Saving Lives and Reducing Costs with a Telehealth Network

Saving Patient Lives & Improving Quality & Outcomes

What is a telehealth network?

Amid healthcare's rapidly changing technological landscape, a Telehealth Network is a secure point-to-point redundant fiber optic network providing very high communication speeds of 10 Gbps (Gigabits per second). It is analogous to a multi-lane freeway formed in a "ring" between hospitals. Digital information shared through this network does not compete (nor is it slowed by) commodity Internet traffic. The actual fiber optic networks are built by public-private collaborations and support new innovations to better serve patients.

What points are connected on the telehealth network?

Dove Healthcare, Hospital Sisters Health System (HSHS), Mayo Clinic Health System, and the UW Department of Family Medicine have collaborated to create telehealth networks in western Wisconsin. These networks, made possibly by the Chippewa Valley Inter-Networking Consortium (CINC), provide secure point-to-point fiber optic connectivity between hospitals, clinics, skilled nursing facilities and data centers in the Chippewa Valley and surrounding small towns and rural areas. This network also allows these health systems to peer with each other and other health care organizations. By leveraging connectivity to WiscNet, Wisconsin's research and education network, hospitals and clinics connect to healthcare entities across the state and nation. The 200+ mile telehealth network in western Wisconsin extends from Eau Claire and Chippewa Falls to Menomonie (west), Spooner (north), Mondovi (south), and to Fall Creek, Fairchild and Augusta (east).

How does the telehealth network save lives?

- Supports "care without borders" and linking ERs with telemedicine and health information exchanges
- Connects a Tele-Radiology Image Hub with 43 healthcare facilities in WI and MN
- Improves health care access to reduce disparities in rural areas
- Links EMS paramedics to hospital ERs with real-time 12-Lead EKG data for faster treatment decisions
- Alleviates health care professional shortages by allowing centrally located "on call" tele-coverage

What kind of networks do hospitals and clinics need?

Health care needs telehealth networks that are:

1) **Fast**—for quicker diagnosis and treatment decision-making
2) **Accessible**—especially for rural and critical access hospitals
3) **Reliable**—with fail-safe redundant links to assure24/7 availability without the risk of downtime for real-time applications supporting critical patient care that is HIPAA-compliant and secure
4) **Affordable**—to reduce the cost of care

How does telehealth support better, faster & more cost-effective patient care?

- Shares electronic patient medical records to coordinate care; supports federal Meaningful Use requirements; supports the statewide health information exchange (HIE) network
- Reduces costs through shared software applications among hospital and clinic sites within a health system (such as common telephone, paging, voice mail, email, & file storage and sharing)
- Connects hospitals with skilled nursing facilities for better care coordination and patient transfers
- Provides cost-effective and efficient offsite storage for disaster recovery

Why do telehealth networks need to be "fault tolerant" to save lives?

In order to be fail-safe for 24/7 mission-critical applications that save lives, network connections are arranged in a ring so that a failure at any point will not compromise connectivity. By eliminating the possibility of a single point of failure with redundancy, these fault tolerant networks are also used by police, fire, 911-emergency call centers and for disaster preparedness services. When fiber is redundant, data transmission has a fault-tolerance so that if cut by a backhoe (or a beaver in a wetland), the data processing and communications network runs without interruption. *In manufacturing, networks without redundancy may lose money when they fail. In health care, a failed network without fail-safe redundancy to health information may cost lives.*

Telehealth Requires "Health Care Grade" Broadband

How fast is the telehealth network in western Wisconsin?

The redundant point-to-point network *provides 10 Gbps (Gigabits per second).* This high speed "Health Care Grade" broadband is unavailable at any price point from private carriers in western Wisconsin.

Why do hospitals and clinics need high-speed dedicated networks?

Compared to the typical private sector businesses, health care produces vast amounts of digital information—approximately one terabyte each day for a typical hospital—and growing exponentially. Applications like telemedicine, electronic health records, imaging data, data backup, telephone, paging, and voice mail (and someday genome mapping) use large amounts of bandwidth. Telehealth networks must allow data to be securely backed up offsite and accessible. Acute care network data cannot compete with other Internet traffic because large medical files have a different traffic payload and therefore need a different type of network than the traditional service provided by commercial telecommunications carriers.

What is the difference between high- and low-capacity broadband speeds?

Using a highway analogy, a network is a "roadway" for sharing digital data. High-capacity fiber optic speeds are analogous to a multi-lane freeway to provide speeds of *100 Mbps (Megabits per second)* to 10 Gbps and beyond. Lower capacity speeds, like BadgerNet (providing libraries, schools and municipalities from one to 100 Mbps at rates based on bandwidth), are analogous to a narrow road. This lower capacity service often utilizes copper, wireless, satellite and some fiber technology.

Reducing Costs for Patients & Taxpayers

Does the network reduce health care costs?

The ***"Community Area Network" (CAN)*** that supports the telehealth network provides a fiber optic infrastructure for enhanced efficiency and reliability at substantially reduced costs. Telehealth network

hospitals are able to provide better care at less cost by sharing applications (with one license) throughout the network. With a telehealth network, multiple hospital departments can be collapsed into one ubiquitous unit.

What makes the network cost-effective?

Underground fiber optic cable supports a secure point-to-point network broadband communications system transmitting data via light through micro-thin strands of glass. There may be as many as 96 pairs of fiber optic strands in a single linear foot of cable. In any segment, strands may be used by Dove Healthcare, HSHS, Mayo Clinic Health System or UW Department of Family Medicine for their telehealth networks. Although fiber optic cable installation and maintenance is costly, economies of scale are leveraged in western Wisconsin through the CINC, a best practice CAN. CINC allows health care providers to share network costs with city, county and state government, educational institutions, libraries, nonprofits, and technology providers. Often investments in the network produce one-time ROIs of five years or less, resulting in ongoing operational savings. Network may last as long as 30 years, which ensures sustainability. Operational overhead is minimal and upgrades in needed bandwidth are achieved through investment in end point electronics without increasing monthly service costs. This model allows members to create their own customized networks to meet their unique needs, and allows application sharing with increased services at reduced costs.

A Best Practice Network

Why do hospitals prefer their own networks to the Internet?

The telehealth network is a dedicated point-to-point and peered network that provides high speed communication without competing with other user traffic. Competing with internet traffic is costly, unreliable, and can slow connectivity. For example, a trauma patient's CT scan (a very large digital file) could take hours to transmit over the shared Internet, but only seconds or minutes to transmit via the Telehealth Network.

Can the network diminish the Digital Divide for rural hospitals?

The network fosters innovation in the future to help provide equal parity by allowing urban hospitals to support rural hospitals and clinics with life-saving emergency department tele-medicine, tele-consults, tele-psyche, tele-dermatology, tele-radiology, etc. The network provides the high speed point-to-point broadband network infrastructure to share resources and expertise that are unavailable in rural communities.

Is the Telehealth Network critical to saving lives in rural areas?

Distance should never be a barrier to the best possible health care. Telehealth (including teleradiology in trauma cases) saves lives, particularly in rural areas. In medical emergencies, fast and reliable access to health care professionals, health records and diagnostic images—using technology connected by advanced broadband—can be decisive factors that save lives and improve outcomes. Faster care decisions lead to better patient outcomes; better care and better outcomes reduce costs.

CINC Officers and Stakeholders (representing healthcare members):

- Kevin Groskreutz, Divisional CIO, Hospital Sisters Health System, Kevin.Groskreutz@hshs.org
- Kevin Anason, IT Unit Head, Mayo Clinic Health System, Anason.Kevin@mayo.edu
- Jerry Barton, Practice Administrator for Augusta & Eau Claire Family Medicine Clinics, Jerry.Barton@fammed.wisc.edu
- Tom Stevens, Dove Healthcare & Affiliates, tstevens@mysmbgroup.com
- David Mortimer, Grant Program Manager, Hospital Sisters Health System, David.Mortimer@hshs.org