



RURAL CONNECTIONS

Although healthcare reform looms on the horizon, rural providers and their patients cannot wait for federal "salvation." Two Catholic multi-institutional healthcare systems with facilities in Iowa believe fiber-optic technology may provide solutions to the inadequacies inherent in the rural healthcare delivery system.

IOWA'S ENVIRONMENT

Iowa is largely a rural state. Of its 99 counties, 71 have more rural citizens than urban. According to 1990 U.S. Census Bureau data, Iowa's rural population accounted for 39.3 percent of the state's total population. The rurality of Iowa poses a problem for residents, especially the elderly, in accessing specialty care services. The lack of public transportation systems, distance to providers, and seasonally inclement weather often delay or prevent rural residents from obtaining needed care.

Iowa's population is among the nation's oldest, with 15.4 percent of the population older than 65. The Iowa Hospital Association's 1993 publication *Iowa Hospitals: A Profile of Service to the People* indicated that in 1992 persons aged 65 and older accounted for 36.9 percent of acute hospital discharges and 47.4 percent of patient days.

In addition, half of Iowa's counties are underserved by primary care physicians. Access to medical specialists and sophisticated medical equipment is similarly limited. Iowa hospitals have



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*Iowa
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**BY GARY
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attempted to deal with professional and technology shortages through network relationships. This strong tradition of collaboration is evidenced by the fact that 80 of Iowa's 121 hospitals (66.1 percent) are part of multihospital systems. These networks often share personnel, jointly develop services, and participate together in various purchasing programs.

Summary The Sisters of Mercy Health Corporation, with 14 hospitals in Iowa, and the Mercy Health Centers of Central Iowa, with 13 hospitals in the state, believe fiber-optic technology may provide solutions to the inadequacies inherent in the rural healthcare delivery system.

Since 1989, Iowa has committed more than \$100 million toward the development and installation of a statewide fiber-optic communication network. The Iowa Communication Network (ICN) was originally envisioned as a means of providing voice, data, and interactive video capabilities to state government agencies, libraries, schools, and colleges. Currently, only hospitals with medical education programs are authorized to use the network, but others are expected to be allowed to soon.

Realizing the potential benefits telemedicine and the ICN posed, in June 1993 the Sisters of Mercy Health Corporation and the Mercy Health Centers of Central Iowa jointly established the Midwest Rural Telemedicine Consortium (MRTC) to enhance rural residents' access to primary healthcare through integrated communications systems. The MRTC is trying to secure federal funding to conduct a demonstration project in eight hospitals. The project's goal is to determine how the use of telemedicine applications, specifically fiber-optic applications, affects access, quality, and costs in providing specialty healthcare services to rural patients.



THE IOWA COMMUNICATIONS NETWORK

Since 1989, Iowa has committed more than \$100 million toward the development and installation of a statewide fiber-optic communication network. The Iowa Communication Network (ICN) was originally envisioned as a means of providing voice, data, and interactive video capabilities to state government agencies, libraries, schools, community colleges, and universities within the state. The ICN became operational in October 1993, establishing its presence in every county.

Although the ICN was primarily developed as a tool for government and education, healthcare providers immediately recognized its potential value in developing and distributing telemedicine services to remote locations within the state. Through the ICN, rural patients would be able to receive specialty diagnostic services at their local hospital rather than traveling 20 to 30 miles to the nearest specialist or waiting until the specialist is next scheduled to visit the local hospital. However, hospitals that do not have medical education programs are not authorized to use the ICN. Legislative authority for all hospitals to use the ICN is expected to be granted during the 1994 Iowa Legislative Assembly.

Even with an ICN link in each county, connections to hospitals still require considerable capital investment, a commodity in short supply, given inadequate reimbursement and negative patient revenue margins among Iowa's hospitals. Even if Iowa hospitals are authorized to access the ICN, a source of capital will have to be found, especially for rural facilities. Still, the opportunity posed by the ICN is exciting.

Iowa hospitals and physicians have been experimenting for years with various telemedicine applications. Telemedicine is the use of telecommunication technologies to provide medical services, most often diagnostic services producing images (e.g., radiology, pathology, and ultrasound). Teleradiology, the transmission of radiologic images to off-site radiologists for review and diagnosis, has proven to be a way to sustain diagnostic services in rural hospitals and clinics that do not have on-site radiologists. Unfortunately, teleradiology transmissions using conventional telephone lines are slow, whereas the costs associated with installing dedicated fiber-optic cables are prohibitively high. Thus the state's development of the ICN poses a unique opportunity to develop real-time transmission of image, voice, and data across a state-owned network.

Through
the Iowa
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tions Network,
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THE MIDWEST RURAL TELEMEDICINE CONSORTIUM

In 1992 the Mercy Health Centers of Central Iowa and the Sisters of Mercy Health Corporation began discussions with Sen. Tom Harkin, D-IA, about creating a federal program to fund the development of telemedicine applications. Harkin was particularly interested in the potential benefits telemedicine and the ICN posed for rural healthcare providers, especially rural physicians, who often noted professional isolation and limited access to diagnostic equipment and specialty consultants as significant impediments to practicing in rural areas.

The continuing discussions with Harkin's office led to the creation of the Rural Telemedicine Act of 1993, a federal funding program that would provide financing to rural hospital networks to develop telemedicine services.

In June 1993 the Sisters of Mercy Health Corporation and the Mercy Health Centers of Central Iowa agreed to jointly establish the Midwest Rural Telemedicine Consortium (MRTC), with the mission of "enhancing the access to and provision of quality and affordable educational and primary health care services to residents of rural communities through technological means afforded by integrated communications systems." All hospitals affiliated with the two systems have indicated that they will join the MRTC.

The Mercy Foundation, a subsidiary of Mercy Health Centers of Central Iowa, was designated as the fund development agent for the MRTC. Since the greatest obstacle keeping rural providers from linking with the ICN is a lack of funds to cover capital costs, the MRTC's goal is to pursue funding "from government and private agencies to finance and construct an integrated telemedicine network to connect all participating hospitals, and to purchase equipment, software and services in order to enhance the delivery of health care and educational services to rural Iowans." In short, the MRTC will use the ICN if authorized to do so.

ORGANIZATIONAL STRUCTURE

The MRTC formed an executive committee of member administrators to perform administrative functions and to formulate and implement policy decisions. Other tasks include:

- Delegating responsibilities to the Mercy Foundation for fund development activities
- Directing the Mercy Foundation to maintain and disburse grant funds or other contributions
- Prioritizing requests for and determining the amount of funds distributed to MRTC members for capital needs



- Initiating, monitoring, and revising policies and procedures
- Ensuring adherence to cost, schedule, performance, and reporting requirements as defined in the terms and conditions of granting agencies
- Ensuring compatibility of telemedicine services and systems among MRTC members
- Promoting community support for MRTC's grant and service development activities
- Resolving disputes among MRTC members
- Ensuring equitable allocation of expenses among MRTC members
- Ensuring efficient, effective, and timely utilization of the MRTC's telecommunication capabilities and resources

Although MRTC's executive committee has been given authority over systems design, priority setting, and fund development and distribution, telemedicine task forces are being established and are assuming responsibility for the development of the telemedicine applications that will "ride the communications network." The applications being considered include pathology, radiology, and ultrasonography. The MRTC is structured such that a telemedicine task force will function within each of the Mercy's five Iowa Community Health Care Systems and will operate out of the following hub facilities: Marian Health Center, Sioux City; Mercy Hospital Medical Center, Des

The consortium is considering development of telemedicine applications in pathology, radiology, and ultrasonography.

Moines; Mercy Health Center, Dubuque; North Iowa Mercy Health Center, Mason City; and Samaritan Health System, Clinton. Task force members are expected to include, as a minimum, the following persons:

- The Community Health Care Systems network administrator and directors of education, management information systems, and planning
- MRTC member administrators
- Physician representatives from family practice, pathology, and radiology
- A local college representative

DEMONSTRATION PROJECT

To date, the MRTC has developed and submitted grant applications to several funding agencies. Most notable has been its effort to secure federal funding to conduct a demonstration project in eight MRTC hospitals, covering a broad geographic area. The project's goal is to determine how and to what extent the use of telemedicine applications, specifically fiber-optic applications, affect access, quality, and costs in providing specialty healthcare services to rural patients. The project will concentrate on consultative and technological services benefited by the transmission of images (e.g., radiology, cardiology, and pathology). The objectives of the demonstration project include:

- Assessing patient and practitioner satisfaction with telemedicine consultative and technological services
- Evaluating the extent to which telemedicine improves diagnostic accuracy and treatment effectiveness
- Determining the impact of telemedicine on rural patient and provider access to specialty services
- Comparing costs of utilizing telemedicine approaches to rural healthcare delivery with traditional methods of meeting rural patients' specialty needs

EXPECTATIONS

Whether reform initiatives become a boon or bust for rural healthcare providers, improving communication transmission linkages between primary, secondary, and tertiary providers should improve the efficiency and effectiveness of rural healthcare delivery. At least, the establishment of the MRTC will strengthen the relationships between the Iowa Mercys and the rural providers that make up their networks. Whether telemedicine reduces costs remains to be proven, following extensive project evaluation. However, if it improves the timeliness of diagnosis and treatment for rural patients, telemedicine will have greatly enhanced the prospects for America's rural citizens to receive the same high-quality care as their urban neighbors. □

CLINICAL LABORATORIES' COMPUTER LINK

The laboratory information management process has traditionally presented a great risk of error and delay, with a long and time-consuming communications line stretching from patient to physician to technician to laboratory and then back through the chain.

St. Mary's Hospital, Streator, IL, is solving these problems with a computerized laboratory test-ordering and results management system that links the hospital, laboratory, and physicians' offices. The program allows the hospital to create laboratory requisitions on computer, to keep track of specimens, and to receive results instantly through a telephone link. Information is then stored in a data base that can be used for reports for physicians and managers.

A bar code reader and bar code-based tracking allow efficient and accurate management of laboratory specimens and data. "The lab no longer needs to hold up the test because it has to call us to verify our hand-written information," says Marcia O'Neal, supervisor of the blood bank at St. Mary's. "At our hospital, we can instantly access the system to see real-time status of any test."

The computer system used at St. Mary's was developed by SmithKline Beecham Clinical Laboratories for its physician and hospital clients. The system is designed to streamline clerical processes, eliminate errors, improve turnaround times, and expedite billing. In addition, physicians can receive a results report that flags abnormal results and can be converted to graphic display for ease of analysis and presentation.