Health Care Hubs: The Future Of Telemedicine and Broadband

Health care and broadband stakeholders collaborate to improve and expand telemedicine.

By Craig Settles / *Gigabit Nation*

Not long ago, telemedicine described a simple concept of remotely monitoring a patient's health data wherever he or she might be located. Many telemedicine patients were elderly, living at home and suffering from a long-term condition or chronic disease.

Today, however, telemedicine can mean using intranet or internet networks to diagnose a patient or administer, initiate, assist, monitor, intervene in or report on a medical procedure. Telemedicine now touches many medical disciplines, including mental health, stroke care, dermatology, women's health and physical rehabilitation. It influences the lives of people from newborns to seniors.

Access to reliable broadband can determine how convenient, affordable and far-reaching telemedicine benefits are to communities that receive them. Enter the creation of health care hubs, which join multiple health care providers via broadband to benefit the communities they serve.

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WHAT'S A HEALTH CARE HUB?

A community can use its broadband infrastructure to link hospitals and clinics in a "hub" to gain economies of scale for health care properties, broadband infrastructure and/or telemedicine applications. Throw the net farther and create a new broadband triple play – aligning health care institutions, schools and libraries into a telehealth care hub.

Telemedicine providers that connect health care facilities to one another and to residents can often serve as the initial anchor tenants for community broadband networks.

TELEMEDICINE GIVES RURAL HOSPITALS A LEG UP

A hospital and its rural satellite facilities in Massachusetts are giving their communities renewed hope that more citizens can receive leading-edge health care now and in the future. Telemedicine is the key.

Based in Springfield, Baystate Health is a nonprofit health care organization that serves more than 750,000 people throughout western New England. Employing about 11,500 team members, it's the largest private employer in the region.

Baystate Health's rural community hospitals don't have enough local medical specialists (cardiologists, vascular neurologists and so forth) to serve people in need. Springfield-based specialists had to travel an hour or more each way to service community hospitals.

The hospital system solved its challenges by leveraging telemedicine technology to link more than 30 Springfield physicians with patients at three rural hospitals. In the program's initial three months, 12 nurses and medical assistants at the community hospitals learned to use the new equipment. Through the use of telemedicine, patients now can receive care closer to their homes, and physicians can devote their time to treating patients instead of traveling.

URBAN AREAS NEED HUBS, TOO

The Illinois Medical District plans to take broadband and telemedicine to new levels with high-speed fiber. The 560-acre district includes four major hospitals, medical research facilities, labs, a biotech business incubator, two medical universities and more than 40 health care–related facilities – all connected by fiber.

In big-city Chicago, where one would expect to find an abundance of internet capacity, "the district is in a broadband desert," says Warren Ribley, former district executive director. Some hospitals had to copy research results onto CDs and deliver them to other hospitals.

"There are currently numerous initiatives happening throughout the district that we believe will act as a catalyst for continued growth and economic development," says Ryan Gage, director of marketing and communications for the Illinois Medical District. Gage says Rush University Medical Center and the Chicago Lighthouse for the Blind are just two major organizations planning expansion projects in the near future.

ARKANSAS CREATES PREMIER HEALTH CARE HUB

Arkansas used to lead the United States in stroke deaths. Then came the Arkansas Stroke Assistance through Virtual Emergency Support (AR SAVES) in 2008. It's

Hypothetical anchor-centered fiber layout

a telemedicine program founded through a partnership of the Center for Distance Health at the University of Arkansas for Medical Sciences and the Arkansas Department of Human Services. AR SAVES was instrumental in moving the state down to sixth place in stroke deaths nationally in 2016.

"We are one of the few, if not the only, U.S. hospitals that provides a statewide telemedicine application that crosses multiple hospital systems," says Tina Benton, director of the Center for Distance Health. "In a few weeks, we will be connected to 53 of the 80 hospitals in the state of Arkansas."

"When the program started, there were only three vascular neurologists in the entire state," adds Renee Joiner, director of AR SAVES. "We connected only 10 hospitals in the first year, but we grew it from there. We identified and trained at each hospital a dedicated telestroke coordinator (nurse facilitator), ER physicians and nurses, and even floor nurses."

Before the program, fewer than 1 percent of stroke patients statewide received the declotting drug Alteplase (TPA). "We've gone to 33 percent of

the patients in those 53 hospitals who qualified for the program to receive TPA," says Roy Kitchen, network director for Arkansas e-Link and a member of the AR SAVES team. .

"We share a fiber ring with several other health and telehealth programs throughout the Arkansas hospital systems, including a huge trauma care program," says Benton. "If there was a big explosion near one of the hospitals, that's where patients could be triaged and treated in consultation with specialists at other hospitals via telemedicine. There are only 16 burn injury beds in Arkansas, so they use telemedicine to triage these injuries."

THROWING A WIDE NET

"Continuum of care" describes a comprehensive integration of multiple health care providers that spans all levels and intensities of care. This integration gives physicians a wider range of choices and solutions. A continuum of care reduces costs, improves outcomes and increases patient satisfaction.

A health care hub with its triple play can strengthen and expand the continuum of care. The hub can link to

> A health care hub can include not only hospitals and clinics but also private doctors' offices, schools, libraries and medical facilities in correctional institutions.

health care resources in another town or county, such as medical facilities in prisons or jails.

Entrepreneur radiologists could easily be added to a health care hub. Dr. Frank Maddux, a co-founder of an ISP that joined a fiber network in Danville, Virginia, believes teleradiology is becoming universally adopted because there are clear protocols for how it is to be used and clear expectations of outcomes.

Radiologist Dr. Jim Busch is one of Chattanooga's premier medical business stories. He brought the city's radiologists under one organization, Diagnostic Radiology Consultants. Radiologists connect through the city-owned gigabit network to other team members and the city's hospitals.

Dr. Busch wrote software that, together with Chattanooga's network, allows the team to serve more hospitals and patients, grow and expand the business, and create another hook that draws individuals and businesses to town.

The network enables the radiologists and medical facilities to save 40 hours per radiologist per year, which represents a sizable dollar savings. Dr. Busch says it is not uncommon for more than 10 radiologists to send multiple large files simultaneously.

THE ABCS OF TELEHEALTH IN K–12

The Sevier County School System in Tennessee experienced many school closings because of communicable illnesses. "In some winters, the flu could affect as many as 20 percent of 14,000 students, causing entire schools to shut down," explains Don Best, coordinator of school health for the system.

In 2009, the system turned to telemedicine. It uses video conferencing hookups and USB-compatible devices for conducting quick exams and recording vital signs. The technology platform comes from AMD Global Telemedicine. The county also made sure there would be a nurse for every school.

During a telemedicine visit, a child can be screened, monitored, examined, diagnosed and treated for conditions that include ear infections, strep throat and obesity. The school and its provider, Cherokee Health, can easily track health and illness trends.

In eight years, there have been more than 11,000 telemedicine encounters, and the system has gone five years without a school closure due to influenza. Eighty-four percent of students treated via telehealth remain in school.

How many schools in your school district could integrate within your hub, especially if the district receives federal E-Rate funds to support its broadband connections?

LIBRARIES: QUIET TELEHEALTH ALLIES

Libraries reach out and touch virtually everyone across the economic spectrum – and they often have the fastest broadband connections in their communities. Libraries can team up with health care providers in the hub to offer health and wellness knowledge as well as telehealth applications and services. Like companies that allow health care providers to schedule on-site telehealth services for employees, libraries could partner to offer these services to library patrons.

Another possible role for libraries is to lend broadband devices so patrons can access telehealth services. For example, Mobile Beacon, a nonprofit, sells small Wi-Fi transmitters called mobile hotspots to other nonprofit organizations. The hotspots have an average download speed of 8 to 12 Mbps with no data caps, and they deliver internet access to qualifed low-income people. These hotspots work on the Sprint and T-Mobile LTE networks.

Mobile Beacon primarily sells its devices to libraries, which lend them to patrons for any time between several weeks to six or 12 months. Katherine Messier, Mobile Beacon's executive director, says, "Roughly 5 percent of our clients are health care organizations. Although it's a small percentage of our client base, 37 percent of these organizations use our broadband service in direct support of their patients."

Jefferson Rural Clinic in Jefferson City, Tennessee, uses the Mobile Beacon units. "We are a free medical clinic with volunteers and one part-time person," says its spokesperson. "We run this clinic for an entire year on about $35,000. If we had to pay for internet access at the going rates, it would be a minimum of $1,500 a year."

WHAT'S NEXT?

Community leaders, health care stakeholders and the telehealth industry should consider partnering to pursue political and public policy objectives that boost broadband expansion.

"Whether you're in a rural or metropolitan community, you can't have telehealth without fast, reliable internet access," says Eric Bacon, president of AMD Global Telemedicine. Telemedicine has proven time and time again to increase access to care, but to deliver on telehealth's promise, adequate bandwidth must be available throughout the continuum of care." ❖

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