



Telehealth in the 21st Century

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Introduction

In July, Larry Craig, U.S. Senator from Idaho, had a check up in Pocatello, Idaho. Using a computer-adapted stethoscope, blood pressure cuff, and scale, a nurse in Boise, 200 miles away, listened to his heartbeat, weighed him, and took his blood pressure. Observers, some as far as 500 miles from Pocatello, watched on television monitors. This was part of a demonstration of Idaho's telehealth program.

Telehealth, which includes both telemedicine and distance learning for health professionals, will have many valuable applications in MCH. This edition discusses the potential benefits and raises a number of technological and ethical questions. It also includes reports from the largely rural states of HRSA Region X, which have pioneered many aspects of Telehealth.

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Next edition: Preventing Children's Mental Health Problems

What is Telehealth?

by Penny O'Leary

"Imagine a world where, no matter who you are or where you are, you can get the health care you need when you need it." This is the opening statement for the HRSA Office for the Advancement of Telehealth web site.* Using video conferencing, the Internet, telephone lines, store-and-forward technology, streaming media, and satellite and wireless communication, some health care providers and patients are seeing that statement come true. In addition, using these media, expanded opportunities for distance learning have opened up for health care professionals.

Telehealth refers to the use of electronic media in several ways:

- communication between health professionals and patients in different locations
- communications between healthcare professionals, such as video consultation
- electronic transfer and storage of medical data and medical records
- continuing education of healthcare professionals

The term *telehealth* is generally preferred to *telemedicine* because it is considered more inclusive of all healthcare professionals. This issue may also use *telemedicine* when referring to the interaction between all kinds of healthcare providers and patients.

Telemedicine includes scenes like this:

- Parents of newborns in intensive care neonatal units and the professionals caring for these newborns using secure web sites with electronic messaging to improve communication and increase family participation, to deliver and receive parent education, and to facilitate discharge planning.
- Psychologists meeting with their clients

*<http://telehealth.hrsa.gov/> Continued p. 2



MATERNAL AND CHILD HEALTH BUREAU

U.S. Department of Health & Human Services
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Comments about the *Northwest Bulletin* and reports of maternal-child health-related news from throughout the Northwest, activities of state legislatures, upcoming meetings and events are welcome; however all materials submitted are printed at the discretion of the Editorial Board.

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The web site is <http://depts.washington.edu/nwbfch/>

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“face to face” using video conferencing.

- Surgical patients can be followed from a distance, minimizing hospitalization time as well as travel for surgical personnel and rural patients.

Some of the benefits of Telehealth are:

- Improved health care access—rural patients may minimize long and sometimes dangerous trips into health care facilities, second opinions are easier and faster to come by, specialists become available to medically underserved areas and areas with only primary care physicians
- Improved access to medical records and health information—health care professionals in several locations can access and update medical records faster, improving care and decreasing error. On-line medical information can increase patient self-care opportunities as well as opportunities for professional distance learning and medical research data and information
- Improved continuity of care—patients with chronic illness can be better and more easily and more regularly monitored while reducing travel time for both patients and health care professionals,
- Improved continuing medical education—distance learning and medical research data and information allow health professionals to improve their ability to care for their patients.

Telehealth raises many questions. Who will be the providers of such healthcare? How will they be trained? How and by whom will they be regulated and monitored? Where will the records of such interactions go and in what form? How will confidentiality be maintained? The answers to these questions are just now being developed. Laws are being developed at both the state and federal levels to regulate this service delivery.

Confidentiality: Immediate access to patient records, while of great benefit to patient and health care providers, raises question about privacy, confidentiality, and security. This involves others besides health care professionals who are responsible for storage, access to, and accuracy of medical records.

Liability: an ongoing issue for the health care professional and the referring and consulting facilities. Current malpractice law does not address liability of telemedicine vendors and technical staff.

Licensure and accreditation: Laws vary from state to state. The practice of telemedicine across state lines may not be legal in some state and legal in others, or legal with restrictions. Many health care professional groups are developing model licensure processes for interstate telemedicine.

Fraud and/or misrepresentation: Telehealth includes access to health information. The Internet is a wonderful source for data, health information, and health education. Where information is sold, legislation and processes are needed to ensure that the information and

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Editorial: Electronic Medical Records

An Overlooked Issue in Telemedicine

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What's the big deal about telemedicine? If telemedicine is defined as providing care at a distance, then you, as a physician, have been practicing it for many years. You do telephone consultations and follow-up. Many of you use fax, email, and the Internet routinely.

When I mention telemedicine to my colleagues, they describe a vision of video, audio, and written messages, including patient records, flowing over the Internet. Telemedicine promises increased efficiency, improved patient care, and the ability to rapidly analyze variation in patient care. However, it also raises a number of issues that must be clarified and resolved. Physicians and other health care professionals need to be involved in the solutions.

There are major controversies over balancing benefit for the individual patient versus benefits for the provider, the insurer, the regulator, and the public's health. There are legal and ethical issues. A number of regulations have been and are being developed regarding protection of confidentiality and privacy. Most of these laws and regulations are coming from bad experiences in business transactions. Most notable is the Health Insurance Portability and Accountability Act (HIPAA). Pay attention to this and other efforts, because they will shape the ability to share patient information with consultants, insurers, and regulators.

The ability of a practitioner to provide information (as well as care) at long distances—across state or international boundaries—is yet another issue. Practicing medicine across these boundaries using electronic systems has generated jurisdictional disputes regarding licensure, malpractice, ethical behavior, informational content, and the quality of interactions between physicians and between physicians and patients.

Development of Electronic Medical Records Raises Tough Questions

I believe that the critical issue affecting the future of telemedicine is whether an integrated medical record that is readily available from any electronic source will be allowed. The electronic medical record has been the fundamental promise of telemedicine for over 30 years. Technology is beginning to catch up with the complexity of the medical record, a document we take for granted. The ability to store large and individually variable amounts of data cheaply was not possible until recently. As we create electronic medical records, we open up a number of issues that were not major

concerns when the records were only on paper. One unanticipated new challenge is setting standards for what goes into these documents and how they are structured. Computers handle data much better when it is in a fixed or at least consistent format. Think about how you record patient information and how it will integrate with that recorded by other physicians, nurses, and the myriad care providers that write in a typical hospital chart. Once you have solved that one, consider how your office chart will need to be structured like everyone else's office chart. What will you insist on keeping? What additional tasks are you willing to do to meet the needs of others?

One of the major questions in creating these data systems is "Who owns the data?" The person or group that owns the data is then responsible for the data. The owner will have the major influence on how privacy and confidentiality are balanced against needs for access and minimizing potential harm. Presumably the owner will also be liable for breaches or failures to protect the information.

Next most critical is acceptability of the electronic record for both the physician and the patient. To be acceptable, the document must be utilitarian, but it must also meet myriad regulatory requirements. Its utility must outweigh any additional time required to create it. What can we do to efficiently enter data in these systems? Most written medical records are quite cryptic and cursory, not to mention illegible. Expectations of the electronic record are much higher. Not only should the information be readable, it should be searchable, complete, and comprehensive. Interestingly, these are much higher demands than we have for our current documents. To create this ideal record requires time, often with the belief that time spent entering the data will be made up later during review or analysis.

Data entry becomes an issue of whose time is saved and at what cost. If all records are dictated, there is added cost of transcription. If the physician or other provider does the entry, there is the cost of that entry time. There is great hope for voice recognition technologies. However, any of the current voice recognition technologies takes considerable individual effort. Are you willing to spend 14 to 60 hours reading in prepared text to have the voice recognition program recognize your speech pattern in hopes of saving time over the long haul? Several specialties with a set of common problems have developed templates to enhance the written or voice entry to the record. Can they be developed for your practice? Who will do the development?

Telemedicine in its broadest sense—the immediate interaction between patient and provider—is a truly exciting opportunity for all of us. Immediate and direct communication can be satisfying for patient and provider. Maintaining records of the

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contacts and their content is a challenge that must assure confidentiality, security, and usefulness. Computerized medical records can improve the quality of medical information and its availability. These medical records will likely increase the quantity of the information recorded. While challenges remain, at least the questions are becoming more clear and better framed.

Participate in the solutions

As a physician or other health care professional, you cannot leave the operating decisions to others. You need to participate in the decisions and solutions. You will be better prepared if you understand your practice patterns and how they are different from your partners and work group. You should enlarge your computer skills and learn about the legal and social implications of electronic records. When the decision to go to an electronic record occurs in your workplace, you need to commit the time necessary to create a record that works for you, your patients, your staff, and also helps with the economics of medical practice.

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the data is accurate, current and provided by reputable vendors for appropriate use. The news media has reported often on the access to restricted drugs by individuals who get prescriptions from a physician or pharmacist who has never seen the patient and has not verified the “patient’s” real requirement for the drugs.

Legislation/regulation: Not all states have developed regulations, let alone regulations that are compatible with other states and the federal government. Physicians may be required to be licensed in the state where the patient is treated. Other states may require physicians to provide only physician-to-physician consultation. Finally, only a few states have developed regulations defining consumer rights for those who receive telemedicine.

Reimbursement: Will telemedicine services be covered? Will insurers pay for “face-to-face” visits if telemedicine is an alternative. Appropriate fee schedules, quality monitors, and evaluation tools are being developed.

Medical records: Storage of records and their authentication is critical. How, to whom, and by whom will medical records be disclosed. (See the editorial, page 3.)

What needs to be done?

The technology will continue to grow and change to meet the needs of healthcare consumers. All of the interested parties—clinical staff, legal staff, risk managers, information staff and

vendor professionals, patient rights advocates, patients, reimbursement professions, and regulators—must be involved to develop a seamless system that addresses the issues raised by technology.

Penny O’Leary was until recently the Assisting Managing Editor of the Northwest Bulletin

CD ROMS Provide Self-Paced Learning in Genetics and FAS

Nancy White, Full Circle Associates

Professional education has been hampered by the challenges of time and space — bringing people together to present continuing medical education offerings. Today CD-ROMs and web-based distance education offerings can now bring the education to the professional. Two CD ROMs developed by Washington State projects are examples of innovation in distance professional education:

- *Genetics & Your Practice*, CD ROM, Washington State Department of Health, the March of Dimes, and the Institute for Child Health Policy at Florida State University
- *Fetal Alcohol Syndrome Tutor*, University of Washington FAS Diagnostic & Prevention Network and the March of Dimes.

Genetics & Your Practice (G&YP) has been a face-to-face genetics education program for primary care providers used nationwide starting in 1998. However, there were difficulties reaching rural providers and providers who were unable to get away from their practice. In 1999, a CD ROM was created by the Institute for Child Health Policy at Florida State University using key points from the larger G&YP print curriculum with additional multimedia segments and visuals to enrich the learning experience. The case studies were augmented with video clips from experts. The first year evaluation has been very positive. The price of the CD ROM has been deliberately kept low. A number of medical schools order copies for all their students. More information and ordering details can be found at http://www.marchofdimes.com/Programs/428_859.htm.

Fetal Alcohol Syndrome Tutor was produced by the Fetal Alcohol Syndrome (FAS) Diagnostic & Prevention Network first as a print manual to train people on FAS diagnostic tools. It was a natural progression to the image-rich CD ROM format, where the actual facial measurements could be demonstrated. Feedback about the more than 1000 CD ROMs already distributed has been very positive. The CD ROM is distributed by the March of Dimes for \$15.00 (information at <http://depts.washington.edu/fasdprn/>). Previews can be found at <http://depts.washington.edu/fasdprn/cdpreview.html>.

Online Learning: Keeping Up Wherever You May Be

by Laura Larsson

Most of us are face-to-face learners. That's how we learned to learn when we were in grade school. Until relatively recently, the only methods were lectures, workshops, seminars, or correspondence classes. As technology developed, we began to learn via satellite down-link and via television. Web-based distance learning is an important new step in the evolution of learning.

Web-based online learning is accessible to everyone with access to a computer and an Internet connection. It is available at any time. It is relatively inexpensive and the quality of the instruction is often exceptionally high. Given a knowledgeable instructor, learning can be fun, highly interactive, learner-based, and stimulating.

Distance learning is education that takes place when the instructor and the student are not present in the same physical space at the same time. The major advantage of distance learning is that, within the limitations of the course, the student can learn at his or her own speed, at the time of his or her own choosing, and from home or office. Modules can often be begun one day and finished another. Modules are often updated more frequently than in-class lectures (especially for classes being offered once a year, or those offered on an ongoing basis).

Another important advantage of distance learning is the savings in terms of time and cost. During times of constrained travel budgets and concerns about personal security, learning can occur at home without the jetlag, expense, and worry of traveling. For academic departments or schools reaching out to students via the Internet, distance learning can be profitable—but more importantly, distance learning can reach formerly hard to reach students.

Is distance education effective?

This is a touchy subject, especially among academics, and there are forceful advocates on both sides of this issue. A number of papers have found no statistical difference between modes or that distance education was superior. The debate will no doubt continue, as this field is still new. You can find a short list of papers on this topic at Dave Edyburn's "But, Is It Effective" website (<http://www.uwm.edu/~edyburn/effect.html>) and articles by Fred Saba (see Additional Reading, page 6).

Why become a distance learner?

Ongoing training is a necessity for many working professionals. Two areas of skills will always need to be enhanced: becoming more efficient at using the computer (digital literacy skills), and knowing how to efficiently find, organize, use, and

disseminate information. Work- and discipline-specific demands on worker skills are also increasing. Training via online learning improves worker capabilities and productivity.

From an employer's point of view, there are advantages to having workers use a distance format. Plus, the costs are less because travel time is eliminated. Having the employee in the office in the event of a surge of work or an emergency is another advantage.

To determine if distance learning is for you, visit this PBS Website and take the on-line questionnaire: <http://www.pbs.org/als/college/dlandyou/quiz.htm>. For information on what students need to consider as they look for and take courses, visit the Oregon Community College's Website located at: <http://occdl.chemeketa.edu/web.cfm?ID=14>.

Characteristics of a Distance Learner

You are a potential distance learner if you are a person who desires to learn a new skill, competence, or who just wants to expand your knowledge about a topic or issue—and if you wish to learn at your own pace and place. Possibly the most important factors however, are motivation and time management. You must be able to manage your own time and set deadlines for yourself.

Where to Find Distance Learning Opportunities

Universities, community colleges, technical, schools, and some research groups offer training. Libraries are excellent places to learn how to use the Internet. The following web sites can be used to help you find courses:

The World Lecture Hall, <http://www.utexas.edu/world/lecture/>
Ed-X Distance Learning Channel, <http://www.ed-x.com/>
World Wide Learn, <http://www.worldwidelearn.com/>

Rather than taking a formal class, you could use one of the search engines like *Google.com* to search for information on a topic of interest. This can be one of the best ways of learning.

Success or Failure

Success depends very much on the learner's attitude, ability to set goals for themselves, and, most importantly, ability to complete tasks on time despite a busy schedule. The learner's willingness to find and invest the time necessary to complete assignments and to participate in discussions is critical. The more self-motivated the learner, the more likely he or she is to be a success. Distance learning is not for everyone.

In addition to personal and learning styles, potential distance learners should pay attention to whether or not they are getting what they paid for. Online learning is still very new and is undergoing tremendous change as instructors try to figure out

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Children's Oral Health in Rural Areas: the Role of TeleHealth

David B. Shurtleff, MD and Peter K. Domoto, DDS.

In five Washington counties, telehealth services have been used to tackle the challenge of providing dental care to rural children through the Washington State Children's Community Health Access Project.

The Healthy People 2010 identified effective health communications as one objective to improve the health of the nation.¹ Prevention measures adopted by communities, health professionals, and individuals have improved the oral health of Americans.² While advances in media and computer sciences create opportunities for assessments, collaborative consultation, monitoring chronic disease, and provider education,^{3,4} the greatest benefit may be the opportunity to enhance health promotion and disease prevention programs to caregivers, patients, and health care providers in rural areas of the state.

Patients from rural communities encounter many difficulties when referred to tertiary care centers. A cultural gap can inhibit clear communication between many patients and tertiary specialists. In addition, travel is prohibitively expen-

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how to move face-to-face classes to the Web. Consider carefully issues of accreditation, value of the resulting certificate or credit, the track records and qualifications of the instructor and institution, and even, admissions policies.

Additional Reading:

CDC Distance Learning Primer, CDC, Public Health Training Network, 4/8/99

Distance Education: An Overview, Gottschalk, Tania H., ed., University of Idaho, January 22, 1999

How to be a Successful Distance Student, McVay, M., Simon & Schuster Custom Publishing, ISBN # 0-536-01711-5 (Order from Pearson Custom Publishing at 800/922-0579)

Learnavity.com: Learning styles, training and learning, FAQs, and more for the adult learner.

Phythian, T. and Clements, M., "Post Foundation Tutorial Planning," *Teaching at a Distance* 18 (Winter), 38-43

"Welcome to Saba's Corner," Saba, Fred, *Distance Educator*. 2002.

Red Flags to Watch for When Choosing Distance Education Programs: Will you get what you are paying for? Thomas, Charlotte, *LifeLongLearning.com*, April 1, 2000

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sive and complicated for families. The distance often precludes participation in the clinics by caretakers who know the patient and family. Persons from rural settings may have trouble communicating freely when seen by specialists strange to them in busy city clinics. In addition, health care providers may not be knowledgeable about cultural diversity and may not be sympathetic toward rural folk who misjudge traffic and arrive late for their appointments or who may be reluctant to talk to strangers.

Washington State Children's Community Health Access Project

Washington State has hosted a variety of telemedicine programs,⁵ including the MCH-sponsored Washington State Children's Community Health Access Project (WSCCHAP)⁶, which provided both outreach clinics and formal and informal education for teachers and health professionals. The project was designed to empower four culturally different, rural, isolated counties to enhance coordinated health care and health education delivery systems. The Interactive Teleconference System demonstrated that cost-effective, culturally sensitive, effective tertiary consultations could be provided with overwhelming acceptance by both patient families and local professionals. Over 2,576 consultations were conducted in 199 clinics. Primary caregivers felt that most of their questions had been answered and they would choose such service again. All communities had cooperative relationships between the schools and local health departments with referral to tertiary level neurodevelopment specialists participating in these clinics.⁶

Bringing Oral Health Care to Rural Children

A model telemedicine system for oral health has been introduced to the southwest five counties of the state of Washington as part of WSCCHAP. The Lewis County Children With Special Health Care Needs respite center and clinics have collaborated on this project.

Oral health is an important aspect of the overall health of infants and children. Dental caries is the single most common chronic childhood disease—5 times more prevalent than asthma and 7 times more prevalent than hay fever.² Oral and dental problems have significant medical consequences for children that may go unnoticed because of the traditional separation of the medical and dental systems.⁷

Most rural communities do not have dental providers to meet the oral health needs of children and their families. Most dental providers are not trained to provide care to infants and toddlers; many physicians and auxiliary staff are not knowledgeable of the systemic risks of dental disease. Children with special health care needs and/or behavior management issues, particularly in rural settings, are less likely to obtain

dental care and are at increased risk for complications. Extreme dental disease frequently contributes to distracted behavior and associated poor education performance.^{12,13}

Telemedicine consultations, including digital photographs of the oral environment, have greatly increased access to expert dental care while video conferencing has supported provider decisions. Telehealth has also assisted families in developing a sense of personal responsibility and involvement in modifying their identified unhealthy behavior.

Conclusion

A statewide telemedicine system with integration of health promotion models has the potential to bring oral health into the realm of overall health. Inclusion of oral health treatment planning and clinical pathways provides the communities with meaningful communication and decision support systems.

- 1) *Health People 2010*: Draft for Public Comment. US Department of Health and Human Services: Washington DC.
- 2) US Department of Health and Human Services. *Oral Health in America: A Report of the Surgeon General—Executive Summary*. Rockville, MD. US Department of Health and Human Services, National Institute of Dental and Craniofacial Research. National Institutes of Health. 2000.
- 3) Johnston B, Wheller L, Deuser J, Sousa K. Outcomes of the Kaiser Permanente tele-home research project. *Archives of Family Medicine*. 9(1):40-45, January 2000.
- 4) Patyk M, Gaynor, S, Verdin J. Patient education resource assessment: Project management. *Journal of Nursing Care Quality*. 14(2):14-20, January 2000.
- 5) *Federal Telemedicine Directory 1998*: Office for the advancement of Telehealth (OAT). <http://telehealth.hrsa.gov/jwgt/teldirect98/projects.html>. Accessed on May 20, 20000.
- 6) *The Washington State Children's Community Health Access Project: 1992-1999. Final Report*: David B. Shurtleff, MD Abstract. <http://depts.washington.edu/wwami/wscchapRep2.htm>. Date accessed May 20, 2000.
- 7) Mouradian WE, Wehr E, Crall JJ. Disparities in children's oral health and access to care and their consequences. Submitted to *JAMA*.
- 8) Acs G, Lodolini G, Shulman R, Chussid S. The effect of dental rehabilitation on the body weight of children with failure to thrive: case reports. *Compend Contin Educ Dent*. 1998;19:164-171.
- 9) Acs G, Shulman R, Ng MW, Chussid S. The effect of dental rehabilitation on the body weight of children with Early Childhood Caries. *Pediatr Dent*. 1999;21:109-113.
- 10) Committee on Research Science and Therapy. Periodontal disease as a potential risk factor for systemic disease. *J Periodontol*. 1998;69:841-849.
- 11) Watson MR, Horowitz AM, Garcia I, Canto MT. Caries conditions among 2-5 year-old immigrant Latino children related to parents' oral health knowledge, opinions and practices. *Community Dent Oral Epidemiol* 1999; 27:8-15.
- 12) Gift HC, Reisine ST, Larach DC. The social impact of dental problems and visits. *Am J Public Health*. 1992;82:1663-1668
- 13) *AAP News*. 16(3); March 2000. American Academy of Pediatrics. Elk Grove Village, IL

Telecommunications Terms

Audio-conferencing: two-way electronic voice communication between two or more people at two or more locations.

Backbone Network: a high speed transmission facility (e.g., optical fiber) designed to interconnect lower speed distribution channels.

Bandwidth: a measure of the information-carrying capacity of a communications channel; the higher the bandwidth, the greater the amount of information which can be carried.

BBS (Bulletin Board Service): a computer service that allows remote users to access a central "host" computer to read and post electronic messages.

Bridge: a device which is used to interconnect three or more telecommunications channels, such as telephone lines, to permit simultaneous, two-way communication among all points which have been interconnected.

Broadband: communications which are capable of carrying a wide range of frequencies. Broadcast television, cable television, microwave, and satellite are examples of broadband technologies.

Computer conferencing: group communications through computers, or the use of shared computer files, remote terminal equipment, and telecommunications channels for two-way, real-time group communication.

Conference call: a telephone call which, by making use of a bridge, connects more than two individuals at geographically distinct locations for simultaneous conversation.

CPE (Computer-based Patient Record): the term for the computer-generated (electronic) patient record that is being developed.

Direct Digital Imaging: involves the direct capture of digital images (e.g., an MRI) so that they can be electronically transmitted.

Downlink: the path, or link, from the satellite to earth stations which receive its signals. The term is frequently applied to a parabolic antenna that receives signals from a satellite. It is often referred to as a dish, a terminal, an earth station, or a TVRO (television receive only).

EDI (Electronic Data Interchange): the sending and receiving of data directly between two remote computers without paper or human intervention.

Equal Access: ability to choose between the different long distance carriers. In rural areas, some local exchange carriers are still serviced by only one long distance carrier.

Fiber Optics: hair-thin, flexible glass rods encased in cables that use light to transmit audio, video, and data signals.

ISDN (Integrated Services Digital Network): a digital telecommunications channel that allows for the integrated transmission of voice, video, and data; a protocol for high-speed digital transmission.

RANs (Rural Area Networks): as conceptualized by the

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Northern Idaho Links Facilities Using Video Teleconferencing

The effort to provide quality health care to rural northern Idaho becomes a daunting task when faced with the numerous barriers that plague the region. According to the U.S. Health Resources and Services Administration, access to health resources in Idaho is more difficult than in most other states. If trends continue, services will be increasingly centralized and inaccessible to rural Idahoans. Specifically, federally designated physical, oral, and mental/behavioral health shortage areas cover 73% to 93% of the state. Part of the problem is physical barriers: the area is infamous for hundreds of miles of twisty back country roads and hard, cold winters that often make travel risky, not merely inconvenient.

In response to these barriers, a visionary consortium of county hospitals in northern Idaho, the North Idaho Rural Health Consortium (NIRHC), is making an ambitious attempt to bring better access to health care and education to the rural areas of Idaho via new technology. With the partnership of North Idaho College, the NIRHC has developed a multi-location interactive video conferencing network. It links primary health care facilities and school districts located in five northern counties of the State of Idaho. Sites include Benewah Community Hospital, St Maries; Bonner General Hospital, Sandpoint; Boundary Community Hospital, Bonners Ferry; Shoshone Medical Center, Kellogg; Kootenai Medical Center, Coeur d'Alene; and North Idaho College. There are additional sites throughout the 13 northern Idaho school districts.

Video conferencing can extend quality health services to rural areas, reduce travel costs, and increase the quality and

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U.S. Congress Office of Technology Assessment, RANs would be shared-usage networks, configured to include a wide range of users in rural communities such as educational, health, and business entities.

Uplink: the path, or link, from a transmitting earth station to the satellite. The term is frequently applied to a transmitting earth station.

Voice-grade channel: a telephone circuit of sufficient bandwidth to carry signals in the voice frequency range of 300-to-3400 Hertz.

WANs (Wide Area Networks): data communication networks that provide long-haul connectivity among separate networks located in different geographic areas.

WATS (Wide Area Telephone Service): a flat rate or measured bulk rate long distance service provided on an incoming or outgoing basis. WATS permits a customer, by use of an access line, to make telephone calls to any dialable telephone number in a specific zone for a flat or bulk monthly rate using an 800 number.

frequency of communications. Each site has a videoconference room with a modular video conferencing system, allowing participants to view far-site video and hear the audio from all participating sites. Each site can be linked to one or more other sites at one time. During a multipoint conference (when three or more sites are bridged together), the current speaker is selected automatically and shown to all other sites. All sites have the capability of transmitting slides, videos, personal computer presentations, or graphic files. In addition, there are a number of medical examination devices, such as stethoscopes, otoscopes, ECG monitors and more, that can interface with the conferencing equipment to transmit patient data in real time from the remote site.

Video teleconferencing is also being used to provide effective distance learning and continuing education applications. This allows access into rural areas where other solutions may not prove practical or cost effective. This technology is much more engaging than videotape distribution or one way satellite broadcasts, as it employs one-on-one interface between participants at conference sites.

The NIRHC has been a leader in assuring access to quality health care services in rural northern Idaho. NIRHC has provided nursing education to these small communities in hope that qualified health care workers can be "grown locally." In 1998, NIRHC secured a three year, \$600,000 grant, though the Federal Office of Rural Health Policy to create the North Idaho School Cooperative project. This innovative project provided enhanced teacher inservice training in health related areas, promoted health career training opportunities, improved direct student health services, and extended care-plan management of medically fragile and at-risk children. In 2002, the NIRHC was awarded a \$530,000 appropriation for the promotion of telehealth activities in rural northern Idaho, thanks to the support from Senator Larry Craig. Administered through the Office for the Advancement of Telemedicine, the funding will support projects that will extend access to mental health services for adults and adolescents; as well as rehabilitative therapy for special needs children. In conjunction with these efforts, the projects will work with Idaho Medicaid to explore issues of healthcare provider reimbursement.

The cooperative efforts of these dedicated groups in the Idaho panhandle have brought improvements in the quality of health care services to the rural population. The continued success of these projects will rely on the strength of their commitments.

For additional information please contact Tom Hauer at hauert@kmc.org or (208) 666-2987 or Sue Fox at suefox@sandpoint.net or (208) 265-3390.

Oregon Nurses Go the Distance

Telehealth is playing an increasingly large part in the everyday work of Oregon nurses, particularly in public health. A significant component of nursing care involves managing data and information. In fact, information exchange through wires is not a new role for nursing. Telephone triage has been a nursing intervention for years and is regarded as the predecessor to telemedicine. Nurses caring for underserved populations, such as those in rural areas, are increasingly using telehealth systems. Eleven of Oregon's 36 counties are designated as frontier, with less than or equal to six people per mile.

Nurses engage in telehealth by clarifying medication instructions over e-mail, gathering patient education materials on the Internet, taking computer-mediated education courses, sending letters to legislators on Internet home pages, triaging patient concerns on the telephone, and conducting basic physical assessments with the help of cameras, live video transmission, and digital readout screens.

Concerns over reimbursement, licensure requirements, confidentiality, and technology are the primary obstacles in the use of technology in practice. Currently physicians and nurse practitioners can be reimbursed for certain Medicaid telehealth services delivered to patients living in rural areas that qualify as Health Professional Shortage Areas (HPSA). In Oregon, there are 24 geographic areas designated as HPSA in primary medical care. Unfortunately, the Center for Medicare and Medicaid Services (CMS) guidelines are narrow, so providers often must split the limited fees with the referring provider.

In terms of licensure, issues of accountability arise when health care advice is delivered across state lines. The nursing community is governed by an endorsement policy where nurses across the country take a national exam recognized by all states. This allows Oregon to recognize nurses from Washington by issuing a license by endorsement. Currently, there is a national movement toward mutual recognition, which would allow a nurse to obtain one state license that grants "multistate privilege to practice" across state lines. Nurses would be required to comply with the practice acts of the state in which they were practicing nursing, as they are under the current system. In addition, they must observe the federal Health Insurance Portability and Accountability Act (HIPAA) requirements for security of health information.

Oregon Health Sciences University, School of Nursing, offers advanced practice degrees to registered nurses throughout the state, including an on-line MPH. Graduate students in Ashland, La Grande, and Klamath Falls are not restricted by geography and are able to remain in their communities while they learn. Programs are delivered using audio-visual equipment that transmits over high speed T-1 phone lines (Polycom), web-based computer conferencing systems (eCollege), electronic mail (GroupWise), and facsimile. Graduates often stay in the area to

practice, which helps to build the health care infrastructure in rural areas.

Despite the barriers, new technologies have the potential to be a tremendous clinical and education tool for all registered nurses, while increasing access to services for Oregon's population.
—Joyce Edmonds, RN

Further information for Oregon nurses:
<http://www.ohsu.edu/son/>, <http://www.osbn.state.or.us>

RODEO Net Facilitates TeleMental Health in Eastern Oregon

Mental health services for children are a recognized need in rural Oregon. Rural Options for Development and Education Opportunities Network (RODEO Net) has been working to improve access to mental health services since 1991.

Oregon ED-Net, funded by the legislature in 1989, created a system for video broadcast, two-way video conferencing, local internet access, and computer conferencing in virtually all counties in the state. This is sustained with local support. The Eastern Oregon Human Services Consortium began in 1991 to use ED-Net technology to deliver mental health services and training. The result was RODEO Net. It began providing distance learning but has moved away from that aspect of telehealth because universities can handle educational outreach in a much more cost-effective way. Now it focuses on the delivery mechanisms rather than the content.

RODEO Net manages the infrastructure on which service delivery depends. Services include protocols, procedures, scheduling, evaluation, and training. In 1991, there were no protocols for the delivery of services. Since then, RodeoNet has developed protocols for confidentiality as well as other aspects and provides training in telehealth. It also seeks service providers who are willing to use video teleconferencing.

Partnerships with other organizations have been one key method of building and maintaining the network. RODEO Net has developed collaborative relationships with Eastern Oregon State College, numerous telephone companies serving rural Oregon, and a private nonprofit managed behavior healthcare organization, among others.

RODEO Net has been seeking grant funds for videophones in schools. The equipment also could be placed in "proctor family homes," allowing caseworkers to talk directly with children and family members.

RODEO Net, 541-663-8950, www.rodeonet.org

Telehealth Pioneered in Alaska

Alaska's first milestone in the use of telecommunications to deliver health services in Alaska was use of a new telegraph system in 1925 to organize the emergency transfer of diphtheria serum from Anchorage to Nenana by train (about 400 miles), and 674 miles by dogsled relay from Nenana to Nome.

The challenge of providing health services to widely dispersed population groups across great distances has continued ever since. The state is about one-fifth the size of the continental U.S., larger than Texas, California, and Montana combined, with about 622,000 residents—about 1 person per square mile. Both the challenges and potential benefits of telehealth in this environment loom large.

Today, both public and private sector health care delivery systems are finding opportunities to use advanced computer-based technologies and telecommunications systems to improve access to quality health information and health care, wherever the patient may be. Health care is provided by the Alaska Native health corporations, the military, veterans administration, and state-provided public health services.

Due to the growing interest in Telehealth and the influx in federal funds, the Alaska Telehealth Advisory Commission (ATAC) was formed in 1998 to propose a framework for rational development and deployment of statewide capacity for telehealth/telemedicine systems. The June 1999 Final Report of the Alaska Telehealth Advisory Commission identified major issues and spelled out core principles which are providing guidance to all the players in the state.

The Commission (now renamed the Council) has members representing the health care and public utility systems, the local telephone company association, insurers, and other health professional groups.

Great expanses of mountains, glaciers, and tundra all hinder installation and raise costs of telecommunications infrastructure. "Earth stations" supporting wireline or wireless distribution systems of signals picked up from satellites are essential in most of the state. The ATAC supported full implementation of the Universal Services Fund (USF) program for rural health care providers. The USF support is helping rural providers overcome major obstacles to deployment of affordable telecommunications.

Today, private hospitals are investing in capital equipment and telecommunications services as part of their cost of doing business. In both the private sector and military hospitals, teleradiology has become a major program, expanding since the early 1990s. Mental health services are adopting real-time video communications in areas where there is at least moderate bandwidth available. The state Department of Corrections

is using videophones extensively for its mental health services.

The budget-based military, veterans, and Alaska Native health systems and the state public health system are working together through the Alaska Federal Health Care Access Network (AFHCAN), funded by Congress. In the year 2000, AFHCAN deployed telemedicine workstations and patient education kiosks to 239 sites serving Federal beneficiaries, mostly in remote and isolated communities. Many of the sites getting telemedicine equipment are village clinics staffed by community health aides, the trained primary care workers in Alaska Native villages who need reliable access to physician or mid-level back-up via telephone, radio, or computer. Most of the village clinics have access to other communities, only by boat, plane, or snowmobile, weather permitting.

Use of telehealth systems from rural clinics is expected to be mostly for primary care: case descriptions; digital photos of ear drum, skin, eye, wound, and other injuries; and, potentially, ECG/EKG readings (currently faxed), and information-gathering for either the patient or the primary care provider from consultants or from internet resources. The systems also will be used for training and administrative needs.

Access to public health information and public health training and distance learning is also being enhanced in Alaska through the Health Alert Network (HAN) project funded by the Centers for Disease Control and Prevention. While the HAN funds are primarily linked to Bioterrorism Preparedness and Planning, the state Department of Health and Social Services will be able to use the network to exchange other key information over the Internet.

The Alaska Health Education Library Project (AHELP) is another project funded by the Centers for Disease Control and Prevention and coordinated by the Alaska Division of Public Health. It will provide health professionals easy access to health information resources via the Internet. Soon to be a website, this site will offer a clearinghouse of health promotion/chronic disease prevention information on programs, materials, and resources available in Alaska.

The Alaska Telehealth Advisory Council reports Alaska's telehealth/telemedicine and telecommunication improvements on its website: <http://www.hss.state.ak.us/commissioner/atac/>

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Health Benefits from Telehealth in Eastern Washington

Telehealth is advancing children's health in Eastern Washington through the use of interactive video-conferencing by linking moms and children in rural areas with specialty providers in urban centers.

The Inland Northwest Health Services TeleHealth Network is bridging the miles for families in rural areas and improving access to specialty education and providers typically located in urban centers by using this unique Telemedicine network. The system serves patients and providers residing in 10 eastern Washington counties.

For several years maternal-child health educators from local Spokane hospitals have utilized Telehealth to offer maternal-child classes to rural hospital staff, saving hospitals thousands of dollars in travel time and staff wages. This inservice training is performed over the video-conferencing system.

TeleHealth projects have included:

- Gestational Diabetes Management
- OB Grand Rounds
- Advanced Insulin Management for Children
- Breast Feeding Consultations for Mothers
- Family Visits
- Children with Special Health Care Needs

Discharge planning has proven to be another wonderful application of Telehealth. For example, premature twins born in Othello were recently transported to a Spokane hospital. Prior to discharge, a Telehealth conference was performed that included the public health nurse and primary care staff in Othello. Staff were able to obtain a clear picture of the discharge plan by direct interaction with the case manager, nutritionist, neonatal intensive care nurse, and physical therapist who had all cared for the twins during their eight-week hospital stay. The public health nurse commented, "The discharge report was the best ever."

In another case, a newly diagnosed diabetic child from the Columbia Basin received instruction in disease management from a diabetic nurse and dietician located in Spokane. Using a Spanish interpreter, the child's family was able to participate in the consultation.

Other examples of Telehealth usage include: nurses from another Spokane hospital successfully demonstrated umbilical catheter insertion to nurses at Ferry County Hospital in Republic in an emergent situation. A potential cystic fibrosis transplant patient was linked to Stanford University Medical Center to evaluate his clinical condition by the transplant team. Based upon the quality of the conference, the team approved his physician's request for transplant.

Marilynn Snider, RN, Clinical Coordinator
Inland Northwest Health Services, Northwest TeleHealth

University of Washington Programs

Certificate in Public Health

The Certificate in Public Health provides a focus on community practice through courses in Public Health Practice, Health Services, Community Health Development, Policy Development, and Managing Health Care. Students also take introductory courses in Epidemiology and Biostatistics. Students complete a practicum as a capstone experience. The work necessary to earn the certificate is done through a combination of on-site and partial distance learning courses over a period of four academic quarters or one calendar year.

This certificate is designed for employed public, community, and environmental health professionals who are seeking graduate level educational opportunities, but who may not be able to make a long-term commitment to a full-time MPH program.

Credits earned may be transferred into the Extended MPH Degree Program if a certificate student is admitted to the Extended Degree Program (EDP) as an MPH degree student.

Contact: Gail Greenwood, EDP Associate Director
206-616-2942, uwedp@u.washington.edu

Extended MPH Degree Program (EDP)

This program offers the opportunity to earn a Master of Public Health Degree while continuing full time employment. The program provides graduate education in core Public Health disciplines (Health Services, Epidemiology, Biostatistics, Environmental Health); skill enhancement in program management, evaluation, and policy; and special pathways in Maternal and Child Health, Community Practice, and Health Education.

The EDP is designed to be completed in three calendar years which include: four weeks of intensive in-residence study on the UW campus for three summers; four on-campus weekend (Fri./Sat.) seminars at two-month intervals during the first two academic years, plus directed independent study. Students complete a thesis or agency-related project, and a practicum in the home community.

Contact: Gail Greenwood, EDP Associate Director
206-616-2942, uwedp@u.washington.edu

Maternal and Child Health (MCH) Program

This two-year, full-time program leads to a Master of Public Health degree. It is designed primarily for individuals with clinical or public health experience who seek advanced training to assume leadership roles in program management, policy formulation, assessment, evaluation, and/or research. Students complete core courses in Health Services, Epidemiology, Biostatistics, and Environmental Health, special courses on issues of families and children, and complete a thesis and a practicum on maternal and child health topics.

The MCH program is offered jointly by the Departments of Health Service and Epidemiology.

Contact: Carmen Velasquez, Program Administrator
206-543-0312, carmv@u.washington.edu
<http://depts.washington.edu/mchprog/welcome.html>

Calendar

May 21–23, 2003, Emerging Opportunities in Health Promotion and Health Education, San Diego. Contact Assn. of State and Territorial Directors of Health and Public Health Education, www.astdhphe.org

June 18-20, 2003, SOPHE 2003 Midyear Scientific Meeting, “Spicing Up Health Education: Recipes for Innovative Approaches and Effective Practices,” Las Cruces, NM, www.sophe.org

June 19-21, 2003, Meeting the Challenge of Healthy People 2010: Preventing and Controlling Asthma, Washington, DC, www.asthma2003.net or Catherine Porterfield 202/973-8679.

Online CME sites

Public Health Foundation Clearinghouse - www.TrainingFinder.org

Cyberounds - <http://www.cyberounds.com>

CME CE - <http://www.cme-ce.com/>

MedLecture.com - <http://www.medlecture.com>

University of Florida - <http://www.medinfo.ufl.edu/cme/cme/modules.html>

University of Wisconsin - <http://www.cme.wisc.edu/online/coursepage.html>

CME Gateway.com - <http://www.cmegateway.com/>

Medscape Online CME Center - <http://www.medscape.com/Home/CMEcenter/CMECenter.html>

American Academy of Family Physicians - <http://www.aafp.org/cme/>

American Medical Association - <http://www.ama-assn.org/cmeselec/cmeselec.htm>

The Teletraining Institute, <http://www.teletrain.com>

Additional Telehealth Resources

Health Resources and Services Administration - <http://telehealth.hrsa.gov/>

Telemedicine Today - <http://telemetoday.com/buyersguide/bghome.htm>

Center for Telemedicine Law - <http://wwwctl.org>

Association of Telemedicine Service Providers - <http://www.atasp.org>

American Telemedicine Association - <http://www.atmeda.org/>

Telemedicine Information Exchange - <http://tie.telemed.org/>

Telemedicine Journal - <http://www.liebertpub.com/>

Telemedicine Today - <http://www.telemetoday.com/>

National Library of Medicine/Grateful Med - <http://www.nlm.nih.gov/databases/freemedl.html>