HARNESSING ICTS: A CANADIAN FIRST NATIONS EXPERIENCE

K-NET CASE STUDY ON HEALTH

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IMPROVED HEALTH SERVICES: A COMMUNITY PRIORITY

In 1998, Keewaytinook Okimakanak (KO) chiefs visited a hospital in Ottawa where they observed a videoconference between a cardiologist and a patient in the Northwest Territories. They saw firsthand how the doctor could listen to a heart beating in a clinic thousands of kilometres away – and they knew that this was something they needed for their communities.

Although each of the KO communities has a medical facility, professional medical services are often provided by doctors and nurses who fly into the communities on an occasional basis. Medical emergencies usually require a medical evacuation ("Medievac air ambulance"), where the patient is transported by air to the closest hospital hundreds of kilometres away. An emergency air ambulance flight from Fort Severn costs in excess of CAD$6,000 per flight, while return airfare for a medical visit in a larger community costs more than CAD$1,000.

When K-Net coordinated a First Nations telecommunications consultation in 1999 to explore how the communities wanted to use broadband technologies, all of the KO communities agreed that improved health services were highest on their list of priorities.

> *"The common priority for broadband development and implementation was health care services. The need for distributed health informatics was expressed across sectors and was described in several forms. Most often, people talked about the tele-consultative opportunities that network access could bring. Another aspect of service was access to continuing medical education. Similarly, health care professionals and community people identified ways that broadband services might let them share best and local practices with other communities."* [1]

This photo is from a planning session in Keewaywin in 2001 where health stakeholders came together to brainstorm on goals and services. The objectives appear in large circles: "community awareness"; "healthy children"; "nurse present at all times"; "non-violence in homes". The small circles outline programs to reach those objectives. The yellow notes show the indicators that will confirm that the objectives have been met.

1 *Keewaytinook Okimakanak First Nations Telecommunications Consultation Report.* May 1999. http://smart.knet.ca/archive/documents/CONSULT.html

LINKING WITH THE TELEMEDICINE NETWORK

In early 2001, KO entered into a partnership with the Northern Ontario Remote Telecommunications Health (NORTH) Network, a telemedicine initiative that had been underway in other larger northern centres that already had the technical capability to deliver health services through a broadband network. Working with the NORTH Network and other partners, KO developed the Northern Ontario Telehealth pilot project, funded by Health Canada, the Federal Economic Development Initiative for Northern Ontario (FedNor) and other partners.

The KO telehealth project uses telemedicine workstations and cameras to improve First Nations access to health professionals and health programming. The specific objectives of the telehealth project are to:

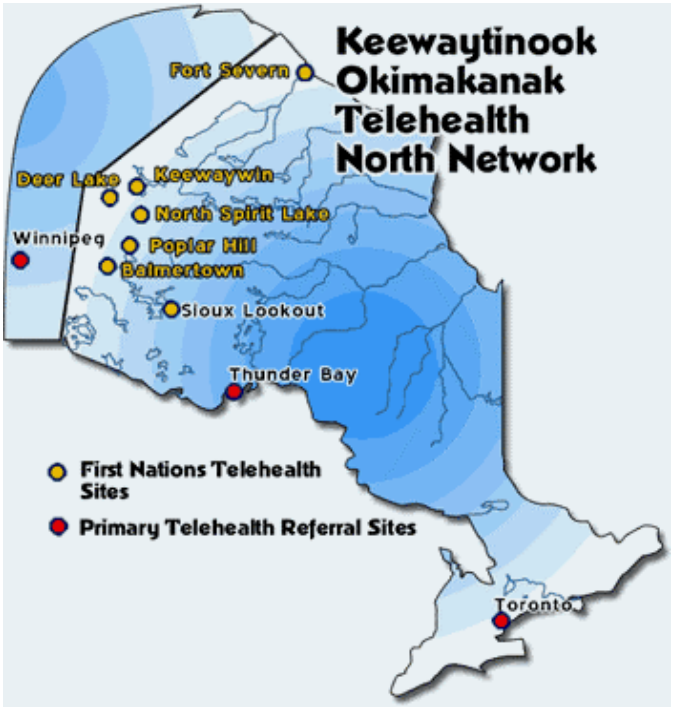
1. Improve access to specialty care
2. Reduce costs associated with long-distance travel
3. Increase access to continuing medical education and reduce professional isolation
4. Program evaluation to aid in planning a provincial telehealth network [2]

As the KO communities gained access to high-speed Internet, they also acquired the ability to participate in an expanded NORTH Network. This has allowed them to link with medical professionals at regional facilities like the Sioux Lookout Zone, Thunder Bay Regional Hospital, and the Winnipeg Health Sciences Centres. They can also access specialists as far away as the Sick Children's Hospital in Toronto (about 2,000 kilometres away).

The network that makes these new community-based services possible is state-of-the-art. (See also Network Development Case Study) Keewaytinook Okimakanak Telehealth "…boasts an integrated IP environment for dynamic (data/voice/video) health services delivery. The telehealth initiative is delivering a variety of telemedicine applications with more planned over the next two years...

A three-year business case to expand the KO Telehealth demonstration project and its services to other remote First Nations across the Sioux Lookout Zone region in Northwestern Ontario was recently approved under the Health Canada Primary Care Health Transition Fund." [3]

In each of KO's remote fly-in communities, there are now telehealth workstations linked to a private and secure network. They have remote diagnostic tools like a digital stethoscope; an otoscope to examine ears, eyes and throat; a document camera for sending x-rays for diagnosis; a patient microphone; a video monitor; as well as the videoconference unit which is used for consultations and telepsychiatry sessions. An uninterruptible power supply (UPS) unit provides up to one and a half hours of use in the event of a blackout.



Community members have been trained to be the telehealth coordinators, and although they do not have formal medical training, they have been trained to use the telehealth tools to link patients with medical experts in hospitals in urban centres. In some cases, these telehealth coordinators have received assistance from younger peo-

2 For more information, see http://telehealth.knet.ca
3 2002-03 Annual Report for the Kuh-ke-nah Network of Smart First Nations Project

ple in their communities on using computerized equipment, and technical staff from the K-Net e-Centres[4] are essential resource people to ensure that the network operates efficiently.

The local youth have been learning about computers and the Internet in their classrooms and through their own experimentation with the new technologies, and they are teaching the older generations how to use these tools.

"One of the biggest obstacles I have is computer skills because I never really worked with computers before – but I am very lucky in that capacity because my daughter and my friend's daughter who is eleven years old have been able to help me with it. When I am stuck, they come to the office and they show me how. They are more like my teachers on the computer… We are just getting trained on the stethoscope for the cardiac machine and… I am still not up to it because it is computerized too – I am not too comfortable with the computer. I am scared I may make a mistake and then what I send out there will be all mumble jumble." – Julie Meekis, Telehealth Coordinator

Local health workers have new roles as intermediaries between sources of information, medical doctors, and community members' needs. They are key players in the telehealth system because of their strong community links, their understanding of the realities facing their people, and their communication skills. For the most part, the elders in the KO communities do not speak English, and they are often the most in need of medical care. They are also least willing to travel by air to receive medical treatments. Although they stand to benefit the most from telehealth, community elders are also least familiar with modern technologies, and do require support and opportunities to experience it in a safe and secure environment.

"With the elderly, I find that I really have to coach them to come in, but once they realize what goes on, they say like the other people that it is good that we do not need to go out of the community. A lot of those elders, I think the only time they go out is for surgery, but other than that, they get seen here by the nurses or by telehealth with the doctor in Sioux Lookout."

– Julie Meekis, Telehealth Coordinator

TELEHEALTH OR TRAVEL

"We had a middle-aged female patient come in with a diabetic ulcer on her leg that wasn't healing. We used the telehealth to let the doctor have a look at the leg and actually see what was going on, and he was able to prescribe a course of treatment that was effective in healing it. It took a while, but it did work and prevented the client from having to travel out, wait, see a doctor, come back, and then start treatment."[5]

– Bonnie Hodgson, Nurse

One of the main benefits of telehealth is the reduced travel burden on individuals and families. Rather than having to fly out on a milk run[5] for a diagnosis or follow-up care, the telehealth tools can link patient and doctor to assess the patient's condition and determine whether there is a real need for flying out. During the year between April 2001 and March 2002, over 60% of all patient flights out of KO communities to the Sioux Lookout Health Zone were for consultations and follow-up procedures. Although telehealth is not the solution for all medical needs, research by the Ontario Heart Institute, NORTH Network in 2002 determined that 15-20% of those patient consultations and follow-ups could be conducted by telehealth.[6]

4 E-Centres provide public access to networked computers. E-Centre staff work with the community to help people make use of the available technologies and also work to keep the entire network running throughout the community and in the different buildings. The e-Centre is the community data network hub providing direct access services to all the services available on the high-speed data network.

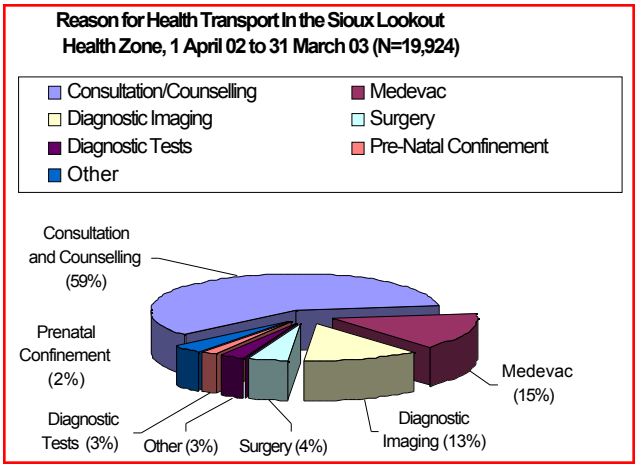
5 "Milk run" is a colloquial expression for a trip that involves many stops in many places, and refers back to the days of home milk delivery.

6 "The KO Telehealth Vision", KO Telehealth Migration Workshop, Oct.23, 2002 Presentation.

Even with the important contribution of telehealth, however, medical transportation costs in the North are expected to continue rising due to several factors:[7]

- growing population in the First Nations communities
- a lower overall health status in this population
- higher rates of hospitalization due to lack of access to primary health care services
- prevalence of chronic diseases and disorders (diabetes, fetal alcohol syndrome)
- increasing transportation costs
- increasing retention and recruitment costs for health care workers

In 2001, First Nations Inuit and Health Branch (FNIHB) reported patient and escort transportation costs of more than $8.3 million for the Sioux Lookout Health Zone (SLHZ). In the 2001-2002 fiscal year, this cost increased by more than 30% to $12.2 million. NIHB costs stabilized in fiscal year 2002-2003 at $12.5 million. By the end of the third year of the regional telehealth initiative, it is estimated that telehealth will be used for up to 20% of all client sessions. Statistics from Health Canada First Nations and Inuit Health Branch indicate that annual transportation savings because of the increased use of telehealth will be at least $2.44 million.[8]



The chart (in previous column) shows that the bulk of transports for medical appointments are to meet with specialists and general practitioners. The NORTH Evaluation report indicates that patient satisfaction for telehealth services was 94%.[9]

TELEPSYCHIATRY

"We need to find ways to use telehealth more. We have a Mental Health Consultant who's hired to come in here to the community every month and it's costing us a lot of money to bring her in… There's a waiting list, and when she comes in, she sees about 45-50 clients in 5 days." – Daisy Kabestra, Health Centre Director

The telehealth pilot project includes a telepsychiatry component for all the KO First Nations. The rationale for this program is the following:

"The recent increase in the demand for mental health care among remote northern First Nations communities has overwhelmed existing services to the extent that long waiting periods must be endured before counseling can be provided. A telepsychiatry program was conceived as a means to overcome the economic and geographic barriers to accessing mental health care imposed upon rural and remote First Nations communities. Its purpose was to supplement existing mental health services and thereby reduce the long periods spent awaiting care. The pilot project was undertaken to test the viability of such a program. Video, telecommunication and digital information technologies were combined to create live-time audio-visual links between First Nations clientele within their home communities and a psychiatrist in Winnipeg, Manitoba. During 1.5 hour videoconferencing sessions, the psychiatrist provided assessment, treatment and consultation services."[10]

7 Source: Dr. Brown's presentation on the NORTH Evaluation.

8 *The KO TeleHealth/North Network Partnership Expansion Plan Proposal*. May 23, 2003

9 NORTH Network, 2000. *Evaluation of the Demonstration Project 1998-99: Northern Ontario Remote Telecommunications Health Network*.

10 *Evaluation of the Keewaytinook Okimakanak Telepsychiatry Pilot Project*, 2002. Centre for Health Services and Policy Research, Queen's University, Ontario, http://knet.ca/documents/KO-Telepsychiatry-Report-2002-12-21.pdf (pp. i-ii)

The telepsychiatry project has involved a lot of planning between the chief, council and staff in each of the KO First Nations, staff at Keewaytinook Okimakanak, the project coordinator, and psychiatrists. The following is a brief list of the activities that have occurred:

- community orientation
- community education and awareness
- determining effective structures, procedures and protocols
- screening clients for appropriateness of the telepsychiatric consult medium
- organizing and implementing the video consultations
- evaluation of acceptance by clients [11]

To appreciate the cost-effectiveness of such a program, it is important to understand how much psychiatric services cost, and who pays for them:

While considerable savings would accrue through the implementation of a telepsychiatry program, there would also be significant transfers of economic burden within the overall system. Savings of $2,148 per client-session, in the form of travel and accommodation no longer required by the client and escort, would be realized by Health Canada.

However, the client's home community could expect its share of the overall cost to increase, from about $170 to between $305 and $580 per client-session, depending upon whether service organizers determined whether the services of a Mental Health Consultant would continue to be required, or that much of this work could be undertaken by a community's Mental Health Worker. It is also possible that, in either case, a considerable portion of this direct cost might be offset by the re-allocation of already budgeted resources.[12]

The K-Net system is also being used in many informal ways to improve the mental and emotional health of KO communities. The ability to access information and discuss personal issues in confidence with a professional outside the community has widened individual support networks, and people are developing new coping skills. This society is dedicating enormous effort to healing the effects of abuse in residential schools.[13]

In the past, elders recount that the traditional society dealt with problems "openly" through communal problem-solving. Today, many people prefer a combination of tools; sometimes the traditional healing circle is complemented with individual counseling with an outsider using chat groups or email, and sometimes online supports are used, such as the Turning Point site (http://www.turning-point.ca).

"A youth was going through a crisis in her own life and she wasn't sure how to handle it, so she met this other person who lived in Poplar Hill… on K-Net chat, they were able to have their own conversation, and that person was able to encourage her to keep on living and always do the best she can."

– Darlene Rae, e-Centre Manager

BENEFITS TO HEALTH PROFESSIONALS

K-Net's specialized telehealth facilities assist health professionals in providing more responsive and specialized health services. Another benefit, however, comes from their access to broadband services in general, which allows them to link with other medical practitioners and specialists, as well as friends and family. Reduced isolation for the KO communities has proved to be a factor in both

11 http://health.knet.ca/telepsychiatry.html

12 Adapted from: Evaluation of the Keewaytinook Okimakanak Telepsychiatry Pilot Project, 2002, Centre for Health Services and Policy Research, Queen's University, Ontario, http://knet.ca/documents/KO-Telepsychiatry-Report-2002-12-21.pdf (p.iii)

13 For background on the residential schools and their impact on First Nations, please refer to http://www.turning-point.ca/index.php/article/frontpage/1

recruiting and retaining staff. The ability to communicate freely through email and videoconferencing has allowed health care workers to build a support network, which helps them both professionally and personally.

Better and faster access to information has also been important for health care professionals affected by K-Net. Mental health practitioners have discovered that they can search the Internet for advice, insights and information that they can apply quickly and efficiently to assist them in their work. Primary health workers have found much needed information on nutrition, diabetes prevention and prenatal care, as well as a myriad of other topic areas to support the effective delivery of their programs.

These online tools are offering more opportunities for health professionals to stay in touch, share information and advice, and improve their knowledge. A new virtual medical school for the whole of Northern Ontario, the Northern Ontario Medical School (NOMS) is a joint venture of Laurentian University in Sudbury and Lakehead University in Thunder Bay (see http://www.normed.ca). NOMS will have multiple teaching and research sites distributed across northern Ontario, including large and small communities. The KO communities are well-positioned to benefit from any programs or improved health outcomes initiated by NOMS thanks to K-Net's technical and organizational infrastructure.

INFORMATION AND COMMUNICATION FOR COMMUNITY HEALTH

Family ties in the North are strong, as in most traditional societies. In the recent past, family members who traveled away from their community for medical treatment or long-term care would have been limited to radio communication and, in some cases, phone calls to stay in touch with family members. Now, even when people cannot travel due to old age or high costs, they can stay in contact over great distances using K-Net tools like videoconferencing, email and chat. Families in times of stress can connect with loved ones. Among the most popular K-Net sites is http://hosting.knet.ca/~mothers/fortsevernpage.htm where photos are uploaded of new mothers and their babies.

"The computer to me is vital – there is all kinds of information, teaching and learning programs…If you want to know anything about stress, it will be on the Internet…A couple of days ago, I had a youth come into the office. We used the computer to look up treatment homes… like what programs the treatment home had to offer. Anything you want to know, you can get from the Internet…from anger management, depression, stress, different kinds of phobias, your research is on the computer."

– Lawrence Mason, Mental Health Coordinator

By improving access to health information, K-Net is having significant impacts on these remote First Nations communities. Community members are actively harnessing the information tools available to them, conducting research, educating themselves and sharing this knowledge with others. The long-term impacts of this influence will take time to measure, but from personal accounts, much is being learned.

MIGRATION OF TELEHEALTH SERVICES TO OTHER FIRST NATIONS COMMUNITIES

The telehealth initiative is set to expand to more First Nations communities in northern Ontario, and the growing coverage of the services will make it increasingly attractive to Health Canada to invest in the system as a means of providing improved medical programs and services to the North. The Keewaytinook Okimakanak Health team, working with K-Net and other partners across the region, is now pursuing the following activities:

- Expand the telehealth sites to include all the First Nations in support and development of the Sioux Lookout Health Zone (a comprehensive business plan has been submitted to Health Canada for funding and is now being considered under the Primary Care Health Transition Fund (the aboriginal envelope);
- Work with the provincial government Integrated Network Project (INP) to ensure Smart Systems for Health (SSH) is able to purchase connectivity services from K-Net;
- Development of the Centre of Innovation for First Nations IT Services and Research in Red Lake to ensure ongoing research and development resources for the operation of these broadband services and projects including telehealth.[14]

Clearly, the K-Net services that provide telehealth and telepsychiatry are giving people in KO communities new choices. The people are learning about what is possible and how to apply these tools to benefit their lives. Having been faced for so long with a lack of access to health programs and services, it may be a challenge to integrate so many new technologies so quickly, but the K-Net communities are adapting well.

14 K-Net. 2003. *The Kuh-ke-nah Network of Smart First Nations Demonstration Project Annual Report* (p.13)

Artists:

The six First Nation artists kindly agreed to support the use of their copyrighted art work to be included in this publication. They include Kevin Belmore, Derek Harper, Abe Kakepetum, Tim Tait, Alice Williams and Saul Williams. Their contact information is included at the end of each section of the document.