prisoners a constitutional right to health care.[18] However, prisons located in isolated rural areas often do not have adequate medical resources, and the only way for some rural prisoners to receive necessary care from specialists is through telemedicine.[19]

The FCC funds can improve connectivity and broadband access to rural prison hospitals and health care facilities, according to Dr. Weinstein.[20]

"All of the prisons in Arizona are telemedicine enabled," said Weinstein. "We've done over 50,000 prisoner encounters [via] telemedicine. To date, 80 percent of all subspecialty care in prisons is conducted using telemedicine, which avoids having to take prisoners to offsite locations for healthcare. It's been a very important program of Arizona."[21]

Arizona's prison telehealth program not only saved the state more than one million dollars,[22] but it also resulted in "much higher satisfaction by prisoners in terms of the quality of their services."[23] The number of grievances directed from prisoners about their health care services has dramatically declined since the implementation of prison telehealth, according to Dr. Weinstein.[24]

EMERGENCY PREPAREDNESS

In addition to the goal of increasing access to rural health care, a secondary goal of the Pilot Program is to set up rapid and coordinated responses to public

health emergencies such as disease related outbreaks, pandemics and bioterrorist attacks.[25] Through coordination with the U.S. Department of Health and Human Services (HHS), the Centers for Disease Control and Prevention (CDC) and other public health officials, the FCC plans to use the Pilot Program to enable rapid responses on a state and national level during public health emergencies.[26]

One of the objectives of the Pilot Program is for the 69 FCC grant participants to make their dedicated health networks available for public health emergencies.[27]

"When you look at emergency responses in Katrina, you need to have a layered system of communication so that when the emergency happens, you can connect with volunteers, find out which hospitals have open beds, get the message out to the public and coordinate all of those kinds of activities," said Ansboury.[28]

The Louisiana Department of Health and Hospital's $15.9 million FCC grant will fund high-speed digital connections to transport medical information to 109 not-for profit hospitals across Louisiana.[29] The grant will allow participating hospitals to connect to the Louisiana Optical Network Initiative (LONI) with "speeds greater than 1,000 times the rate previously possible."[30] In the event of patient evacuations, as with Hurricane Katrina, these capabilities will enable physicians to immediately access medical histories and continue current treatments.[31]

The broadband infrastructure for telehealth networks can also assist with President Bush's goal of implementing national electronic medical records by 2014.[32] According to Dr. Weinstein, "As these networks proliferate and eventually fuse, there are opportunities . . . to implement [electronic medical records] on a broad scale."[33] Ansboury emphasized that, "the FCC grants are meant to create an infrastructure by which all the hospitals can exchange electronic medical records and other services like telemedicine."[34]

Ansboury also pointed out that the objectives of the FCC grant for Northeastern Ohio include "connect[ing] the urban hospitals into the rural community hospitals and then into the National Health Information Network, and interconnecting with institutions across the U.S."[35] Ansboury believes this will allow rural hospitals in Ohio to tap into expertise across the country and also

will provide an infrastructure to respond to national public health emergencies.[36]

Legal and Regulatory Concerns

With emerging and expanding telehealth systems, a myriad of legal and regulatory issues will need to be addressed including privacy, confidentiality, informed consent, licensure, malpractice liability, standards of care and reimbursement.[37] In addition, as newer technologies are used in telehealth, such as algorithmic software for long distance patient monitoring, intellectual property protections also will need to be addressed.[38] The Pilot Program will require participants to implement systems that are compliant with the health information technology standards as set forth by HHS, and will be subject to quarterly reviews and stringent oversight and audits.[39]

Contrary to expectations within the legal and medical community,[40] however, physicians involved in telehealth services have not been subject to increased malpractice suits due to distance consultations and utilization of new technologies.[41]

"[T]here hasn't been a single telemedicine case that's gone to a jury settlement as a malpractice suit, which in many ways is only surprising because you think new technology brings an added risk; but that hasn't panned out," said Dr. Weinstein.[42] "I think the reason for that is that to do telemedicine, you have to pay particular attention to the patient's history, and people are more careful using [telemedicine]."[43]

Weinstein also claimed that "I don't personally know of any (insurance) carrier that has a higher premium because people are doing telemedicine in their practice."[44]

However, because telehealth has not been fully incorporated into the provision of health care, and state regulations vary, legal and regulatory concerns may prove to be barriers to the delivery of clinical services.[45]

State legislatures have enacted "a patchwork of telehealth enabling laws, including licensure, privacy and reimbursement laws."[46] As a result, it is not

surprising that these laws are not uniform.[47] Likewise, federal legislation has not comprehensively addressed telehealth.[48]

Licensure, for instance, can be problematic for physicians who want to practice telehealth across multiple state lines.[49] Most states require physicians practicing telehealth within their state to be fully licensed.[50]

"Completing some state's licensure requirements may require the physician to physically come to the state before the board," said DeVany.[51] "If you are not practicing physically in the state, this becomes very onerous. In addition, the paperwork involved in licensure is often very difficult and requires a lot of time, effort and expense."[52]

Furthermore, there are no formal, comprehensive plans for safeguarding sensitive personal information exchanged over the network.[53] The U.S. Government Accountability Office issued a report expressing concerns that the adoption of national electronic medical records could be slowed if privacy protections are not built into the networks linking insurers, physicians, hospitals and health care providers.[54]

Additionally, one of the most serious obstacles to implementing telehealth services is the absence of consistent, comprehensive reimbursement policies.[55] Medicare, the federal health insurance program for senior citizens, does not reimburse for most telehealth services.[56] Likewise, state Medicaid Programs vary in scope of what they will cover.[57] Although 27 state Medicaid programs "acknowledge at least some reimbursement for telehealth services," some states do not reimburse telehealth services due to serious budget constraints.[58]

"[T]here is a need to change some of the national and state laws with regards to what qualifies under claims and insurance both in general insurance and in Medicaid," notes Ansboury.[59]

Efforts by some state legislators and policymakers have resulted in a dramatic increase in the range of teleheath services that state Medicaid programs will fund.[60] For instance, according to Dr. Weinstein, "Medicaid in Arizona really does reimburse for all telemedicine services, [and] all 47 of our third party payers' pay for telemedicine services."[61] Dr. Weinstein attributes this to the efforts of state legislators who have sponsored telehealth-enabling legislation since 1995.[62]

Despite some legal and regulatory setbacks, pioneering telehealth programs such as those selected by the FCC for the Pilot Program can not only dramatically improve rural access to health services but can also serve as a model for the integration of telehealth into modern medical practice across the country.

So a program that began with the idea of helping rural communities to catch up in health care seems to be helping them leapfrog the rest of the country in some promising aspects of medical technology. When the rest of the United States is able to learn from these gains, hopefully many more people will feel that the FCC's money was well spent.

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