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Community Services in the 21st Century:
First Nations & Inuit Telehealth Services

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Anahim Lake, BC - Ulkatcho Band
Fort Chipewyan, AB - Mikisew & Athabasca Cree First Nation
Southend, SK - Peter Ballantyne Cree Nation
Berens River, MB - Berens River First Nation
La Romaine, QC - Montagnais de Unamen Shipu

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In the February 18, 1997 Budget, the Government of Canada announced the creation of the Health Transition Fund (HTF). This Fund, responding to a recommendation of the National Forum on Health, supports large-scale pilot projects in key areas of health system modernization. These projects are the basis for evaluating what should be added to, or refined in, the public health care system of the future. The Fund was a three-year federal investment of $150 million to support national, provincial and territorial projects contributing to Medicare modernization. Decisions on projects and priorities were made by Canada's Ministers of Health.

This Final Results Report is an amalgamation of experiences and lessons learned by participants in the 2 million dollar National First Nations Telehealth Research Project (HTF402 − September 1998 - March 2001), mainly of five, isolated First Nations communities. It also contains evaluation outcomes collected and analyzed by an independent evaluation team. The Report has been reviewed by each community project team, as well as by the project Steering Committee and Peer Review Team.

Telehealth is most commonly defined in Canada as "the use of communications and information technology to deliver health and health care services and information over large and small distances".[1]

Although the potential of telehealth has been explored in Canada for over four decades, the boom in telehealth activity began four to five years ago, prompted by important federal initiatives and the convergence of key drivers (e.g. health care reform, increased capacity of information and communication technology etc.). Many provincial and territorial projects and networks emerged during this time. While the visions of these initiatives are very diverse, they all emphasize access to better health regardless of location through the use of information and communications technologies as enablers to enhance health service delivery and share health information and expertise.

It would seem that, since the impetus for telehealth diffusion in Canada is the need for improved access to health services, First Nations and Inuit communities are a natural environment for telehealth implementation if the the following conditions are taken into account:

1) over 1/3 of First Nations and Inuit communities are located in isolated locations;

2) significant inequities in health outcomes among the Canadian and Aboriginal populations have been documented;

3) telehealth has the potential to address many priorities in First Nations health identified by Health Canada and the Assembly of First Nations.

> Considering the above, the National First Nations Telehealth Research (hereinafter "National Project") was proposed to the Health Transition Fund in order to achieve the following overall goal:
>
> > To test whether telehealth improves access to high quality health care and improves the delivery of health services in a cost-effective manner in five isolated First Nations communities across Canada.

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1   Jocelyne Picot, *Telehealth Industry: Part I - Overview and Prospects* (Ottawa: Industry Canada, 1998) 1.

The National Project involved the planning, implementation, operation and evaluation of telehealth in five First Nations communities: Anahim Lake (British Columbia), Fort Chipewyan (Alberta), Southend (Saskatchewan), Berens River (Manitoba) and La Romaine (Quebec). These communities were selected by the First Nations and Inuit Health Branch's (FNIHB) regional offices because they satisfied the following criteria:

➢ remote, isolated or semi-isolated community;
➢ Chief and Band Council support of the project;
➢ Community Nurse and Health Director support of the project;
➢ support from FNIHB's Regional Nurse/Physician;
➢ support from Regional Director.

While the design of each community telehealth research sub-project was adapted to the needs and culture of the community at hand, the National Project was implemented in eight main phases: (1) drafting of the Accountability Framework; (2) needs assessment; (3) applications selection; (4) sending out Requests for Proposals and selecting the vendor; (5) negotiating agreements with provincial health and educational facilities; (6) securing access to the required telecommunications infrastructure; (7) installation/testing of the equipment and training of personnel; (8) evaluation and ethics review.

The National Project is a pioneer in the implementation of telehealth in First Nations communities. Its design and process are unprecedented and, for this reason, it encountered many issues and obstacles that had never before been tackled. Some issues/obstacles compelled the project to deviate from its initial methodology in the following ways.

➢ Two project extensions were granted.
➢ Implementation of the Anahim Lake telehealth project was delayed until April 2001 due to the difficulties experienced in obtaining the required telecommunications infrastructure.
➢ The La Romaine telehealth project had to switch from a real-time videoconferencing system to a store-and-forward system to deliver its selected telehealth applications due to the high cost of securing high bandwidth;
➢ Some selected telehealth applications could not be implemented due to limits in financial resources and human resources (i.e. limited scope of practice, temporary staffing and time management).
➢ Staff turnover created disturbances in all five community telehealth projects, ranging from low usage of the equipment to the need for additional training.

These deviations did not hinder the success of the project. Rather, they contributed many lessons learned, valuable outcomes of the National Project.

With respect to experiences of the National Project, four main types of project outcomes are highlighted:

1. **Lessons Learned**;

2. **Critical Success Factors** for any new telehealth implementation in isolated First Nations and Inuit communities, derived from the lessons learned;

3. **Evaluation Results**, compiled from analysis of the data collected during the operational phase of four community telehealth projects;

4. **Recommendations**, based on a review of outcomes identified above.

1.   Lessons Learned

The main lesson learned during the National Project is the realization that a variety of elements can potentially guarantee or hinder success in adopting, implementing and sustaining a telehealth project. Lesson learned were categorized according to three elements, critical to achieving success if they are concurrently taken into account:

Telehealth Element A: Human Resources	
Telehealth is not a panacea, it cannot do all things for all people. It is for the purpose of conquering the "panacea" vision that community expectations regarding the potential of telehealth should be managed. A detailed communication plan is an important step in the implementation process. The success of any telehealth project will largely depend on human interaction and stable/sound relationships rather than on interaction with the technology.	*"Getting your people to buy into the IDEA of Telehealth."*

Telehealth Element B: Financial Resources	
There are many anticipated and unanticipated cost items. Start-up and operating costs should be distinguished. Sources of sustained funding need to be identified to ensure the long-term viability of telehealth services.	*"Finding the money to do it."*

Telehealth Element C: Technical Resources	
If technology companies come knocking on the door, it is important to be informed of all the steps and considerations involved in telehealth implementation, many of which are not technology related. Although important, technology is often the last piece of the implementation puzzle.	*"Putting the tools in the hands of those who need them."*

2.   Critical Success Factors

From the many lessons learned, it is possible to extract a list of Critical Success Factors for potential future telehealth implementation in First Nations and Inuit communities. These relate to key elements in the implementation process, namely community, funding, management, health care/educational practice, technology and policy.

3.   Evaluation Results

The National Project hired independent project evaluators to create a framework and tools, in consultation with community project teams and provincial health care and educational facilities. The evaluation addressed three main questions pertaining to the implementation and impacts of telehealth in the communities, specifically to (1) the impacts of telehealth on patient and community access to needed, quality care; (2) the role of telehealth in health services delivery, including cost-effectiveness; and, (3) the linkages created through telehealth with existing health resources. Several data collection methods were used:

- ➤ ongoing monitoring of frequency, nature and implications of telehealth usage through forms completed by staff in both the community and referral sites;[2]
- ➤ patient satisfaction assessment, through a total of 110 questionnaires completed by patients using telehealth in each community;
- ➤ 43 qualitative interviews with 65 key informants including telehealth coordinators, Band and nursing station managers, nursing staff, health centre board member, elders, patients (in one community only), tertiary care providers and management, provincial telehealth representatives, and Health Canada representatives.

A case study of each community was produced based on the above data. A cross-case analysis summarized below examined the findings in light of the evaluation questions, the consequences of telehealth in relation to costs, and the main lessons learned.

Access to needed, quality care

To what extent do the telehealth applications respond to community needs, as defined by the needs assessments?

In general, telehealth applications responded to community needs, although this was clearer in some communities than others. At issue are not only the definition of needs, but also how the technology and organizational arrangements can respond to needs. For instance, telehealth can be used to address the issue of diabetes within a community in a number of ways, with some ways being more easily integrated than others.

To what extent do patients and families find each telehealth application acceptable?

It seems overwhelmingly clear that, once initial concerns are overcome with a positive experience, telehealth is acceptable to the vast majority of patients and families who use it. Consistent with the findings in the research literature review, satisfaction levels are high, and almost all patients would use the system again. In addition, although the evaluation design did not permit assessment of the views of those patients who did not use the system, refusals to use the system were infrequent. It should be noted, however, that the quality of many patients' experience with telehealth is due to the quality of the care provided by nursing station staff and the relationships they have with them; when telehealth provides a new service, what is most salient to many patients is not the new technology but the new relationship and the new care received.

To what extent has telehealth improved access to needed, quality care?

The extent to which telehealth has improved access to needed care in the community depends on the extent to which it was used and integrated into ongoing health service delivery. When usage and integration were higher, telehealth certainly improved access to care within the community. Moreover, the quality of care provided was, insofar as can be estimated by this study, of quality equivalent or better to standard care. These findings are consistent with the research literature examined.

To what extent are services provided through telehealth consistent with established means of improving patient health outcomes?

Insofar as can be assessed in this study, services provided through telehealth are consistent with established means of improving patients' outcomes. In the views of the health professionals consulted, in no case was telehealth seen as inconsistent with

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2   Over the evaluation period, information was received about 927 telehealth sessions involving 176 patients. The number of sessions per community varied from 40 to 755, and the number of patients seen from 17 to 59.

established professional practice guidelines. Moreover, data obtained from the encounter forms suggest that educational interventions delivered through telehealth to patients were generally consistent with established patient education guidelines, although some aspects were addressed more frequently than others.

Health services delivery

To what extent has telehealth use been organized successfully?

The successful organization of telehealth usage in this project varied among the communities, according to a number of factors. Key among these were the stability of staff during the implementation period and the quality of the relationships established with the remote referral centres. **Stable, committed staff in the nursing station was a key success factor for effective implementation of telehealth in these communities.** This is an issue that was not identified in the research literature, and may be unique to isolated communities.

To what extent have the professional skills and competencies required for telehealth been identified and successfully addressed through training?

The main issue with respect to the development of professional competencies for telehealth through training was the constant need to provide training to new staff members due to turnover. The adequacy of training received was also a result of the user-friendliness of the technologies involved. Training received for the interactive video-based systems was generally felt to be adequate partly because the systems were very easy to use; this was not the case for the store-and-forward system.

To what extent are telehealth applications used by eligible patients in the community?

It is not really possible for this evaluation to answer this question adequately, as little information was made available on the numbers of eligible patients (those with the health conditions which would make them candidates for using the available applications) who did or did not use telehealth during the study period. In some cases, it is clear that only a small fraction of eligible patients used the systems; while in others, the identification of new patents with health needs that had never before been addressed as a result of the implementation of telehealth suggests a high level of penetration.

To what extent does telehealth improve competencies and confidence of local health personnel?

In all communities, the implementation of telehealth brought new competencies to local health personnel, and in all cases, these were widely welcomed. Telehealth was seen as greatly improving access to outside expertise, reducing feelings of professional isolation, increasing confidence in judgments and improving the quality of patient care decisions made about cases in conjunction with remote experts. These results confirm those of existing studies in the area of tele-education for professionals.

How does telehealth affect staff workload, task allocation and professional practices?

When telehealth coordination responsibilities were assigned to a nurse in the nursing station who also had patient care duties, workload demand slowed full implementation. There were, therefore, advantages to assigning these to a separate individual, although it seems preferred that this person have some medical qualifications in order to facilitate communication with remote providers. Other impacts on task allocation seemed limited, perhaps due to the only partial integration of telehealth into some of the community's practices. To the extent that nursing station staff participate in continuing professional education using telehealth, their scope and quality of practice may be improved.

In terms of workload and practice shifts for remote providers, the overall pattern of responses would suggest that telehealth decreases efficiency. The appointments themselves are longer because of set-up time and perhaps increased attention to patients. The rate of patient no-shows also reduces efficiency and productivity for tertiary care providers. While, in many case,s this has not been an issue so far because of the pilot nature of the project, there are several indications in our data that institutionalization of telehealth will require attention to ensuring adequate compensation to remote partners for the loss of productivity – a critical issue compounded by the general scarcity of resources.

To what extent does telehealth result in cost increases, decreases or shifts for health service delivery at the community level?

Overall, the evaluation suggests that the net effect of telehealth is to generate greater access to care, thereby, increasing costs. Cost increases result both from increases in the numbers of patients receiving services — services are now available where none were before – as well as in the intensity of services delivered – patients, especially in some applications, are seen more frequently (regularly using telehealth) than they had been before. The increases in care provided are accompanied by increased indirect costs, over and above provider remuneration and telecommunications cost, in terms of auxiliary equipment supplies and maintenance, patient supplies and within-community patient transportation costs. In addition, some of the data suggest that telehealth sessions take longer than equivalent in-person sessions, thus reducing efficiency.

In terms of avoidance of patient transfers and their associated costs, the results suggest that telehealth will result in avoided transfers in about 30 to 40% of patient care utilizations. This is somewhat less than the rates that can be estimated from the few studies available in the literature, but not a striking difference. As a proportion of total telehealth utilization within a community, this rate will depend on the balance between patient care and other types of applications that the system is used for, notably continuing professional or community education. That is, the more a community uses its telehealth system for non-patient-care applications, the less its telehealth utilization will result in patient transfers. In addition, avoiding transfers seems to be more appealing to patients whose lives or health are most disrupted by leaving the community – elders and families with young children — and least appealing to those patients who are less inconvenienced by transfers and are, in fact, convenienced by them. When a community chooses applications that are concentrated on these two extreme age groups, the proportion of transfers avoided out of all utilizations may be expected to be higher than when a community chooses applications for health problems that affect its population throughout the lifespan.

What is the level of technical success of the platforms, applications and suppliers?

All communities experienced, at minimum, occasional technical problems, but these were resolved with adequate technical assistance in all but one community. In general, the interactive video platforms were found to be reliable and easy to use, although with occasional visual and sound quality limitations, depending on the application. Support provided by the three suppliers involved ranged from excellent to less than satisfactory and was a critical success factor in telehealth deployment.

Linkages among health resources

To what extent is telehealth appropriated, integrated and sustained as a part of the community's self-governed health care system?

The extent to which telehealth was appropriated, integrated and will be sustained varied greatly from community to community. In one community, appropriation and integration have exceeded both the community's and its partners' expectations, and sustainability and expansion of the initiative are almost certain. In the others, varying degrees of integration were associated with varying levels of community mobilization and support, stability within the community's health resources during the study period, technical success, and support provided by both existing telehealth initiatives and by the vendor. In addition, the capacity of the initiative to develop the committed, trusting relationships necessary to ensure good communication and problem-solving was critical to appropriation and integration. **Relating to this issue, real-time technologies and applications are advantaged over store-and forward systems.**

To what extent have the telehealth applications become linked to and integrated with provincial initiatives?

In those provinces where provincial initiatives exist, the communities became linked with them in accordance with the extent of their resources. Interoperability was not a barrier in any of these sites. These links provided access to a larger community of telehealth users, broader support and development from which these communities benefited. **The existence of such provincial networks and their capacity to bring the pilot communities into their fold was a critical success factor in the project.**

To what extent does telehealth improve access of secondary/tertiary care and education providers to local health service providers?

Access of education providers to the communities was improved when there was an existing provincial network coordinating educational opportunities for network members, publicizing its activities, and in some cases, covering the costs of the telecommunications link.

To what extent does telehealth improve health service providers' awareness and knowledge of local conditions and resources?

In several cases, remote providers did maintain that the relationship created through the telehealth initiative had improved their awareness and knowledge of local conditions and resources, as well as challenges faced by the communities. This has led to increased sensitivity on the part of remote health service providers to the special situations of First Nations communities, as well as to relationships based on mutual trust and respect.

Overall, the results of this evaluation showed that telehealth can be successfully implemented in isolated First Nations communities, bringing with it access to needed, quality care, stronger relationships with external health providers, and greater community capacity to undertake major health initiatives. In the long term, telehealth can, therefore, potentially improve health of community members and health service infrastructure within communities. However, successful implementation is contingent on several important factors at the community level: nursing station staff stability, community mobilization, strong relationships with remote providers and provincial telehealth systems, and effective technology and supports.

Recommendations

Taking into account lessons learned, critical success factors and evaluation results, FNIHB – in consultation with the community project teams and Peer Review Team – recommends the following next steps to build on achievements of the National Project:

1. ***A concerted approach to the lack of connectivity in rural and remote communities, and especially Aboriginal communities, is required***. This issue is one that cannot be resolved by FNIHB, nor by Health Canada, in isolation. The National Broadband Task Force and the Connecting Aboriginal Canadians strategy will no doubt raise the profile of this issue. However, their effectiveness in increasing infrastructure deployment will depend on the allocation of dedicated funding to this end.

   A concerted approach to connectivity would not be designed to solely benefit the community health care system. Rather, it would adopt *the Smart Community model* that enables the uptake of technology for community and economic development, education, health, social services, law enforcement, band management etc.

2. ***It is recommended that new research be undertaken to further explore issues raised in the context of this project and to build a unique body of knowledge needed for the implementation of successful telehealth initiatives in First Nations and Inuit communities***. New research could be used to: develop implementation strategies based on type, needs and capacity of a community; to develop funding models for sustainable telehealth initiatives once again based on the unique community situation; to conduct enhanced cost-benefit analyses; to develop models of F/P/T cooperation guiding telehealth implementation, particularly in rural and remote communities. New research should be undertaken over a longer amortization period to substantially increase its value.

3. ***Opportunities to undertake telehealth (including research) should be offered in a manner that is equitable and sustainable across all First Nations and Inuit communities***. Many First Nations communities do not have the structure nor resources to undertake major proposal writing. As well, a clear commitment to provide sustainable funding should be made at the outset. New project timeframes should be adapted to the implementation process required in First Nations communities (a minimum of 3-5 years).

4. ***New research should study the system-wide impact of telehealth on various funding envelopes and on human resource infrastructures of communities, provinces and FNIHB***. Research data will contribute to the building of a Business Case for telehealth in First Nations and Inuit communities.[3] Sustaining telehealth activity in the long term will have significant impact on current funding levels in the following ways: it will decrease, and in some cases, increase the costs of patient travel; it will increase the costs of certain allied health services; it will introduce new health services (and, thereby, new costs) to the community; it will increase the pressures on human resources at the community level, at the provincial level and at the FNIHB regional office level.

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3   The Business Case is a comprehensive analysis of the full potential of what can be achieved by telehealth thanks to identified strategic investments. It is a means of addressing the main concerns of decision-makers and funders and encouraging them to ultimately support an ideal scenario for telehealth implementation. The main components of the Business Case are the Environmental Scan, a list of tangible and intangible benefits, a Tactical Plan and a Costing Model (cost assumptions and estimates). The Tactical Plan determines who, when, where and how telehealth will potentially be implemented in First Nations and Inuit communities. This is critical to determining a costing model for potential future telehealth communities (i.e. how many sites). The Tactical Plan anticipates what would occur **if** funding is granted for large-scale implementation. The scope of this possible funding is not known and, therefore, the Tactical Plan explores, and remains flexible to deal with, various funding options.

5. ***It is recommended that strategies be elaborated to ensure that telehealth effectively contributes to capacity-building, service integration and sustainability in First Nations and Inuit communities***. These are shared priorities in First Nations health of FNIHB and of the Assembly of First Nations.

6. ***Increased awareness/understanding of, and communication to, First Nations and Inuit stakeholder in matters relating to telehealth will enable them to take advantage of new and existing initiatives and funding opportunities***. A rising interest among these stakeholders in the deployment of information and communications technology to benefit health has been demonstrated. However, beyond interest, it is important to gather the knowledge of First Nations and Inuit on why and how this deployment should take place within specific communities, regionally as well as nationally. A primary vehicle for information-sharing and feedback is the creation of a Standing Working Group composed of First Nations and Inuit representatives appointed by national and regional associations, in addition to FNIHB representatives. The primary mandate of this Working Group will be to design a Blueprint and Tactical Plan for potential telehealth implementation.

7. ***Linkages between telehealth and other initiatives of the Aboriginal Health Infostructure (such as FNIHIS, EHRs and health research initiatives), as well as with Canadian Health Infostructure initiatives, are critical in order to leverage investments to benefit Aboriginal peoples***.[4] A concerted approach to health infostructure development – emphasizing harmonization, linkages and leveraging of investments – will ensure that policy and other issues are addressed concurrently, and that economies of scale are created wherever possible. For instance, a comprehensive information management/technology framework – for health information systems, automated records, telehealth systems etc. – could be made available that is culturally adapted and coordinated with community capacity-building strategies. It is important to ensure that Aboriginal interests are represented in F/P/T discussions and partnerships involved in the development of the Canada Health Infoway. More specifically, awareness should be raised concerning unique federal/provincial/Aboriginal jurisdictional issues.

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4   A preliminary vision of the AHI was elaborated by the Advisory Council on Health Infostructure in 1999. It is intended as a distinct component of the Canadian Health Infostructure. Main principles of the AHI were suggested by the Council: self-determination, knowledge as power, and building human resource capacity and autonomous institutional development. Currently, development of the AHI is being undertaken by a Planning Committee composed of representatives of Aboriginal organizations and of FNIHB.

Project Purpose » » » » » » » »

1. Project's Overall Goal

Telehealth is most commonly defined in Canada as "the use of communications and information technology to deliver health and health care services and information over large and small distances".[5] Telehealth can encompass the delivery of a broad range of health and social services. In the United States of America, the term "telemedicine" is used to designate these services and, in Europe, the phrase "health telematics" is common. Telehealth traffic – that is, what travels on telehealth networks – includes: health information (clinical information such as patient records, administrative information such as costs or service utilization data, research information such as analyses and findings), images (still or moving), signals (vital signs, ECGs), audio (heart beat, voice) and multimedia (audio, image, text).

Some broad types of telehealth are:

➣ telemedicine: all forms of medicine-at-a-distance;
➣ inter-institutional and health information networks: the exchange of patient and clinical records and databases;
➣ tele-education: for professional education (e.g. Continuing Medical or Nursing Education) and for public education (e.g. self-care)
➣ tele-monitoring and telecare: for triage, remote home care and emergency networks.

Telehealth mainly serves to:

➣ collect, share/access and disseminate data (images, audio, text);
➣ advise, support, triage, consult, monitor and overall manage patient care;
➣ educate, train, coach, support and mentor health care practitioners.

Although the potential of telehealth has been explored in Canada for over four decades, the boom in telehealth activity began four to five years ago. It was prompted by important federal initiatives, seeking to support this new technology in its next phase of development: the integration of telehealth into mainstream health care delivery. Such initiatives include the Government of Canada's Science and Technology Strategy and Information Highway Action Plan, Health Canada's National Task Force on Health Information and National Forum on Health, Industry Canada's support of key, high export, knowledge-based Canadian businesses. More recent federal initiatives have built on achievements of previous strategies by focusing on F/P/T partnerships and by contributing more considerable investments: the Connecting Canadians strategy and National Broadband Task Force, the Office of Health and the Information Highway, the F/P/T Advisory Committee on Health Infostructure and the Canadian Health Infostructure Partnerships Program (CHIPP).

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5   Ibid.

During the last decade, the convergence of *key drivers* in the telehealth industry has been witnessed on a worldwide scale: cost containment and health care reform (service integration, accountability mechanisms), an aging population, high technology investments in the health care market (portable medical devices, biotechnology, genetics research and engineering, health informatics), increasing consumer demand for health information, decreasing cost, increased capacity of information and communications technologies, and global partnerships to advance health (e.g. G7). Key drivers and strategic federal investments have given rise to provincial/territorial telehealth networks across Canada.

Telehealth initiatives vary in their purpose and direction. The Provincial Vision Statement of Telehealth, elaborated by the British Columbia Government, is: "*A health system in which telehealth technology is used effectively as a tool to improve the health of the people of the province, by enabling the delivery of accessible, affordable and efficient quality health services*."[6] The Technology in Government Week 2000 Conference outlined a vision for telehealth as follows: "*The vision for Telehealth is to offer fully integrated citizen-centred health services over short or long distances, and in urban as well as remote areas.*"[7] During the First International Congress on Telehealth and Multimedia Technologies, hosted by the Telehealth Technology Research Institute of the University of Alberta, a draft Alberta Declaration on Telehealth was formulated. This Declaration begins with the vision: "*Health Everywhere from Anywhere.*"[8] Although these visions are very diverse, they all emphasize access to better health regardless of location through the use of information and communications technologies. These technologies act as enablers to enhance health service delivery and share health information and expertise.

As demonstrated in this fused Canadian Telehealth Vision, the impetus for telehealth diffusion in Canada is the need for ***improved access to health services***. Ergo, First Nations and Inuit communities would seem to be a natural environment for telehealth implementation if the the following conditions are taken into account:

➢ Significant human hardships and financial costs result from transporting patients from remote locations to medical facilities.

➢ Roughly one third of First Nations and Inuit communities are located over 90 kilometers from physician services.

➢ Geographic isolation restricts access of these communities to specialist health services, health information and professional education for community health providers.

➢ Geographic and professional isolation of primary care service providers working in First Nations and Inuit communities hinders recruitment and retention of these providers.

> *In consideration of all of the above, the National First Nations Telehealth Research Project (hereinafter "National Project") was proposed to the Health Transition Fund in order to achieve the following overall goal:*
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> > *To test whether telehealth improves access to high quality health care and improves the delivery of health services in a cost-effective manner in five isolated First Nations communities across Canada.*

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6 British Columbia Ministry of Health, *Telehealth in British Columbia: A Vision for the 21st Century*, August 1999 (http://www.moh.hnet.bc.ca/him/moh/img/paper.html#intro).

7 Technology in Government Week 2000, "Telehealth: Delivering Primary Health Care Services On-Line", Abstract (http://www.webeventregistration.com/registration/ session_home?v_session_id=8336).

8 First International Congress on Telehealth and Multimedia Technologies, *Draft Alberta Declaration on Telehealth*, Edmonton, Shaw Conference Centre, August 1999 (http://www.ttri.ualberta.ca/ttri.html).

2.   Project's Objectives

Relating to Health Care:

➢ To improve linkages between the community health facility and provincial primary/secondary/tertiary care centers and/or educational facilities;

➢ To reduce unnecessary travel and hospital stays of community members by delivering new services from the community health facility;

➢ To provide training opportunities locally for community health providers;

➢ To improve access of community members to health information/education;

➢ To improve access of community members to specialist health care.

Relating to Knowledge:

➢ To conduct an evidence-based assessment of the benefits to the community of telehealth;

➢ To learn the most effective and appropriate ways to introduce telehealth in First Nations communities and how to provide opportunities for First Nations to contribute to telehealth implementation;

➢ To learn ways to increase the involvement of community members in health-related activities by adapting the project to the community's needs and culture;

➢ To elaborate partnership-building strategies based on negotiations with provincial health organizations and equipment suppliers;

➢ To share lessons learned with other telehealth projects in Canada, obtaining an extensive understanding of Canadian telehealth.

3.   Strategic Importance

First Nations and Inuit telehealth is a ***distinct*** component of Canadian telehealth. While telehealth in Canada is not a new phenomenon, its implementation in First Nations communities is a recent initiative that has received much attention by people active in the field. For many telehealth enthusiasts, the implementation of telehealth in First Nations and Inuit communities seems like a natural fit for these main reasons: 1) over 1/3 of First Nations communities are located in isolated locations; 2) significant inequities in health outcomes among the Canadian and Aboriginal populations have been documented; 3) telehealth has the potential to address many priorities in First Nations health identified by Health Canada and the Assembly of First Nations; 4) telehealth has the potential to reduce the high costs of patient travel.

Geographical Isolation

Health Canada is mandated to provide for the delivery of health care services to over 600 First Nations and Inuit communities by funding 565 health care facilities and by offering a range of community-based programs such as home care, diabetes prevention, prevention of Fetal Alcohol Syndrome, pre-natal nutrition etc. 252 of these facilities are located over 90 km from physician services. For this reason, they are classified as Remote-Isolated, Isolated or Semi-Isolated.

Geographic isolation hinders a community's access to health care and community health providers' access to professional support. It has many dire consequences for communities, including: hardships resulting from travel experienced by patients and health providers, and difficulties in recruitment and retention of community health providers. In eliminating some patient and provider travel by offering services remotely, telehealth alleviates some of these hardships.

Inequities in Health Services and Outcomes

According to the First Nations and Inuit Regional Health Survey, approximately 60% of respondents believed that health services available to First Nations and Inuit are unequal to those available to the general Canadian population. Respondents also identified those services in greatest need of improvement: pediatric services, disease prevention, medication awareness, diabetes education, homes for the elderly, home care and mental health services.[9] Inequities in health outcomes were also revealed in the survey, such as:

- ➣ Infant death rates are twice as high among First Nations and Inuit than among Canadians.
- ➣ Chronic conditions are more prevalent among First Nations and Inuit elders than among those of the Canadian population.
- ➣ Type 2 diabetes is 2-5 times higher in the Aboriginal population.
- ➣ Disability rates among Aboriginal peoples are more than double the Canadian rate.

Service inequality is reflected dramatically in nursing and physician shortages in First Nations and Inuit communities. Depending on the region, from 15% to 53% of nursing positions in these communities are either vacant or staffed on a temporary basis.[10] Communities can experience a delay of 8 to 10 months before staffing a vacant position. Filling a vacant position can cost upwards of $35,000. The situation is only expected to worsen. Canada faces a projected shortfall of 59,000 to 113,000 nurses by 2011.[11] This is due in part to the aging of the nursing workforce, whose current average age is 44 years.[12]

The number of generalist physicians in rural Canada fell by 15% from 1994-1998. In 1996, only 14.3% of generalist physicians and 2.9% of specialists served 9 million people living in rural Canada. In the North, nearly two thirds of the population is 100 or more kilometers from the nearest physician. In 1993, areas that did not consist of large or small urban centres had 23% of the Canadian population, but had access to only 9% of physicians (including 3% of specialists).[13] The physician shortage in rural Canada is no doubt experienced in First Nations and Inuit communities. For instance, Manitoba's Burntwood Health Region – 60% of whose residents are First Nations – has the highest population to physician ratio (3,817) in the province.

> *In response to nursing and physician shortages:*
>
> - *Telehealth increases access of First Nations and Inuit communities to health expertise.*
>
> - *Telehealth offers remote professional support (including education), facilitating the recruitment and retention of nurses and physicians.*
>
> - *Telehealth improves nursing care by enabling access to remote physician consultations, health information and continuing education.*
>
> - *Telehealth assists the community in building its capacity to deliver health services and to produce health information by offering learning opportunities.*
>
> *Telehealth can also contributes to improving the delivery of community health programs funded by FNIHB such as mental health, child health, FAS/FAE, home care, diabetes, HIV/AIDS etc.*

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9   Fred Wien and Lynn McIntyre, "Health and Dental Services for Aboriginal People," *First Nations and Inuit Regional Health Survey National Report 1999* (Ottawa: First Nations and Inuit Regional Health Survey National Steering Committee, 1999) 241.

10   Health Canada, FNIHP, *Action on Nursing: Nursing Retention and Recruitment Strategy* (Ottawa: Health Canada, 1999) 2.

11   Ibid.

12   Ibid. 3.

13   Edward Ng, Russell Wilkins, Jason Pole and Owen B. Adams, "How Far to the Nearest Physician?," *Health Reports* 8.4 (Spring 1997): 19-31.

Priorities in First Nations Health

The table below demonstrates how telehealth can respond to strategic priorities in matters of First Nations health identified by Health Canada and the Assembly of First Nations (AFN).

Health Canada, Plans and Priorities in Aboriginal Health, 2000-2001[14]

Overall Objective:	*To assist Aboriginal communities and people in addressing health inequalities and disease threats and in attaining a level of health comparable to that of other Canadians, and to ensure the availability of, or access to, health services for registered First Nations people and Inuit.*

	Strategic Priorities	**Possible Response by Telehealth**
Priority 1	Sustainable health services and programs: reduced health inequalities and disease threats; First Nations and Inuit autonomy and control. *Planned Results:* • Better health and reduced health inequalities among non-Aboriginal and Aboriginal populations. • Informed First Nations and Inuit population and raised awareness of health factors and behaviors.	• By improving access to high quality health care and existing federal programs (e.g. Aboriginal Head Start, addictions programs, Home and Community Care, Community Health Nursing Practice, Aboriginal Diabetes Initiative, dental health, Canada Prenatal Nutrition Program, environmental health and nutrition), reduces health disparities. • Promotes a comprehensive, holistic approach to health service delivery with applications in mental health, traditional medicine, spiritual healing, community and economic development, education, prevention. • Builds community capacity (training, community and economic development, research).
Priority 2	Effective health care services available and accessible to First Nations and Inuit people. *Planned Result:* • Service and health systems integration.	• Linkages with other information and communications technology initiatives (FNIHIS, electronic health records). • By reinforcing linkages amongst providers and facilities, improves regionalized health service delivery. • Promotes cost-effectiveness, especially in the area of non-insured health benefits. • Builds on partnerships with organizations such as the AFN, Inuit Tapirisat of Canada, P/T telehealth initiatives, provider associations etc.

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14   Health Canada, *2000-2001 Estimates: Part III - Reports on Plans and Priorities*
       (http://www.tbs-sct.gc.ca/tb/estimate/20002001/rH_____e.pdf) 78-86.

Strategic Priorities	Possible Response by Telehealth
Priority 3 Increased First Nations and Inuit management of, and accountability for, health care services and the non-insured health benefits program. *Planned Result:* • Transfer of health programs to First Nations and Inuit.	• Supports community-driven projects and health systems. • To be implemented in accordance with standards and accountability frameworks developed in consultation with First Nations and Inuit (e.g. flexible accountability mechanisms and joint accountability to government, community & partner).

Assembly of First Nations, Health Priorities, 2001-2002[15]

Strategic Priorities	Possible Response by Telehealth
Priority 1 **Sustainability** Building and sustaining First Nations Health and Health Care Systems	• By improving access to high quality health care, reduces health disparities. • Provides for needs-based and flexible implementation strategies to accommodate diverse community approaches. • By reinforcing linkages amongst providers and facilities, improves regionalized health service delivery. • Promotes cost-effectiveness, especially in the area of non-insured health benefits. • Improves community capital infrastructure and provides sustained resources to meet infrastructure needs.
Human Resources Development, Capacity Building and Training	• Increases training opportunities for First Nations and other community health care workers and administrators. • Delivers Aboriginal health careers programs. • Establishment of a training fund and program for telehealth coordinators. • Development of standards of practice/protocols for telehealth training, implementation and operation.
Enhancement of Under Funded Programs (i.e. diabetes surveillance)	• Provides remote diabetes surveillance, screening, diagnosis, treatment and education services.

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15   AFN Health Secretariat, AFN National First Nations Health Technicians Network and the AFN Chiefs Committee on Health, *First Nations Health Priorities, 2001-2002* (Http://www.afn.ca/Programs/Health%2...irst_nations_health_priorities.htm).

	Strategic Priorities	**Possible Response by Telehealth**
Priority 2	**Health Research and Infostructure**	• Partnerships among telehealth users/integrators and health researchers such as the the National Aboriginal Health Organization, the Aboriginal Peoples' Health Research Institute, the First Nations and Inuit Regional Longitudinal Health Survey, the First Nations Statistical Institute and others, can be established. • Enables community members to be trained remotely in evaluation.
Priority 3	**Jurisdictional Issues**	• Jurisdictional issues pertaining to telehealth implementation and use to be outlined. • Strategies for ensuring that these issues are addressed in First Nations/F/P/T leadership forums are targeted. • A formal policy for dealing with these issues is developed.
Priority 4	**Mental Health**	• Delivers remote mental health services to First Nations communities, including suicide prevention programs targeting youth. • Delivers remote training programs for community health workers relating to mental health services, including community crisis response strategies for suicide, family violence and other crises.
Priority 5	**Children's Health/Gender Health**	• Delivers remote early childhood development programming and training. • Delivers remote screening and diagnostic tests for cancers (e.g. tele-mammography). • Delivers remote support programs for cancer victims/survivors.
Priority 6	**Smoking**	• Delivers remote smoking prevention, cessation, treatment and training programs.
Priority 7	**Environmental Health & Infrastructure**	• Delivers remote environmental health awareness and emergency measures training programs.

Project Activities   »   »   »   »   »   »   »

1. Methodology

The HTF National project (2 million dollars) HTF, was managed by Health Canada's First Nations and Inuit Health Branch (FNIHB). It involved the planning, implementation, operation and evaluation of telehealth in five First Nations communities: Anahim Lake (British Columbia), Fort Chipewyan (Alberta), Southend (Saskatchewan), Berens River (Manitoba) and La Romaine (Quebec). These communities were selected by FNIHB regional offices because they satisfied the following criteria:

> ➤ remote, isolated or semi-isolated community;
> ➤ Chief and Band Council support of the project;
> ➤ Community Nurse and Health Director support of the project;
> ➤ support from FNIHB's Regional Nurse/Physician;
> ➤ support from Regional Director.

While the design of each community telehealth research sub-project was adapted to the needs and culture of the community at hand, the National Project was implemented in eight main phases.

Accountability Framework

The Accountability Framework was finalized with all project participants during a meeting in Winnipeg in October 1998.[16] It outlined the National Project's organizational chart, objectives, expected outcomes, principles and assumptions, roles and responsibilities, workplan (including a checklist of tasks/activities), budget, risks, categories of potential telehealth applications, main communication messages, management structure and preliminary evaluation plan. The Accountability Framework was instrumental to identifying key members of the national and community project teams, i.e. the National Project Manager, Community Project Officers, Regional Project Coordinators, Community Site Leaders, Community Health Authorities/Managers/Providers, Community Political Leadership, Telehealth Technical Consultant, Technical Vendors, Telehealth Evaluator Specialists, Peer Review Team and Project Steering Committee.

Needs Assessment

In September 1998, community health providers were asked to complete a Pre-Site Visit: Data Gathering Instrument. The evaluation team then provided Community Project Officers with Community Needs Assessment Guidelines and Tools. Needs assessments were undertaken during the Winter of 1999. Key informant interviews were conducted with health and social services personnel, service providers outside health, community leaders (including elders) and provincial secondary and tertiary care resources. Health records and data collected by Health Canada concerning patient transportation, life expectancy etc. were also studied. Information was compiled and analyzed according to a grid intended to match identified needs to potential telehealth applications. The grid's three main categories of evaluation criteria were: response to needs; community readiness; and, feasibility.

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16   The Minister of Health announced the launch of the National Project on September 8, 1998.

Application Selection

To limit the scope of the project and increase its feasibility, communities were asked to select up to three telehealth applications based on identified needs. Applications selected by each of the communities are outlined below.

Community	Applications
Anahim Lake	• Urgent/Emergent Telehealth: real-time, on demand teleconsultations between the Anahim Lake Nursing Station and Cariboo Memorial Hospital in Williams Lake for emergency assessment/triage and support.
Fort Chipewyan	• Telerehabilitation: remote supervision of a Rehabilitation Assistant in the Fort Chipewyan Nursing Station by senior professionals at the Northern Lights Regional Health Centre (Fort McMurray) to conduct occupational, speech and physical therapy sessions; • Televisitation of family members with patients hospitalized in Fort McMurray.
Southend	• Teleconsultations in the areas of General Practitioner (GP) and specialist services with a main focus on dermatology; • Remote educational sessions on diabetes management; • Remote mental health services provided from Saskatoon.
Berens River	• Remote diabetes prevention and intervention: foot care program (education and video examination of feet), community-based screening activities with training and referrals conducted over the audio-video link to health educators and specialists; • Remote mental health services: patient assessment and counseling, specialist consult and group therapy; • Continuing education programs for health staff, administrators and para-professionals.
La Romaine	• Remote diabetes monitoring from the patient's home: use of electronic glucose monitor connected by telephone line to La Romaine Nursing Station and tele-ECG; • Teledermatology: store-and-forward system (i.e. an asynchronous communication where voice, video and/or data is "stored" in a computer and than "forwarded" to a computer in another location); • Tele-Ear/Nose/Throat (ENT): store-and-forward system.

Request for Proposals and Vendor Selection

A Request for Proposals (RFPs) template, was developed for purchase of the telehealth equipment (i.e. videoconferencing, peripherals, network technologies). Community Project Officers sent RFPs to a maximum of ten potential equipment suppliers. Submitted proposals were then evaluated by the officers according to a Bid Review Package. The main groups of criteria pinpointed in the package were: Group 1 – Compliance with Submission Requirements; Group 2 – Vendor Profile; Group 3 – Vendor Commitment; Group 4 – Costs; Group 5 – Equipment and Software. In some cases, equipment suppliers were invited to present their proposed solution to the community project team. The Peer Review Team and Steering Committee were also asked to evaluate the proposal selected by the community project teams according to a list of assessment criteria.

In the majority of cases, partnerships were struck to share provincial resources with pilot communities. The Mental Health Services Program of BC Health and Ministry Responsible for Seniors contributed $30,000 to the cost of purchasing the videoconferencing system installed at Cariboo Memorial Hospital. Southend was linked into the Northern Telehealth Network created by SaskHealth. The Winnipeg Health Sciences Centre contributed the use of its pre-existing videoconferencing equipment to conduct teleconsultations with Berens River. Thanks to the technical simplicity of the store-and-forward system, no additional equipment was required at the secondary and tertiary care centres delivering telehealth services to La Romaine except for the secure software required to open transmitted images.

Memoranda of Understanding (MOU)

Successful partnerships were negotiated with provincial secondary care centres, tertiary care centres and educational centres to ensure delivery of remote services to the five participating First Nations communities. Community Project Officers guided discussions between community leadership and provincial facilities/authorities (i.e. hospitals, regional health authorities, colleges etc.). Often, officers were asked to draft an MOU that was then reviewed by legal advisers of both parties. MOU included, in some cases, agreements to transfer funds from the community to the provincial facility to refund costs related to professional fees and administration. In British Columbia, Alberta and Quebec, teleconsultations conducted in the context of the National Project were not recognized by the provincial government as an insured service. For this reason, provincial fee-for-service health care providers delivering services using the telehealth link were compensated with funds originating from the Project's budget. In the table below is the list of provincial partners involved in the National Project.

Community Partners	**Provincial Partners**
• Anahim Lake Nursing Station, Ulkatcho Band (Anahim Lake)	• Cariboo Memorial Hospital, Central Cariboo Chilcotin Health Council (Williams Lake).
• Nunee Health Authority, Athabasca and Misikew Cree First Nations (Fort Chipewyan)	• Northern Lights Regional Health Centre, Northern Lights Regional Health Council (Fort McMurray)
• Southend Health Centre, Peter Ballantyne Cree Nation Health Services Inc. (Southend)	• Northern Telehealth Network (more specifically, La Ronge Hospital, Victoria Hospital in Prince Albert, Royal University Hospital and Saskatoon City Hospital in Saskatoon, SaskHealth)
• Berens River Nursing Station, Berens River First Nation (Berens River)	• J.A. Hildes Northern Medical Unit, University of Manitoba • Winnipeg Health Sciences Centre (Winnipeg)
• Centre de santé Unamen Shipu, Conseil des Montagnais Unamen Shipu (La Romaine)	• Centre hospitalier régional de Sept-Iles (Sept-Iles), Centre hospitalier des universités de Québec (Quebec City)

Telecommunications Access

The level of access to the required telecommunications infrastructure varied from one community to the other. Since the type of telehealth application determines the level of telecommunications bandwidth required, initial research aimed at identifying the extent of available telecommunications infrastructure was conducted during the needs assessment to ensure that unfeasible applications would not be selected. A summary of the telecommunications made available to each community in the context of the National Project is provided below.

Community	Telecommunications Access
Anahim Lake	Prior to the project, telecommunications access was restricted to bad quality Plain Old Telephone Service (POTS). A satellite C-Band 3.7M to C-Band 2.4M (384 kbps raw link) communication link between the Anahim Lake Nursing Station and Cariboo Memorial Hospital had to be established. Telesat was contracted to provide this service under its R&D program, allowing the community to purchase space segment at 15-minute increments. As well, the installation and testing were conducted free-of-charge by Industry Canada's Communications Research Centre. Notwithstanding, the high cost of the satellite communication link required the negotiation of a cost-sharing partnership with the BC office of Indian and Northern Affairs Canada (INAC). INAC agreed to contribute $75,000 to the satellite link if Internet access could be provided to the Band Administration Office.
Fort Chipewyan	At the outset, the community had high line speed availability thanks to 6 sets of switched-56 lines converted to ISDN using Telesync adapters (high point is 336 kbps).
Southend	At the outset, the community had high line speed availability thanks to switched-56 lines. Its connectivity to the Northern Telehealth Network was feasible.
Berens River	Prior to the project, telecommunications access was restricted to low speed (33.6) POTS. A satellite C-Band 3.7M satellite communication link between the Berens River Nursing Station and the Winnipeg Health Sciences Centre had to be established. Telesat was contracted to provide this service under its R&D program, allowing the community to purchase space segment at 15-minute increments. As well, the installation and testing were conducted free-of-charge by Industry Canada's Communications Research Centre. A cost-sharing arrangement was made with the tertiary care center to cover the civil works costs related to the installation of the satellite earth station at the Winnipeg site.
La Romaine	The community has access to ISDN but requires a new cross-connect digital switch to access a dedicated T1. This capacity was required for the community to connect to the private telemedicine network of the Quebec Health and Social Services Ministry. Called the *Réseau de télécommunication socio-sanitaire* (RTSS), the network links all provincial health care facilities, including the secondary and tertiary care centres that deliver health care to La Romaine community members. The network is established and maintained by a partnership between Bell Canada, Telebec and QuebecTel. La Romaine's access to the RTSS was evaluated at $10,000 per month by the provincial government. This high cost prevented the community from linking into the network and, therefore, set up any videoconferencing link with its referral centres. It instead chose to build a store-and-forward system using a dial-up Internet account.

Installation/Testing/Training

Installation/Testing/Training took place during the Spring of 2000, except in Anahim Lake. Additional training sessions were held during the Fall 2000 and Winter 2001 in La Romaine, Berens River and Southend. These sessions were needed mainly due to staff turnover.

Evaluation and Ethics Review

There is no standardized evaluation framework for telehealth. Some researchers, such as Marilyn Field[17], are known for their development of telehealth-specific evaluation methodologies. There are two general approaches used to evaluate telehealth: program evaluation and health technology assessment. Program evaluation assesses the effectiveness of a service delivery program. It can include several sub-components such as a needs analysis, an economic analysis (cost-benefit, cost-effectiveness or cost-consequence analyses), formative (process-oriented) or summative (outcomes-oriented) evaluations. Health technology assessment relates to the safety and performance of the technology, as well as to the costs of the technology.

The National Project hired independent project evaluators to create a framework and tools, in consultation with community project teams and provincial health care and educational facilities. The National Project hired independent project evaluators to create a framework and tools, in consultation with community project teams and provincial health care and educational facilities. The evaluation addressed three main questions pertaining to the implementation and impacts of telehealth in the communities, specifically to (1) the impacts of telehealth on patient and community access to needed, quality care; (2) the role of telehealth in health services delivery, including cost-effectiveness; and, (3) the linkages created through telehealth with existing health resources. Several data collection methods were used:

➢ ongoing monitoring of frequency, nature and implications of telehealth usage through forms completed by staff in both the community and referral sites;[18]

➢ patient satisfaction assessment, through a total of 110 questionnaires completed by patients using telehealth in each community;

➢ 43 qualitative interviews with 65 key informants including telehealth coordinators, Band and nursing station managers, nursing staff, health centre board member, elders, patients (in one community only), tertiary care providers and management, provincial telehealth representatives, and Health Canada representatives.

A case study of each community was produced based on the above data. A cross-case analysis summarized below examined the findings in light of the evaluation questions, the consequences of telehealth in relation to costs, and the main lessons learned. **It is important to note that the constrained project timeframe of 2.5 years did not allow an evaluation period of more than an average of 8 months**. As background information for their Final Report, the evaluation team completed a literature review of evaluations of selected telehealth applications in rural settings[19], also attached in Appendix A.

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17   Marilyn J. Field, *Telemedicine: A Guide to Assessing Telecommunications in Health Care* (Washington, D.C.: National Academy P, 1996).

18   Over the evaluation period, information was received about 927 telehealth sessions involving 176 patients. The number of sessions per community varied from 40 to 755, and the number of patients seen from 17 to 59.

19   Applications consisted of cardiology, continuing medical education, dermatology, diabetes management, ENT, mental health/counselling, ophthalmology, neo/post-natal and pediatric assessment, rehabilitation, respiratory problems, trauma and emergency medicine.

Since the National Project was, first and foremost, a research project and since it involved human subjects, an ethics review process was undertaken by each community project team. That is, during their first visit to the pilot communities, the evaluation team appealed to community members and leadership to approve the research procedures to be utilized in the data gathering and analysis. Upon request, some communities made available formal letters of approval of the research ethics involved in the project. In November 2000, consolidated ethics review submissions were then prepared for ethics review committees of tertiary care centres/universities participating in the project, mainly the University of Manitoba, the Centre hospitalier des universités de Québec, the Northern Lights Regional Health Centre and Royal University Hospital. This submission compiled all the ethical rules of these centres, as well as the Code of Research Ethics developed by the National Steering Committee of the First Nations and Inuit Regional Health Survey in 1997. Each centre was contacted in order to extract their protocols, questionnaires etc. No requests to appear before an ethics review committee has yet to be received from these centres by the main project investigator (FNIHB).

2. Deviations in Project Methodology

The National Project is a pioneer in the implementation of telehealth in First Nations communities. Its design and process are unprecedented and, for this reason, it encountered many issues and obstacles that had never before been tackled. Some issues/obstacles compelled the project to deviate from its initial methodology. However, such deviations did not hinder the success of the project. Rather, they contributed many lessons learned, valuable outcomes of the National Project. Below is a description of the principal project deviations experienced.

Project Extensions

Two project extensions were granted by the Health Transition Fund Secretariat (from March 2000 to September 2000; from September 2000 to March 2001). These allowed the National Project to adapt its methodology to community needs and processes. Furthermore, extensions allowed project team members to familiarize themselves with the technical and human components of telehealth implementation (i.e. negotiating agreements with provincial health care providers, securing satellite communication links, negotiating agreements with Band and Tribal Councils to guarantee protection of their inherent treaty rights and funding envelopes).

Delays in Anahim Lake Project Implementation

Despite project extensions, telehealth applications were not operational in Anahim Lake before the end of the National Project. This inability to collect usage data is due primarily to the lack of telecommunications infrastructure. Various solutions were sought. Negotiations were undertaken with Telus and Telesat. While satellite communication was selected as the only available option early in 2000, obstacles were faced relating to the feasibility of using Telesat equipment: the high cost, the issue of potential inadequacy of the roof of Cariboo Memorial Hospital to carry a satellite earth station, and the switch from KU-Band to C-Band equipment due to lack of space segment. As previously indicated, a contribution of $75,000 made by INAC was successfully negotiated to partly subsidize the high cost of the satellite equipment. As the situation now stands, the satellite equipment will be installed in Anahim and Williams Lake in April 2001. The project will begin its testing and training phase at that time. It is expected that data will be collected in Anahim Lake until March 2002. This data will be analyzed according to the evaluation framework outlined in the context of the National Project. The analysis will contribute further to the continued effort of building a Business Case for telehealth implementation in First Nations and Inuit communities.

Switch from Real-Time to Store-and-Forward in La Romaine

Once again, the lack of telecommunications access impeded the implementation of telehealth in a second community, La Romaine. However, in this case, the applications selected (tele-ENT, teledermatology and remote monitoring) did not, in and of themselves, require real-time videoconferencing. It was, therefore, possible to implement a store-and-forward system using dial-up e-mail accounts (whose infrastructure is POTS). Notwithstanding, the community's expectations were no doubt disappointed by this switch in the system design. It is possible that this switch partially contributed to the low level of usage of the tele-ENT and teledermatology applications (see Final Evaluation Report in Appendix A).

The Will to Do More in the Face of Limited Resources

In some communities, applications selected according to the needs assessment process were not implemented due to a lack of financial resources.[20] These applications required additional equipment that could not be purchased within the limits of the allocated funds. The expansion of existing community telehealth projects is an important issue that has been raised during recent negotiations for sustained funding.

Secondly, community expectations relating to the potential of telehealth are, at times, not achievable due to limited scope of practice, competencies and time of nurses. In Anahim Lake, specialists at Cariboo Memorial Hospital suggested that the use of ultrasound to remotely diagnose internal injuries would greatly increase the effectiveness of the urgent/emergent telehealth application. In addition to the exorbitant cost, the lack of qualified personnel to capture ultrasounds available at the community level made this application unfeasible. Clear protocols relating to the use of telehealth in urgent/emergent cases had to be developed by the FNIHB zone nursing officer, the community nurse, a project consultant with a nursing background contracted by Cariboo Memorial Hospital, and a clinical advisor employed by the equipment supplier to ensure compliance with nurses' scope of practice.

Confronting Challenges Precipitated by Staff Turnover

Staff turnover at the community level impacted all five community telehealth projects as demonstrated in the table below.

Community	Instance(s) and Impact of Staff Turnover
Anahim Lake	During project planning, the community lost its Nurse-in-Charge in two separate instances. Notwithstanding, the project was able to advance. The current Nurse-in-Charge has been actively involved in protocols development.
Fort Chipewyan	The inability to train a community member as a rehabilitation assistant by establishing a link to Medicine Hat College due to limited financial resources jeopardized the feasibility of the telerehabilitation application. Thankfully, the community was able to recruit a Rehabilitation Assistant to participate in the project. The community member initially targeted for training was able to participate in the project as the telehealth coordinator.

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20   These applications were mainly: the use of a defibrillator to expand the tele-ECG application in La Romaine, a link to Medicine Hat College to train a community member as a rehabilitation assistant in Fort Chipewyan, tele-mental health and addictions counselling as well as tele-ultrasound in Anahim Lake.

Community	Instance(s) and Impact of Staff Turnover
Southend	The loss of a nurse temporarily disrupted the project's progress. However, the community was quickly able to recruit a new telehealth coordinator, a community member, who then partnered with a new nurse to form the telehealth team.
Berens River	The loss of three nurses each of whom had over ten years experience in the community was an unfortunate consequence of the transfer of health services management from FNIHB to the Band Council. Innovatively, a community health representative (CHR) was able to take over the telehealth project by acting as its coordinator. With additional training, the new coordinator allowed the project to move forward and promote community involvement.
La Romaine	The loss of the nurse coordinator and health director impacted progression of the project during the Summer of 2000. Temporary staffing during this time prevented any resources from being dedicated to telehealth coordination. However, a new telehealth coordinator was appointed and a new training session scheduled in September 2000.

Project Outcomes » » » » » » »

There are four main types of project outcomes:

1. **Lessons Learned**, identified during each phase of the methodology;
2. **Critical Success Factors** for any new telehealth implementation in isolated First Nations and Inuit communities, derived from the lessons learned;
3. **Evaluation Results**, compiled from analysis of the data collected during the operational phase of four community telehealth projects;
4. **Recommendations**, based on a review of outcomes.

1. Lessons Learned

The main lesson learned during the National Project is the realization that a variety of elements can potentially guarantee or hinder success in adopting, implementing and sustaining a telehealth project. The following three elements are critical to achieving success if they are concurrently taken into account; otherwise *there is a high risk of project failure*:

Telehealth Element A: Human Resources	
Telehealth is not a panacea, it cannot do all things for all people. It is not designed to replace clinical practitioners and other health staff, but instead is designed to provide easier, more timely access to health services to everyone, especially to those in remote locations or to those whose access is limited by culture, language, or available clinical resources. It is for the purpose of conquering the "panacea" vision that community expectations regarding the potential of telehealth should be managed. A detailed communication plan is an important step in the implementation process. The success of any telehealth project will largely depend on human interaction and stable/sound relationships rather than on interaction with the technology.	*"Getting your people to buy into the IDEA of Telehealth."*

Telehealth Element B: Financial Resources	
There are many anticipated and unanticipated cost items. Start-up and operating costs should be distinguished. Sources of sustained funding need to be identified to ensure the long-term viability of telehealth services. If a health organization is weary about receiving continued funding for telehealth, it will view telehealth as an experimental activity and will not integrate it fully into its existing service delivery patterns.	*"Finding the money to do it."*

Telehealth Element C: Technical Resources	
If technology companies come knocking on the door, it is important to be informed of all the steps and considerations involved in telehealth implementation, many of which are not technology related. Although important, technology is often the last piece of the implementation puzzle.	*"Putting the tools in the hands of those who need them."*

A more detailed account of lessons learned pertaining to each of these critical elements, in addition to a brief discussion on policy issues raised by the project, are provided.

Human Resources

More and better information on communities (on available resources within those communities and within regional referral centres) is needed to improve the process of selection of communities in which telehealth is to be implemented. Time invested in ***community needs assessment and feasibility studies*** prior to selection can increase the chances of success and greatly facilitate the implementation process. It is important to determine if telehealth fits into the strategic plans of the community and connecting health/educational organization(s). Find out what human resources are already available at the main and referral site(s). Ask the question: "What is the impact of telehealth on community and referral/educational centre human resources?" The human infrastructure that supports telehealth must be developed. This development, however, is hindered by the lack and instability of human resources available in remote First Nations and Inuit communities.

It is important to manage high community expectations by communicating that telehealth is not a panacea or an easy fix to all community health problems. Generally, some community members will believe that telehealth can deliver locally complicated diagnostics (e.g. ultrasound). Community members often cite cases where "if only telehealth had been there" a better outcome would have resulted, but this is not always likely. However, while community members are showing an interest in telehealth, the majority are also waiting to see if any significant changes to health care delivery will result before endorsing the technology. The ***communication strategy*** adopted by project managers will be more complex and time-consuming the larger the community. More elaborate communication strategies enable broader-based decision-making which later contributes to more consistent support for the project's direction. Public education materials on telehealth should be developed for and with users of telehealth in remote and rural areas (and ideally, with users in First Nations communities).

It is important for communities to be ready for the ways in which telehealth can change health care delivery. A ***change management strategy*** is necessary; this strategy must take into account the organizational impact of telehealth, that is, its impact on existing community health care resources. Management of a telehealth project that is new to an organization, and/or its users, requires extra investment of time and effort, as well as education and training. Adequate initial and periodical training of health staff is critical to ensure rapid adaptation and high continued usage of the telehealth equipment. A sufficient testing and demonstration period is required to familiarize staff with the equipment at the inception of the system and as new staff come on board. Clinical protocols for the use of telehealth are required and should be developed by the project team. Be alerted to the fact that a project bringing about change will create uncertainty. This is often accompanied by considerable resistance to the changes in question. However, providing community members and health care providers with educational materials and demonstrations of telehealth applications will help them understand what telehealth is about and the impact it may have on their community. It will also increase the likelihood of project success. For instance, such an orientation may alleviate the concerns specialists may express with liability, especially as it relates to the technical quality of

transmitted medical images. Other concerns expressed by health care professionals, in the context of the National Project, were: insurance, interprovincial licenses (needed to deliver telehealth from one province to another), scheduling (determining how much time is required for teleconsultations), patient confidentiality (particularly the presence of community translators and other family members in teleconsultations). Lastly, patients should be kept informed of the various options available to them, from the use of telehealth to other modes of service delivery (e.g. waiting for a face-to-face consultation at the community site, traveling to the referral site etc.). The use of telehealth should be an informed choice made by the patient.

Communities and their health teams should be aware that technology companies may be knocking on their door to sell them equipment. They should be aware of the many aspects of telehealth implementation that are not purely technical. It is important to inform community leadership on the many steps involved in the effective implementation of telehealth that can include securing the commitment of the local health team, involving other community human resources, training staff and negotiating with external service providers. Community/organizational leadership should determine **how to best integrate telehealth into the current practices of health care delivery**. Community leadership will need to negotiate Memoranda of Understanding (MOU) or other forms of written agreement with provincial/territorial facilities in order for infrastructure and resources to be shared with their community. Both parties have to agree to an acceptable level of service that will respond to the needs identified by the community and that is also manageable by the staff at the referral site. *An agreement must be reached before moving forward with the purchase of equipment.* A close relationship with the implementation team of the provincial/territorial telehealth network, if such a network is in place, is also essential for success. This relationship depends on the willingness of provincial/territorial governments, the federal government and First Nations and Inuit communities to collaborate and jointly develop their telehealth initiatives.

Most provincial governments have not set rates of **reimbursement** for services offered through telehealth. That is, telehealth services are not considered insured services and are, therefore, not reimbursed under provincial health care insurance plans. Governments that have agreed to reimburse telehealth services have done so on an application-by-application basis. Comprehensive telehealth fee schedules do not exist at this time. Costs of the National Project were increased because of the need to compensate specialists for services rendered to the pilot communities through telehealth. These costs cannot be sustained in the long term. As well, federal/provincial jurisdictional issues relating to health service reimbursement in First Nations communities further complicated project implementation. Of course, if salaried providers dispense telehealth services to communities then reimbursement is not an issue. This was the case in Berens River where salaried providers employed by the Northern Medical Unit of the University of Manitoba could provide additional telehealth services with no additional professional fees to take into account. Notably, Nunavut has stipulated in all contracts with health service providers that they must use telehealth to deliver health care where appropriate. Finally, health services reimbursement issues go beyond fee-for-service providers. They also relate to non-insured services such as mental health and rehabilitation services.

Project implementation timetables were difficult to maintain for a variety of reasons:

➢ In certain cases, the effort required to implement telehealth successfully was underestimated.

➢ Additional community human resources were needed. Current personnel are invested in other responsibilities. Consequently, communities have been very dependent on the contracted project officer to manage and drive the implementation process.

> Part-time project officers working on contract have other professional commitments. Because they must work at the pace of the community, they have been required to shift time lines and, when possible, rearrange their other workloads.

> Changes in project governance structures at the community level have caused some difficulties for decision-making.

The National Project has also had to deal with community events/crises that negatively impacted project timetables and successful implementation. To date, here are examples of such events: elections; resignation of nurses and other project champions; health problems of project team members; tragedies such as motor vehicle accidents, forest fires, suicides; the arrival of an early Spring and the loss of the winter/ice road; unavailability of project team members due to rodeo, blueberry picking season, vacations etc. Ergo, it is important to manage community and providers' expectations with regards to timelines.

Communities need expertise in project planning and management. Training is required for community project officers. Or, funding is required to hire external project officers. Project officers are trainers, facilitators, mediators, coordinators and, at times, advisors, but never decision-makers. If possible, project officers should be hired based on their provincial/territorial knowledge and contacts, and familiarity with the First Nations community. However, in order to build economies of scale, centralization of expertise may be considered as an alternative to each community separately contracting external consultants. The structure and organization of this centralization is a matter for ongoing discussions. Centralized activity might include negotiations for telecommunications access, equipment purchase and support, training, program management etc.

The nursing stations/health centers need a **telehealth coordinator**. A telehealth coordinator is a key resource to promote and operate the telehealth system. A coordinator schedules all uses of the equipment. Coordinators are trained on the basics of setting up a telehealth consultation, on operating the equipment, on establishing the outside connection and on conducting the follow-up work (documentation). It is important for more than one community health provider to be trained in the use of telehealth equipment to ensure that there is always someone able to operate the equipment in case of sickness or turnover of staff. The coordinator trains new staff members to use the equipment. This is critical since most communities face frequent staff turnover. Events can be organized by the coordinator to inform and encourage community members to use the equipment. Communities can choose to train a nurse, a Community Health Representative (CHR) or someone else as coordinator depending on who is available and interested in the position. If a non-certified health professional is selected, there may be liability and scope of practice issues to consider. Identifying community members to be trained as telehealth coordinators is a challenge. This role demands skill in a broad range of areas including clinical practice, administration, scheduling, communication/socialization (people skills), translation, information/file management.

Community leadership must be made aware that they will need to commit significant resources to the purchase of telehealth equipment and, in the case of proprietary equipment, perhaps commit to a long-term relationship with the vendor. Independent legal counsel and, if possible, independent technical expertise should be contracted during the process of **negotiation with the equipment supplier**. This process can be tied to capacity building at the community level: allowing community members to view demonstrations of telehealth equipment and ask questions, reflect on issues and processes, work out divergent perspectives until a consensus emerges etc. The process may also benefit the vendor who may be better prepared to address the specific needs and settings of First Nations once contracted.

The ***information management and information technology (IM/IT) requirements*** of telehealth should not be underestimated. The need for an integrated IM/IT technical support plan should be identified at the national level. The rapid introduction of new technologies and information systems cannot be supported by the current technical support infrastructure. Linkages with other health infostructure initiatives (mainly, the First Nations and Inuit Health Information System and Electronic Health Record) will allow the creation of economies of scale and prevent duplication of effort and information mismanagement.

Initial involvement of the project evaluators in the planning and implementation of the project is crucial. Project evaluators should familiarize themselves with the community sites and be encouraged to develop relationships with community teams sooner rather than later. Provisions of ***federal and relevant provincial/territorial privacy legislation*** should be respected and worked into the evaluation component of the project to the agreement of all parties involved. ***Ethical principles*** – beneficence, nonmaleficence, autonomy and justice (fairness, confidentiality, integrity, competence, dignity, respect of others) such as those applied in the National First Nations and Inuit Regional Health Surveys – should be included in the design of any telehealth research project. In most cases, an ethics review process should be undertaken. As well, ***professional codes of ethics and conduct*** should be respected.

The ***lack of FNIHB resources at the regional level*** caused some project delays. In certain cases, FNIHB regional personnel was too busy to invest the time required to participate in community telehealth projects. In regions where third level services have been transferred, there is confusion about the role of regional FNIHB personnel. The expected role of FNIHB regional offices must be further discussed.

All members of the community project team should be regularly updated by the project officer to ensure that ***information is shared equally among participants***. Community teams should also be in contact with federal and/or national and/or provincial/territorial decision-making bodies (in the case of the National Project, the Steering Committee) to foster community ownership. When meetings of decision-making bodies are held, community teams should receive notes of these meetings. Ideally, representatives of community teams should be included in these decision-making bodies. There should be clear guidelines in the Project Accountability Framework that define under what conditions a community project can be abandoned by the funder. As well, such guidelines should define what aspects of the project will be funded and to what extent.

Telehealth is all too new to everyone involved. The lack of community precedents to learn from and the complex and technical nature of the project created obstacles to implementation. This is why it is important to ***share lessons learned*** with other communities, for instance, through workshops and conferences (e.g. Assembly of First Nations Health Conference in February 2001). As well, in the context of a larger project involving several communities, bi-annual teleconferences should be held inviting community teams from all participating communities to share their experiences (and not solely reuniting project officers).

Financial Resources

While a full-fledged feasibility study, including a cost-benefit analysis, could in itself be costly and time consuming to conduct, to do so is highly recommended because it enables local health service planners, administrators, government and/or alternative funding sources to consider the telehealth project proposal and to support funding requests.

In preparing the telehealth project proposal, be prepared to estimate the costs for each of the following items, including both one-time and ongoing costs. Ball-park estimates are also provided.

Capital costs - One Time	Non-capital costs - One Time and Ongoing
✓ hardware;	✓ feasibility, needs analysis, process and outcome evaluation studies;
✓ telecommunications infrastructure	✓ FTEs (project manager, telehealth site coordinator, technicians etc.);
✓ software; interfaces; peripherals;	✓ office facilities and cost of meetings;
✓ facility upgrades;	✓ telecommunications link (monthly connection fee, rate per minute);
✓ one-time software licensing fees.	✓ training and skill maintenance costs;
	✓ insurance and administrative costs;
	✓ installation costs (include facility upgrades, testing, transportation);
	✓ technical support and maintenance;
	✓ provider remuneration adjustments, service contracts with provincial health care and educational institutions.

Average funding allocations per site by major cost item
(based on estimates from the National Project that do not take into account economies of scale)

Project management/Administration	$50,000
Evaluation	$10,000
Community Site Coordinator	$30,000
Technical Expertise/Support/Maintenance	$20,000
Training	$10,000
Service contracts with provincial health and educational facilities	$20,000
Office supplies	$5,000
Telecommunications (equipment if required and usage charges)	$40,000 - $100,000
Telehealth equipment	$60,000

Communities need to purchase telehealth technology (software/hardware/peripherals) to deliver the services that meet their needs. They also need to contract continued technical support and maintenance to update and to keep the equipment running. The nursing stations/health centers need space for the telehealth equipment. The room that houses the equipment must be properly designed and configured for telehealth. Funds may be required to modify rooms to comply with videoconferencing technical standards, such as lighting, paint color, sound proofing etc. In some cases, proper exterior mounts are required for the satellite equipment. Communities may need some minor capital funds for furniture for the telehealth coordinator such as a desk and a chair, no-glare meeting tables, blinds etc.

Communities need telecommunications infrastructure and bandwidth to match selected telehealth applications and the purchased telehealth equipment in order to connect this equipment from the community site to the referral/educational sites and to ensure an adequate quality of service. It is important to know what telecommunications infrastructure is available in the community before planning a budget and selecting telehealth applications. Telecommunications may be the single most expensive item of telehealth implementation in the community. Telecommunications costs can include equipment, line rentals, site preparation and usage charges (such as long distance fees). Installation and maintenance contracts for telecommunications equipment are also required.

Communities need to negotiate service contracts (MOU) with external health care providers and referral centres. These contracts need to provide for reimbursement of fee-for-service providers in cases where the provincial government does not recognize telehealth as an insured service.

The community will need to assess the impact on the local economy, especially on local transportation and accommodation facilities, of introducing telehealth (i.e. especially if a reduction in patient/provider travel is considered likely).

The community will need to estimate sustainability costs, that is, annual costs of supporting and operating telehealth (including telecommunications costs, site coordinator salary, new services planned/equipment required, evergreening plan for aging equipment).

Technical Resources

Communities are concerned that telehealth technologies are easy to use and allow for their gradual adaptation. Initial and ongoing technical support, including 24/7 telephone support and remote troubleshooting, is essential to ensure that these technologies are used correctly It is important for community users to be well trained, comfortable and supportive of these technologies.

Companies may sell telehealth equipment directly to communities without explaining the complications of connecting to health care providers. Communities can benefit from access to adequate and independent technical expertise that is helpful in negotiating with telehealth companies.

Proprietary telehealth equipment developed by various vendors is not typically interoperable. At the time of purchase, it is important to ensure that the equipment will be compatible with the equipment implemented in the sites to which you want to connect.

The request for proposals (RFP) should include a precise description of the project requirements, such as a price range for the various types of services required, a commitment to, and penalties around, fixed delivery dates, the need for training, maintenance and long-term technical support. To save time and legal fees, included in the RFP can be a contract that the selected vendor would be expected to sign with only minor modifications.

More communities are demanding access to high bandwidth telecommunications capacity as they become aware of the potential associated with this higher capacity. The usefulness of telecommunications links in other community sectors such as education, justice and economic development, is being recognized as the Smart Community model. It offers an alternative to the traditional "stovepipe" government service delivery approach. As government departments all endeavour to "connect" to First Nations communities to deliver their services electronically, the deployment of high bandwidth telecommunications will become a priority for different levels of government (federal, provincial/territorial, regional).

There is a direct relationship between the type of health service a community wishes to deliver using telehealth and the necessary bandwidth to deliver this service adequately and effectively. Although there are many technological options to deliver a broad array of telehealth services, including store-and-forward or low bandwidth telecommunications solutions, we have learned that certain applications – for example, mental health services and urgent/emergent services – are preferably not undertaken without a minimal telecommunications capacity of 384 kilobits per second. This capacity enables clarity of picture.

Telecommunications turned out to be the most expensive cost item in two of the five pilot sites of the National Project. Consequently, it had a large impact on telehealth application selection and delivery. In the future, it is recommended that telecommunications planning be part of the initial community priority setting activities and applications selection process. This will safeguard against giving community members the misleading impression that technology is not a determining factor in selecting telehealth applications.

Policy Issues

It was originally planned in the National Project that telehealth service delivery would not disturb existing referral patterns in the five communities. That is, with telehealth, patients would be connected to their usual health care providers and facilities. Notwithstanding, one pilot community decided to change the primary care referral pattern and two other communities are liaising with new facilities to complement their access to speciality services. Of course, telehealth has the potential to connect communities to wherever they may want to go, outside of existing referral patterns. We can anticipate that, in time, more communities will choose to go where the expertise is available to meet their needs. In such cases, **FNIHB's Non-Insured Health Benefits' (NIHB) travel policy** would be affected.

Are communities expected to **reallocate savings** that might be incurred from reduced patient travel to sustained funding of telehealth? Or, can communities reallocate these savings to other health related activities, such as increasing nursing staff?

Telehealth will incur increased costs in **NIHB Allied Health Services**, more specifically in mental health, home care and rehabilitation services. Questions remain as to whether provinces will agree to fund diabetes and other forms of patient education using telehealth, as to whether dental therapy can be delivered using telehealth and as to whether telehealth will dramatically impact the delivery of other NIHB Allied Health Services.

Telehealth companies are interested in establishing **partnerships** with the federal government to provide technological infrastructure to communities. It is important for FNIHB to develop a clear mandate and strategy to deal with potential private sector partners. Telecommunications companies also wish to partner with FNIHB to provide remote community connectivity. FNIHB will need to review these offers and develop a larger health infostructure strategy that considers the needs of all its current and potentially future initiatives (i.e. the First Nations and Inuit Health Information System, telehealth and electronic health records). In addition, a number of other federal departments are considering the joint delivery of telecommunications solutions to mutually benefit from these connections (i.e. the Connecting Aboriginal Canadian strategy led by INAC).

It is important for FNIHB to examine **the impact of telehealth on current nursing practice**, especially on training, support, recruitment, retention, liability and scope of practice. FNIHB and provinces are dealing with a constant staff turnover and shortage of nurses. Telehealth can potentially improve nurse retention by addressing some of the difficulties experienced by health providers working in remote areas: lack of support, isolation and lack of continued training opportunities.

It is important for FNIHB to review the ***socio-economic benefits*** of earlier diagnoses and improved continuing care made possible through telehealth, such as savings in lost employee productivity.

In order to leverage knowledge, to build economies of scale and to increase the likelihood of success, FNIHB may wish to focus on dealing with ***"across the board" community health crises*** (such as respiratory disease or diabetes) if/when implementing telehealth on a larger scale. It may wish to determine how telehealth can contribute to the standardization of care and to the support of health needs in areas such as *home care, diabetes management, mental health* and *continuing education.*

It is important for FNIHB to review potential sources of future funding once the National Project is completed, particularly if the *evaluated cost-consequence ratio* is deemed satisfactory by communities and FNIHB. Of course, ultimately, communities must be allowed to choose whether they wish to use telehealth if it becomes an ongoing FNIHB program. A funding model for ***sustainable telehealth programs*** needs to be developed that details what items are funded by federal (national or regional offices) and provincial/territorial governments, partnerships with the private sector, research and educational institutions, or other sources. It is also important to determine whether funding should be earmarked for certain activities (needs assessment/community consultation, evaluation etc.).

Does the implementation of telehealth imply that provinces are to provide insured services on-reserve, the current responsibility of the federal government? While the *Canada Health Act* may warrant this shift in responsibility, will provinces view telehealth as an increased cost to their health care delivery systems? It is important for FNIHB to review the impact of telehealth on ***cross-jurisdictional issues***, specifically the potential negative impact on FNIHB regional funding envelopes.

Legally, the ***Canada Health Act*** provides for universal access to health services for all Canadians. Knowing this, is FNIHB obligated to implement telehealth since it has the potential to even out geographical disparities in access to health services?

Until telehealth equipment is standardized and made interoperable, ***equipment vendor monopolies established by provincial/territorial telehealth networks*** can greatly restrict First Nations and Inuit communities from connecting to each other and participating in joint initiatives. These monopolies force them to adhere to the provincial/territorial network standard, a standard that generally centralizes expertise in tertiary – and, at times, secondary – care centres. This trend goes against community capacity-building. As well, if provinces/territories decide to change vendors or upgrade equipment, will FNIHB grant the funds required to keep pace with these network modifications? In cases where provincial/territorial telehealth networks have not yet been implemented, does FNIHB wait to see what will be implemented prior to undertaking a telehealth project in First Nations and Inuit communities within those provinces/territories to ensure compatibility down the road?

Furthermore, it is important to consider the dilemma of who will be responsible for establishing in First Nations and Inuit communities ***links to provincial/territorial health and educational facilities***. What cost-sharing mechanisms can be developed? For instance, the La Romaine community participating in the National Project was denied the subsidization of its telecommunications link to the Quebec telemedicine network (RTSS) because its telehealth project was a federal initiative and not a provincial one. First Nations and Inuit communities have, as of yet, been excluded from this network.

As well, provincial/territorial health information and/or telehealth networks may have developed their own processes for tracking system usage and evaluation. These processes must be taken into account in the implementation of telehealth in First Nations and Inuit communities since they raise issues of **ownership, control and access** to health research and information.

In conclusion, **clearer models of federal/provincial/territorial cooperation** should be constructed to guide telehealth implementation in First Nations and Inuit communities. Cooperation will result in cost savings and greater efficiencies in health service delivery.

2. Critical Success Factors

From the many lessons learned, it is possible to extract a list of Critical Success Factors for future potential telehealth implementation in First Nations and Inuit communities.

Project Area	Critical Success Factors
Community	• attainable expectations • informed • readiness • stable governance and nursing services
Funding	• comprehensive • sustained
Management	• decentralized • needs-based • local champion • evaluation criteria considered at outset • targeted performance goals (preferably quantified) • effective change management • effective time management • effective project management at the community level • communications strategy • access to technical expertise • training/capacity building
Health Care/ Educational Practice	• comprehensive provincial reimbursement of telehealth services provided by fee-for-service practitioners • formal agreements (MOU) with referral and educational centers • resolution of liability, licensing, accountability and insurance issues • standardized practice protocols and clinical guidelines • compliance with academic standards/curricula and accreditation • interprovincial licensing agreements • evaluations of clinical and educational efficacy • legal and technical provisions for privacy and confidentiality • ethics review • periodical training and 24/7 technical support for telehealth users

Project Area	Critical Success Factors
Technology	• user-friendliness • ongoing technical support • security mechanisms • interoperable, plug-and-play solutions • access to the required bandwidth • telecommunications planning at the outset • sufficient testing and demonstration period
Policy	• flexibility/choice in referral patterns • harmonization of F/P/T initiatives • positive evaluations of telehealth • federal coordination of non-insured health benefits/telehealth policies

3. Evaluation Outcomes

All findings of the evaluation – including detailed case studies of each community project – are documented in the Final Evaluation Report attached in Appendix A. These are summarized below according to the main research questions raised during the evaluation.

Access to needed, quality care

To what extent do the telehealth applications respond to community needs, as defined by the needs assessments?

In general, telehealth applications responded to community needs, although this was clearer in some communities than others. At issue are not only the definition of needs, but also how the technology and organizational arrangements can respond to needs. For instance, telehealth can be used to address the issue of diabetes within a community in a number of ways, with some ways being more easily integrated than others.

To what extent do patients and families find each telehealth application acceptable?

It seems overwhelmingly clear that, once initial concerns are overcome with a positive experience, telehealth is acceptable to the vast majority of patients and families who use it. Consistent with the findings in the research literature review, satisfaction levels are high, and almost all patients would use the system again. In addition, although the evaluation design did not permit assessment of the views of those patients who did not use the system, refusals to use the system were infrequent. It should be noted, however, that the quality of many patients' experience with telehealth is due to the quality of the care provided by nursing station staff and the relationships they have with them; when telehealth provides a new service, what is most salient to many patients is not the new technology but the new relationship and the new care received.

To what extent has telehealth improved access to needed, quality care?

The extent to which telehealth has improved access to needed care in the community depends on the extent to which it was used and integrated into ongoing health service delivery. When usage and integration were higher, telehealth certainly improved access to care within the community. Moreover, the quality of care provided was, insofar as can be

estimated by this study, of quality equivalent or better to standard care. These findings are consistent with the research literature examined.

To what extent are services provided through telehealth consistent with established means of improving patient health outcomes?

Insofar as can be assessed in this study, services provided through telehealth are consistent with established means of improving patients' outcomes. In the views of the health professionals consulted, in no case was telehealth seen as inconsistent with established professional practice guidelines. Moreover, data obtained from the encounter forms suggest that educational interventions delivered through telehealth to patients were generally consistent with established patient education guidelines, although some aspects were addressed more frequently than others.

Health services delivery

To what extent has telehealth use been organized successfully?

The successful organization of telehealth usage in this project varied among the communities, according to a number of factors. Key among these were the stability of staff during the implementation period and the quality of the relationships established with the remote referral centres. **Stable, committed staff in the nursing station was a key success factor for effective implementation of telehealth in these communities.** This is an issue that was not identified in the research literature, and may be unique to isolated communities.

To what extent have the professional skills and competencies required for telehealth been identified and successfully addressed through training?

The main issue with respect to the development of professional competencies for telehealth through training was the constant need to provide training to new staff members due to turnover. The adequacy of training received was also a result of the user-friendliness of the technologies involved. Training received for the interactive video-based systems was generally felt to be adequate partly because the systems were very easy to use; this was not the case for the store-and-forward system.

To what extent are telehealth applications used by eligible patients in the community?

It is not really possible for this evaluation to answer this question adequately, as little information was made available on the numbers of eligible patients (those with the health conditions which would make them candidates for using the available applications) who did or did not use telehealth during the study period. In some cases, it is clear that only a small fraction of eligible patients used the systems; while in others, the identification of new patents with health needs that had never before been addressed as a result of the implementation of telehealth suggests a high level of penetration.

To what extent does telehealth improve competencies and confidence of local health personnel?

In all communities, the implementation of telehealth brought new competencies to local health personnel, and in all cases, these were widely welcomed. Telehealth was seen as greatly improving access to outside expertise, reducing feelings of professional isolation, increasing confidence in judgments and improving the quality of patient care decisions made about cases in conjunction with remote experts. These results confirm those of existing studies in the area of tele-education for professionals.

How does telehealth affect staff workload, task allocation and professional practices?

When telehealth coordination responsibilities were assigned to a nurse in the nursing station who also had patient care duties, workload demand slowed full implementation. There were, therefore, advantages to assigning these to a separate individual, although it seems preferred that this person have some medical qualifications in order to facilitate communication with remote providers. Other impacts on task allocation seemed limited, perhaps due to the only partial integration of telehealth into some of the community's practices. To the extent that nursing station staff participate in continuing professional education using telehealth, their scope and quality of practice may be improved.

In terms of workload and practice shifts for remote providers, the overall pattern of responses would suggest that telehealth decreases efficiency. The appointments themselves are longer because of set-up time and perhaps increased attention to patients. The rate of patient no-shows also reduces efficiency and productivity for tertiary care providers. While, in many case,s this has not been an issue so far because of the pilot nature of the project, there are several indications in our data that institutionalization of telehealth will require attention to ensuring adequate compensation to remote partners for the loss of productivity – a critical issue compounded by the general scarcity of resources.

To what extent does telehealth result in cost increases, decreases or shifts for health service delivery at the community level?

Overall, the evaluation suggests that the net effect of telehealth is to generate greater access to care, thereby, increasing costs. Cost increases result both from increases in the numbers of patients receiving services — services are now available where none were before – as well as in the intensity of services delivered – patients, especially in some applications, are seen more frequently (regularly using telehealth) than they had been before. The increases in care provided are accompanied by increased indirect costs, over and above provider remuneration and telecommunications cost, in terms of auxiliary equipment supplies and maintenance, patient supplies and within-community patient transportation costs. In addition, some of the data suggest that telehealth sessions take longer than equivalent in-person sessions, thus reducing efficiency.

In terms of avoidance of patient transfers and their associated costs, the results suggest that telehealth will result in avoided transfers in about 30 to 40% of patient care utilizations. This is somewhat less than the rates that can be estimated from the few studies available in the literature, but not a striking difference. As a proportion of total telehealth utilization within a community, this rate will depend on the balance between patient care and other types of applications that the system is used for, notably continuing professional or community education. That is, the more a community uses its telehealth system for non-patient-care applications, the less its telehealth utilization will result in patient transfers. In addition, avoiding transfers seems to be more appealing to patients whose lives or health are most disrupted by leaving the community – elders and families with young children — and least appealing to those patients who are less inconvenienced by transfers and are, in fact, convenienced by them. When a community chooses applications that are concentrated on these two extreme age groups, the proportion of transfers avoided out of all utilizations may be expected to be higher than when a community chooses applications for health problems that affect its population throughout the lifespan.

What is the level of technical success of the platforms, applications and suppliers?

All communities experienced, at minimum, occasional technical problems, but these were resolved with adequate technical assistance in all but one community. In general, the interactive video platforms were found to be reliable and easy to use, although with occasional visual and sound quality limitations, depending on the application. Support provided by the three suppliers involved ranged from excellent to less than satisfactory and was a critical success factor in telehealth deployment.

Linkages among health resources

To what extent is telehealth appropriated, integrated and sustained as a part of the community's self-governed health care system?

The extent to which telehealth was appropriated, integrated and will be sustained varied greatly from community to community. In one community, appropriation and integration have exceeded both the community's and its partners' expectations, and sustainability and expansion of the initiative are almost certain. In the others, varying degrees of integration were associated with varying levels of community mobilization and support, stability within the community's health resources during the study period, technical success, and support provided by both existing telehealth initiatives and by the vendor. In addition, the capacity of the initiative to develop the committed, trusting relationships necessary to ensure good communication and problem-solving was critical to appropriation and integration. **Relating to this issue, real-time technologies and applications are advantaged over store-and forward systems.**

To what extent have the telehealth applications become linked to and integrated with provincial initiatives?

In those provinces where provincial initiatives exist, the communities became linked with them in accordance with the extent of their resources. Interoperability was not a barrier in any of these sites. These links provided access to a larger community of telehealth users, broader support and development from which these communities benefited. **The existence of such provincial networks and their capacity to bring the pilot communities into their fold was a critical success factor in the project.**

To what extent does telehealth improve access of secondary/tertiary care and education providers to local health service providers?

Access of education providers to the communities was improved when there was an existing provincial network coordinating educational opportunities for network members, publicizing its activities, and in some cases, covering the costs of the telecommunications link.

To what extent does telehealth improve health service providers' awareness and knowledge of local conditions and resources?

In several cases, remote providers did maintain that the relationship created through the telehealth initiative had

Overall, the results of this evaluation showed that telehealth can be successfully implemented in isolated First Nations communities, bringing with it access to needed, quality care, stronger relationships with external health providers, and greater community capacity to undertake major health initiatives. In the long term, telehealth can, therefore, potentially improve health of community members and health service infrastructure within communities. However, successful implementation is contingent on several important factors at the community level: nursing station staff stability, community mobilization, strong relationships with remote providers and provincial telehealth systems, and effective technology and supports.

improved their awareness and knowledge of local conditions and resources, as well as challenges faced by the communities. This has led to increased sensitivity on the part of remote health service providers to the special situations of First Nations communities, as well as to relationships based on mutual trust and respect.

4. Recommendations

1. ***A concerted approach to the lack of connectivity in rural and remote communities, and especially Aboriginal communities, is required***. This issue is one that cannot be resolved by FNIHB, nor by Health Canada, in isolation. The National Broadband Task Force and the Connecting Aboriginal Canadians strategy will no doubt raise the profile of this issue. However, their effectiveness in increasing infrastructure deployment will depend on the allocation of dedicated funding to this end.

   A concerted approach to connectivity would not be designed to solely benefit the community health care system. Rather, it would adopt *the Smart Community model* that enables the uptake of technology for community and economic development, education, health, social services, law enforcement, band management etc.

2. ***It is recommended that new research be undertaken to further explore issues raised in the context of this project and to build a unique body of knowledge needed for the implementation of successful telehealth initiatives in First Nations and Inuit communities***. New research could be used to: develop implementation strategies based on type, needs and capacity of a community; to develop funding models for sustainable telehealth initiatives once again based on the unique community situation; to conduct enhanced cost-benefit analyses; to develop models of F/P/T cooperation guiding telehealth implementation, particularly in rural and remote communities. New research should be undertaken over a longer amortization period to substantially increase its value.

3. ***Opportunities to undertake telehealth (including research) should be offered in a manner that is equitable and sustainable across all First Nations and Inuit communities***. Many First Nations communities do not have the structure nor resources to undertake major proposal writing. As well, a clear commitment to provide sustainable funding should be made at the outset. New project timeframes should be adapted to the implementation process required in First Nations communities (a minimum of 3-5 years).

4. ***New research should study the system-wide impact of telehealth on various funding envelopes and on human resource infrastructures of communities, provinces and FNIHB***. Research data will contribute to the building of a Business Case for telehealth in First Nations and Inuit communities.[21] Sustaining telehealth activity in the long term will have significant impact on current funding levels in the following ways: it will decrease, and in some cases, increase the costs of patient travel; it will increase the costs of certain allied health services; it will introduce new health services (and, thereby, new costs) to the

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21   The Business Case is a comprehensive analysis of the full potential of what can be achieved by telehealth thanks to identified strategic investments. It is a means of addressing the main concerns of decision-makers and funders and encouraging them to ultimately support an ideal scenario for telehealth implementation. The main components of the Business Case are the Environmental Scan, a list of tangible and intangible benefits, a Strategic Plan and a Costing Model (cost assumptions and estimates). The Strategic Plan determines who, when, where and how telehealth will potentially be implemented in First Nations and Inuit communities. This is critical to determining a costing model for potential future telehealth communities (i.e. how many sites). The Strategic Plan anticipates what would occur ***if*** funding is granted for large-scale implementation. The scope of this possible funding is not known and, therefore, the Strategic Plan explores, and remains flexible to deal with, various funding options.

community; it will increase the pressures on human resources at the community level, at the provincial level and at the FNIHB regional office level.

5. ***It is recommended that strategies be elaborated to ensure that telehealth effectively contributes to capacity-building, service integration and sustainability in First Nations and Inuit communities***. These are shared priorities in First Nations health of FNIHB and of the Assembly of First Nations.

6. ***Increased awareness/understanding of, and communication to, First Nations and Inuit stakeholder in matters relating to telehealth will enable them to take advantage of new and existing initiatives and funding opportunities***. A rising interest among these stakeholders in the deployment of information and communications technology to benefit health has been demonstrated. However, beyond interest, it is important to gather the knowledge of First Nations and Inuit on why and how this deployment should take place within specific communities, regionally as well as nationally. A primary vehicle for information-sharing and feedback is the creation of a Standing Working Group composed of First Nations and Inuit representatives appointed by national and regional associations, in addition to FNIHB representatives. The primary mandate of this Working Group will be to design a Blueprint and Strategic Plan for potential telehealth implementation.

7. ***Linkages between telehealth and other initiatives of the Aboriginal Health Infostructure (such as FNIHIS, EHRs and health research initiatives), as well as with Canadian Health Infostructure initiatives, are critical in order to leverage investments to benefit Aboriginal peoples***.[22]. A concerted approach to health infostructure development – emphasizing harmonization, linkages and leveraging of investments – will ensure that policy and other issues are addressed concurrently, and that economies of scale are created wherever possible. For instance, a comprehensive information management/technology framework – for health information systems, automated records, telehealth systems etc. – could be made available that is culturally adapted and coordinated with community capacity-building strategies. It is important to ensure that Aboriginal interests are represented in F/P/T discussions and partnerships involved in the development of the Canada Health Infoway. More specifically, awareness should be raised concerning unique federal/provincial/Aboriginal jurisdictional issues.

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22 A preliminary vision of the AHI was elaborated by the Advisory Council on Health Infostructure in 1999. It is intended as a distinct component of the Canadian Health Infostructure. Main principles of the AHI were suggested by the Council: self-determination, knowledge as power, and building human resource capacity and autonomous institutional development. Currently, development of the AHI is being undertaken by a Planning Committee composed of representatives of Aboriginal organizations and of FNIHB.

Dissemination Plan» » » » » » »

The dissemination plan is aimed at providing information useful to: the five First Nations communities participating in the National Project to assist them in deciding whether to continue to invest in telehealth; other Aboriginal communities who wish to undertake telehealth initiatives; and FNIHB to help it decide whether to pursue telehealth implementation in other First Nations and Inuit communities.

1. Main Themes

The information can be used as background for building a Business Case for telehealth services, or simply to gain a better understanding of telehealth implementation and use in rural and remote communities, particularly First Nations and Inuit communities. There are three main themes in the information disseminated:

1. **Implementation Process**: Tools developed during the National Project such as a project planning and scheduling tool, a community needs assessment tool, an evaluation framework tool, a community Request for Proposals template, a community bid analysis tool, a community MOU and contribution agreement template; and, regular updates on the progress achieved.

2. **Lessons Learned**: Potential benefits of telehealth identified by communities during the needs assessment process, telehealth human resource issues, financial resource issues, technical resource issues and policy issues.

3. **Evaluation Findings**: Results of the data gathering instruments, key informant interviews, patient satisfaction questionnaires etc.

2. Target Audiences

Target audiences are categorized according to each information theme.

Implementation Process	Lessons Learned	Evaluation Findings
• Five participating First Nations communities and their partners (provincial facilities); • Aboriginal communities; • Other rural and remote communities; • Telehealth coordinators.	• Associations of Aboriginal and other health care providers/managers; • Health Canada and other federal departments; • National and regional First Nations and Inuit organizations; • Provincial/territorial governments; • Telehealth coordinators; • Researchers; • Telehealth industry.	• Five participating First Nations communities; • Other Aboriginal communities; • Health Canada and other federal departments; • Provincial/territorial governments; • National and regional First Nations and Inuit organizations; • Associations of Aboriginal and other health care providers/managers; • Researchers; • Telehealth industry.

3. Dissemination Principles

The Project Accountability Framework, developed by FNIHB in consultation with the community project teams, specifies some principles to which the dissemination plan must adhere:

➢ We agree that all those involved in the project will respect individual and community privacy, confidentiality and ownership of health data/information as agreed to. We agree that the community will own the health data and information that is collected by the project.

➢ We agree that the documentation and communications of this project will be carried out, developed and produced in both official languages of Canada.

➢ We agree that communities will own the community health and evaluation data collected during this project and that Health Canada will release information about the community only upon the approval of the communities involved and that Health Canada will not use the data collected for any other purposes other that for which it was collected.

➢ We agree as project stakeholders that we will respect individual and community privacy, confidentiality and ownership of health data and information. All information of a personal nature to which the project stakeholders become privy, shall be treated as confidential. All information of a personal medical nature to which the project stakeholders become privy, shall be treated as confidential in accordance with the *Privacy Act*.

➢ We agree that only aggregate data collected throughout the pilot process will be shared with key stakeholders to support the development and management of a Business Case for Telehealth Services in First Nations and Inuit communities that can respond to the gaps and sustainability of telehealth.

4. Dissemination Activities

Activities are categorized according to each information theme. Some activities address more than one theme: the website, the HTF Final Results Report, the Education Primer.

Implementation Process	During the initial implementation process, information packages (including a movie, pamphlet and slide presentation) were disseminated to the five participating First Nations communities.
	A news release was disseminated by Health Canada on September 3, 1998 entitled *Release of the Final Report of the National Conference on Health Infostructure*.
	The FNIHB website lists tools available and provides community updates. Tools are available upon request to Aboriginal communities.
	Most communities undertook some form of information dissemination during the implementation process to educate community members and promote the project at the regional/provincial level. For example:
	• La Romaine: three radio communiqués, posters displayed in the community, annual updates at the Quebec Native Caucus, two radio news reports in Sept-Iles;
	• Berens River: two articles in the *Winnipeg Free Press* (September 2000), open house (Summer 2000).
	• Southend: door-to-door community information campaign with pamphlets, open house (Spring 2000).

- Fort Chipewyan: News release (May 2000), article in <u>The Ottawa Citizen</u> (May 29,2000), presentations at the TecKnowledge Telehealth Coordinators Conference (September 2000), at the National Information-Sharing and Feedback Session on the Potential Future of Telehealth in First Nations and Inuit Communities (October 5-6 2000), open house (October 30, 2000).

No standard communication plan was developed for all communities.

Lessons Learned

The website summarizes the Lessons Learned.

FNIHB headquarters have presented Lessons Learned at the following events in 2000: Aboriginal Nurses Association's Annual Teaching Conference (May), the Ontario Centre for Health Promotion Summer School (June), the *Building Linkages and the Role of Technology in First Nations and Inuit Health* workshop organized by FNIHB (July), a FNIHB Regional Zone Nursing Officers meeting (September), Government and Technology Week (October), the Canadian Society of Telehealth Annual Conference (October), Health Canada's E-Health Conference (October), Smart 2000 (October), InfoHealth 2000 (October), a *Democracy Bytes Back* workshop (November 2000). Lessons Learned will continue to be presented at conferences/meetings/workshops when opportunities/requests arise. On February 26, 2001, FNIHB was asked to coordinate a live telehealth demonstration at a Plenary Session of the Assembly of First Nations Health Conference. A presentation was made on the National Project. The Project's satellite communications contractor, Telesat, sponsored the event that included three live links to the Berens River Nursing Station, the Winnipeg Health Sciences Centre and the Fort Severn Nursing Station. As well, a video containing testimonials from three of the participating communities was shown at the FNIHB Conference booth.

On October 5-6, 2000, FNIHB, in partnership with the AFN and the Inuit Tapirisat of Canada, held a National Information-Sharing and Feedback Session on the Potential Future of Telehealth in First Nations and Inuit communities. Approximately 60 First Nations and Inuit representatives attended the session traveling from most provinces/territories, including the main participants of the National Project community teams. The session was a first step in a broad consultation strategy initiated by FNIHB. It was intended to give participants the opportunity to acquire a general understanding of telehealth and its implications for First Nations and Inuit communities. Participants were also invited to discuss the need for telehealth and the general components of a Blueprint to guide its potential future development. Finally, participants were called upon to identify the next steps required to move forward the telehealth agenda. A Final Report of the Session was widely disseminated to attendees and other interested Aboriginal organizations/communities, as well as within Health Canada.

The main recommendation formulated by session attendees was to establish an Ad Hoc Working Group to address next steps in a more detailed fashion and to draft a Vision Statement for First Nations and Inuit Telehealth. Fifteen attendees volunteered to participate in the Ad Hoc Working Group. The Group's first meeting was held on November 23-24, 2000.

An Education Primer that is largely based on the Lessons Learned will serve as the main content of a national information-sharing and feedback strategy. This strategy will be developed jointly by national and regional FNIHB telehealth coordinators, in consultation with national and regional First Nations and Inuit representatives sitting on a Standing Working Group. The Primer will target First Nations and Inuit community leadership and health providers. Its goal is to raise awareness, obtain feedback on a Vision Statement and Blueprint for potential future telehealth implementation, and build community capacity in telehealth management/implementation.

Evaluation Findings

On March 25-27, 2001, a Final Project meeting was held to reunite the five community project teams and the Peer Review Team, and to present evaluation findings and review the draft HTF Final Results Report.

An HTF Final Results Report will be disseminated within Health Canada and distributed to other federal departments, provincial/territorial governments, First Nations and Inuit organizations/communities upon request.

Findings will be posted on the website. They will be communicated at national, and potentially international, conferences/workshops and integrated in the Education Primer (see above).