

Using Technology to Support Behavioral Health in Rural Communities: The Wyoming Network for Telehealth Project

Rex E. Gantenbein, Ph.D.

Director, Center for Rural Health Research and Education, University of Wyoming

By any measure, Wyoming is a frontier state. It is currently the least populated state in the Union with 509,294 people, fewer even than the District of Columbia, living in 97,100 square miles. The land is high desert with mountain ranges with elevations ranging from 3,099 to 13,804 feet above sea level. The mean elevation is 6,700 above sea level, ranking Wyoming second among the 50 states. The climate is relatively cold with a normal daily mean temperature of 45.6 degrees Fahrenheit, and Wyoming records the highest average wind speed in miles per hour (12.9) of all the states.

Like other rural populations, Wyoming's citizens face many problems in accessing quality health care. Distance, geography, inclement weather, and rural communities all present challenges for the state's residents in gaining access to health care. Shortages of providers compound the problem, particularly in behavioral health; eighteen of the state's 23 counties qualify as Mental Health Professional Shortage Areas. Only 18 psychiatrists are licensed in the state (and only two of these include a specialization in children). Additionally, according to the Wyoming Department of Health, there are only four certified psychological practitioners, two licensed school psychologists, and two hundred licensed psychologists in the entire state¹.

To help address these issues, Wyoming is undertaking creation of the Wyoming Network for Telehealth, or WyNETTE, project. The goal of this project is to develop dedicated health care telecommunications systems for every hospital, community mental health center, and substance abuse clinic in the state. When completed in 2010, the network will provide 72 sites with high-speed connections not only to each other but to the world through the national Internet backbone. These sites include 30 hospitals (one of which, the Wyoming State Hospital in Evanston, is the state's only inpatient psychiatric facility) and 42 community mental health and/or substance abuse centers, many of which provide both kinds of services.

Telehealth, which can be defined² as the "telecommunication technologies to support long-distance clinical health care, patient and professional health-related education, public health, and health administration," is well known to have the potential to decrease the disparity between rural and urban healthcare access as well as the impact of healthcare provider shortages. The use of telehealth applications to connect providers and patients across distance is particularly effective for improving the psychiatric well-being of rural populations. This is sometimes referred to as *tele-mental health* or *telepsychiatry*.

For many areas in Wyoming, travel to a health care provider typically requires several hours commute, resulting in a disruption of routine, loss of work and income, and significant expense. Decreasing travel time and related costs is one advantage of using telepsychiatry and other telehealth applications. In addition, telepsychiatry allows access to care that could not otherwise be obtained. Patients are able to access care closer to work and home, thus decreasing commute time and lost work days. Moreover, general practices and behavioral health programs in rural communities are able to provide more specialized care for their clients who need resources not locally available.

The WyNETTE project will bring together providers, consumers, and technical specialists to develop advanced telecommunications capabilities that will enhance healthcare in the state, particularly in treatment for mental health and substance abuse. In addition, through connectivity to the national backbone, the state's ability to share information and services with the neighboring states in which a significant portion of care is provided to Wyoming residents will also be significantly improved.

WyNETTE is one of 69 projects being funded through the Federal Communication Commission's Rural Health Care Pilot Program, an offshoot of the standard FCC Rural Health Care Program that provides support

¹ By Wyoming law, a "psychologist" is a person, generally with a doctoral degree and some experience, who has been licensed by the State Board of Psychology to practice in the state. A "psychological practitioner" has a graduate degree in psychology and works under a licensed psychologist; such practitioners can be certified by the State Board.

²This is a slightly more inclusive definition than that of *telemedicine*, which is "the use of medical information exchanged from one site to another via electronic communications to improve patients' health status" according to the American Telemedicine Association.

for telecommunications costs to rural health care organizations. The project will be conducted as a public-private partnership. The University of Wyoming's Center for Rural Health Research and Education (CRHRE, pronounced "share") will be legally and financially responsible for conducting the activities in the project. The CRHRE is dedicated to developing interdisciplinary approaches to integrating technology with research and education to improve the health of rural populations. Other partners in the project represent a broad spectrum of health care organizations in the state, including hospitals, professional organizations, and the state Department of Health.

Design and implementation of the network will be contracted out through a competitive bid process to an organization capable of creating the network. The preliminary design would place a Cisco router at each remote site and provide connectivity through an ATM "cloud"³ to an aggregation point, which will be at the University of Wyoming (UW) in Laramie. In addition to simplifying the design, this approach will eliminate the interruption of service at multiple sites when one line becomes inoperative that occurs with "hub-and-spoke" networks. Seven of the larger hospitals in the state will be connected to UW through dual T-1 ATM lines. Connection to national wide-area networks (the commodity Internet as well as the Internet 2 and National LambdaRail research networks) will be made through UW's links to the Front Range GIGAPop (FRGP), a larger aggregation point in Colorado managed by a consortium of universities, non-profits, and government agencies to which UW belongs.

We anticipate the costs for designing, installing, and maintaining the network over a two-year period for the 72 sites in the state to total \$916,194. 85% of these costs, or \$778,765, will be provided by the Rural Health Care Pilot Program. The remaining 15% of the costs (\$137,429) will be covered by combined support from the Wyoming Department of Health, the Wyoming State Office of Rural Health, the Wyoming Association of Mental Health and Substance Abuse Centers, and the for-profit hospitals participating in the network. There are additional costs for contract and project management – not requested from this program – that will be covered through other sources.

Initially, the network will be used to deliver mental health, substance abuse, and similar counseling and treatment services, primarily through the use of Internet-based videoconferencing. As numerous studies have shown, this technology enables patients and health care providers at distant sites to interact effectively. Additionally, it supports rural health care providers' participation in a variety of professional and patient educational offerings. Network participants may access continuing educational offerings over the Internet to meet their individual needs. The network would also be an excellent way to provide statewide meetings of professional and support groups.

Establishing a dedicated telehealth network for the hospitals, mental health clinics, and substance abuse treatment centers in Wyoming will provide a foundation for developing applications that can help providers in the state become more familiar with the available technology and, perhaps more importantly, become more comfortable with adopting and using it. Clearly, however, the network must be sustained over time in order for this to take place. We are exploring approaches to support the ongoing costs, which could be as much as \$415,000 annually once the network is operational.

We are confident that the creation of this network infrastructure will support a significant increase in the availability of telehealth services in the state, particularly in the areas of mental health care and substance abuse treatment. Three of the partners in the project – the Wyoming Department of Health, the UW Center for Rural Health Research and Education, and Cheyenne Regional Medical Center – already have experience in developing and operating telehealth projects in the state, and resources to support this development are available through resource centers and Federal agencies with which all these organizations have affiliations. Through this experience, we are convinced that the development of a telehealth network for the state's hospitals and mental health/substance abuse facilities will significantly improve our residents' access to quality behavioral health care services.

³ A "cloud" in this context is a commonly used term for a telecommunications carrier's network. An endpoint makes a connection into the cloud at one point and out of the cloud at another; the carrier's network handles the transmission between the two points using hardware that is unseen (inside the "cloud") by its users.