

Telemedicine saves dollars and makes sense for Alaskans

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What could one do with an extra \$10 million dollars? That's the amount experts say Alaskans will save this year alone in travel expenses by taking advantage of telemedicine services around the state.

Imagine a single parent living in a small rural Alaska community whose child is having chronic ear aches. The only medical care available is a clinic that offers basic services and certainly no ear, nose, and throat specialist. The child's pain worsens with each successive occurrence despite attempts to relieve the pain with pain medication.

If that community's health facility does not have access to telemedicine services and equipment, the parent would travel by boat, snow machine, or small plane to a larger transportation hub, fly on a commercial airline to Anchorage or Fairbanks, pay for housing and food while in the city, go to multiple appointments with various doctors, and possibly have to return home for a time before the child is able to be scheduled for surgery. The parent would then incur the costs of a second trip to town on top of the first. The biggest danger in a situation like this is that the illness goes untreated and the child loses his or her hearing. Or the cause could be a simple ear infection that responds to antibiotics. Breaking the bank only to find out the cure costs less than \$100 isn't the best method of health care.

The picture will be very different, however, if the small rural community does have access to telemedicine services and equipment.

The parent and child visit the local health provider who gathers as much data as possible about the child's case. The process includes using peripherals attached to a portable telemedicine cart to take a high resolution photo of the ear canal and tympanic membrane. A history of the child's symptoms is included as text, and the combined information is digitally stored as a case and then forwarded to an ear, nose, and throat doctor in an urban region via Internet connection. The doctor receives an email that a new case needs attention. He or she reviews it and sends back a recommendation that may or may not include a trip to town for an in-person visit or for surgery. The parent knows within a day, and many times within hours, what the verdict is. If the doctor determines that the case is easily remedied right there in the village through, perhaps, a course of antibiotics, the child's pain is relieved sooner, and the parent saves an enormous amount of money, worry, and time away from work.

Leaders in Telemedicine

The Alaska Native Tribal Health Consortium (ANTHC) is at the forefront of telemedicine in the 49th state and beyond. ANTHC is a nonprofit health organization that provides statewide services in medical care; operates the Alaska Native Medical Center hospital in Anchorage; focuses on construction of water, sanitation, and health facilities in rural Alaska; and works closely with local, state, and federal

partners to its meet its vision that Alaska Native people are the healthiest people in the world.

ANTHC developed the Alaska Federal Health Care Access Network, or AFHCAN, whose mobile telemedicine carts are a combination of off-the-shelf hardware and specifically designed software that have been in use now for over a decade across Alaska as well as nationally and internationally.

Created using AFHCAN's tConsult Cart store-and-forward interface, cases may contain textual information and data from biomedical peripherals, including a wand-like dental camera, video camera, otoscope (for ear, nose, and throat issues), tympanometer (ear issues), vital signs monitor, spirometer (measures lung function), electrocardiogram, stethoscope, and scanner.

Using the tConsult Web interface, health care professionals are able to view the data and respond to the case using a standard PC or MAC workstation.

Both tConsult user interfaces are user-friendly, require little bandwidth, and are used to network with larger health care centers for consulting, video teleconferencing, and referral management. ANTHC's chief information officer, Stewart Ferguson, PhD, was key in developing AFHCAN.

"If you can use [Microsoft] Outlook," says Jordan Berg, telehealth coordinator for the Alaska Native Medical Center, "you can learn this software."

AFHCAN provides training on its hardware and software systems with the ability to tailor forms and other specifics to each individual organization that uses it. The training program has been accredited by the American Telemedicine Association.

There are currently more than three hundred AFHCAN telemedicine carts in Alaska, about one hundred in the Lower 48, sixty-five in Greenland, forty-five in the Maldives, and several more in Ireland, Greece, Spain, Panama, and Canada.

What Telemedicine Can Do

Defined by the American Telemedicine Association, telemedicine is "the use of medical information exchanged from one site to another via electronic communications to improve a patient's clinical health status. Telemedicine includes a growing variety of applications and services using two-way video, email, smartphones, wireless tools, and other forms of telecommunications technology." And although telemedicine is similar to health information technology, health information technology usually refers to electronic medical records and related information systems; telemedicine refers to the actual delivery of remote clinical services using technology.

Besides saving millions of dollars each year in travel expenses for Alaskans, telemedicine helps patients get better care faster.

"It's an opportunity to serve our customer owners for higher quality care," says Susan Davidson, LPN, telehealth coordinator for ANTHC. "What we do is all about quality patient care. The benefits are cost savings and safety."

Telemedicine works very well with visually based health issues such as counseling, speech-language pathology, dermatology, wound care, and ear, nose, and throat issues. Telemedicine cart peripherals that provide doctors and specialists with clear images of a patient's teeth, inner ear, skin conditions, and other areas make it easier to identify things like tooth decay, ear infections, and rashes

respectively, and making a diagnosis possible without a costly and time-consuming in-person visit.

Video teleconferencing is gaining a foothold in Alaska as a health care tool, too.

Brian Wregglesworth, director of product development for AFHCAN, says that when his team was comparing companies that offer teleconferencing services, "Vidyo quickly bubbled to the surface" for quality. Testing offered clear video with health providers in several locations connected simultaneously for hours and no dropped connections. Vidyo is a New Jersey-based company with national and international offices.

With 75 percent of Alaska's communities not connected by a road to a hospital, video teleconferencing, or VTC as practitioners call it, is an invaluable alternative to an old fashioned in-person visit. Doctors and patients can communicate in real time as if in the same room, and the high-quality video helps doctors assess patients through visual and auditory details as well as with the written descriptions, photos, and other digital data collected in the case. Using VTC, a doctor can, for example, hear and assess a patient's cough, observe visually how wound care has progressed, or counsel a person suffering from depression. These virtual doctor visits are HIPAA-compliant, convenient, and interactive.

Though VTC requires higher bandwidth than the store-and-forward system, Alaska's telecommunication companies are very supportive of telemedicine efforts across Alaska. Communications technology in rural communities has greatly improved in recent years, and store-and-forward integrates easily with VTC across a spectrum of platforms.

Internet service providers "work hard to get ANTHC more bandwidth," says Berg.

For example, GCI completed the first terrestrial broadband network connecting sixty-five communities in Southwest Alaska in 2011. In 2012, microwave towers and remote repeaters were added, as well as broadband internet service to homes in the region. GCI is working on more of the same in Northwest Alaska.

Gene Peltola, president and CEO of Yukon-Kuskokwim Health Corporation, says the addition of GCI's network "made our day out here."

Every regional and sub-regional clinic in the Yukon-Kuskokwim Health Corporation area has a telemedicine cart and VTC capability. Peltola sees the future of telemedicine in Alaska as improving in capacity and technology as it evolves. What used to take days now takes just minutes via the AFHCAN system. For example, he says, it used to take ten to twelve days for a mammogram to be read. Now the results can come back to the patient and her health care provider in ten minutes.

Insurance companies have been slow to cover these virtual doctor visits via telemedicine systems. Live video teleconferences used in medical care in the Lower 48 are reimbursed but not yet in Alaska. Medicare and Medicaid, however, do reimburse for store-and-forward "visits." Private insurers are slowly responding to this new system of health care.

In April of this year, State Senator Fred Dyson introduced SB80 that would allow licenses for out-of-state physicians to practice telemedicine in Alaska under certain circumstances; this bill also addresses insurance coverage for telemedicine. The bill is currently in the Senate Labor and Commerce Committee.

Who Does Telemedicine Help?

It's not just Alaska Native populations reaping the benefits of telemedicine systems in Alaska. The Veterans Administration has partnered with non-tribal community health centers and community mental health centers to provide services for veterans. Alaska Psychiatric Institute is using telemedicine for follow-up care. And the State of Alaska's Senior and Disabilities Services uses telemedicine for assessments of personal care assistant waiver recipients.

Susan Morgan, public information manager for the state's Department of Health and Social Services, says there are a multitude of uses for telemedicine across Alaska. They include, but aren't limited to, cross-division/discipline consultation related to child protective services; independent living transition planning into adult services with youth in rural locations; diabetes health management and patient self-management; psychiatric nurse consultation with psychiatrists and other medical professionals regarding medication monitoring and follow-up; mental health crisis stabilization within juvenile justice; and informatics, disease reporting, monitoring and surveillance, data collection, analysis, and emergency response.

Challenges of implementing telemedicine in rural Alaska include hidden costs such as switching a paper system to an electronic system, training, resistance to learning a new system, and creating new workflows and business processes.

AFHCAN's training programs reduce resistance to new technology and procedures. Courses offered include train the trainer, clinical administrator course, super user course, and technical training for IT personnel. As soon as health care providers adopt the new systems, says Berg, they are typically thrilled with them and appreciate the time it saves them as well as the higher level of care their patients get.

Telemedicine in Action

A case study published by Vidyo in 2012 illustrates how much Vidyo has helped rural health providers.

Dr. Ella Derbyshire, medical director of the Maniilaq Health Center in Kotzebue, is quoted as saying, "I'm in Kotzebue and my patients are in Selawik, which is about ninety miles away. With telemedicine I can look inside of a child's ear to see if they have an infection, I can oversee a resuscitation procedure or the birth of a baby via Vidyo. It's a very important element to providing quality medical care here. Before telemedicine, if we had an emergency in the village--let's say a snow machine crash--we would not be able to adequately assess the patient's condition. We would have to rely on a community health aid practitioner to describe the patient's condition to determine if this is someone who needs to come into Kotzebue ... or can stay where they are ... or needs to be transported by plane directly to the medical center in Anchorage if they're so acute that they need to see a surgeon immediately."

Derbyshire says that "over Vidyo you are able to make eye contact with the patient so they can see that you're giving them 100 percent of your attention and they are actually relating to you via that eye contact. You ask them a question and they respond immediately. You can ask them to 'show me where it hurts' and you can see where they're pointing to, you can discern if they are in pain or if they don't seem all that uncomfortable. You really make a connection and have a better feel for what's going on and the patient seems to understand that. It's so much better than communicating over telephone or email ... it's real, it's personal, and it's immediate."

Susan Sommer writes from Eagle River.