

# TELEHEALTH NETWORK

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**P**roviding high-speed Internet-based telecommunications access to enhance patient care, improve internal communications and operations and link staff and patients with training and education opportunities available worldwide.

The smallest of Illinois' rural hospitals are linked together in a high-speed, Internet-based communication network that supports video, data and voice transmissions. This telehealth network enables small rural hospitals to electronically access information and services to support and streamline administrative functions, enables staff to participate in and to provide education programs, improves access to information available on the Internet, and enables telemedicine consultations and video connections that overcome the remoteness of rural hospitals and the people they serve.

Funded originally by grants from the Illinois Department of Public Health and now self-sustaining, the telehealth network brings state-of-the-art information technology to hospitals that traditionally had to focus on basic, day-to-day internal network operations with limited or no access to the Internet and the resources the Internet provides. The original grants, which ranged from \$41,000 to \$53,000 per hospital, covered the costs of a recommended list of network infrastructure and videoconferencing equipment, computer upgrades and initial telecommunications expenses.

In the initial development of the telehealth network, staff of the Center for Rural Health at the Illinois Department of Public Health provided technical support to the participating hospitals' information technology staff. Now, technical assistance is provided by staff of the Illinois Critical Access Hospital Network (ICAHN), a not-for-profit organization established by representatives of the critical access hospitals in Illinois. Assistance is available for hospital-wide network design,

**Illinois Critical Access Hospital Network**

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equipment configuration, installation and troubleshooting, and training in network administration and video conferencing. Offering such a comprehensive range of technical assistance is critical to the success of the telehealth network as it enables hospital staff to gain knowledge and confidence using and managing the new technology and realizing its full potential.

The backbone of this telehealth network is the Illinois Century Network (ICN), a telecommunication network developed and supported by the State of Illinois that enables broadband connectivity for colleges and universities, public schools, libraries, local government, and now, health care facilities. The ICN is monitored and connectivity maintained on a round-the-clock basis, 365 days per year to ensure the readily available, reliable and secure network resources that health care providers, administrators and other users need. The high-speed Internet access offered by the ICN is more than twenty, and in some instances, up to forty times faster than a typical dial-up modem connection.

Using a T1 connection, the participating hospitals access the Internet at the nearest of the ICN points of presence located in each of the sixteen

Local Access & Transport Areas (LATAs) in Illinois. Because the ICN has multiple connection locations throughout the state, the T1 charges for participating hospitals will be lower and the hospital staff will have access to anyone worldwide who also is connected to the Internet. Earlier video conferencing technologies that relied on point-to-point connections limited the network user to only those other users who shared the connection and frequently required costly T1 monthly use charges based on the distances between participants.

Assistance is provided to ensure participating hospitals' enrollment in the Universal Service Fund (USF), established by the Federal Communications Commission. The USF helps offset the differences between monthly charges for health providers in rural areas and those in urban areas.

Participating hospitals in the Illinois telehealth network are the rural hospitals that have been certified by Medicare as a *critical access hospital*. These facilities are the smallest and most financially vulnerable hospitals and have the greatest difficulty securing adequate human and technological resources. Developing a local area network and providing adequate Internet access

for hospital staff, both care givers and administrative staff, billing electronically, reporting mandated health data, accessing specialty services not available locally, securing appropriate and affordable on-site emergency department coverage, supporting teleradiology, participating in education programs, and participating in professional and peer organization meetings are all beneficial to hospital staff and area residents they serve. All of these activities can be complicated by the limited finances and remoteness of the critical access hospitals, yet the absence of these activities can be a barrier to more efficient operations and improved health care outcomes. The telehealth network can overcome these barriers.

**Examples of activities that have occurred since initiation of the network include:**

- High-speed Internet access for multiple users throughout the hospital, eliminating the need for and the costs associated with multiple dial-up modems
- Development of secure, encrypted virtual private networks for remote access to software updates and system maintenance
- Faster electronic billing and the elimination of multiple dial-up

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- modems and the associated costs previously needed for data transfer
- Specialty consultations for local patients with physicians at remote sites, eliminating travel time and expense for both health care professionals and patients
  - Video consultations between emergency department staff of the rural hospital and staff at a remote trauma center, ensuring immediate and appropriate care, stabilization and transfer, as necessary
  - Participation by hospital staff of many disciplines in education programs available from educational institutions nationwide and those developed specifically for Illinois' critical access hospitals.
  - Providing the backbone for the addition of enhanced teleradiology systems at the hospitals and reducing transmission time for radiographic images, whether digitized film, or images from CT scanners or MRI units
  - Providing the framework for in-home patient monitoring and for the implementation of electronic health records
  - Supporting round-the-clock monitoring by medical equipment

vendors to ensure that critical equipment, such as CT scanners, are fully operational when needed

- Enabling on-demand video conferencing between as many as four network-participating hospitals using on-site equipment

The benefits realized from the State of Illinois' original investment of \$1.4 million over three years are exceptional. Since the program began in state fiscal year 2000, grants have been awarded to 27 critical access hospitals throughout rural Illinois. An experienced and extremely knowledgeable technical advisor has been contracted, first by the state and now by the ICAHN, to provide assistance to hospital staff on a full-time basis.

The many tangible benefits of the telehealth network — multiple cost savings that offset the increased telecommunications charges and enhanced patient care and diagnostic capabilities — have been described in the preceding material. Intangible benefits have been realized as well, and result from the concomitant development of this telehealth network and the implementation of the critical access hospital certification program. The combination of these activities has resulted in increased and, in several instances, the initiation of commu-

nication and on-going dialogue between hospital staff, whether administrators, IT staff, financial officers, or nursing directors, who have a wealth of information, experience and talent to share with one another. Participation in the critical access hospital program has identified the commonalities of purpose and the telehealth network offers these staff the ability to communicate regularly, by both e-mail and by real-time video conferencing, saving travel time, expense and loss of productive patient care and administrative time.

Continuing evaluation and evolution of the telehealth network are necessary to ensure its relevance to critical access hospitals' technology requirements. Examples of future applications for the network include IP Telephony and a distributed database system.

Specific information about the hospital participants and the technical aspects of the network should be directed to Todd Cooper at [tcooper@icahn.org](mailto:tcooper@icahn.org)