Attachment 8: » » » » » » » »

Evaluation Plan

Draft Evaluation Plan
(Revised Version)
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— working document only —
Please note that this plan has not yet been approved by participating communities.

Introduction

First Nations' Telehealth Research Project

Telehealth — the delivery of health information, resources and services through remote technology — is becoming increasingly accessible as part of comprehensive health care systems. For underserved and remote communities, telehealth offers the promise of reducing the constraints imposed by distance and poor infrastructure while improving health and well-being. As one of several telehealth demonstration and evaluation projects funded through the Federal Health Transition Fund, the First Nations' Telehealth Project will deploy and evaluate applications of telehealth in five remote First Nations communities.

The overall objectives of the First Nations' Telehealth Research Project are: 1) to improve patient and community access to high quality health care, including timeliness of access to medical advice, services and health information; 2) to improve the delivery of cost-effective health services in the communities; and 3) to improve linkages of remote health care centres to secondary, tertiary and educational facilities in each province.

The communities involved in this project, each of which will implement three different telehealth applications, are diverse. Four have already assumed governance of a major portion of their health systems, and the fifth is in the preliminary stages of negotiation for the transfer. The health resources available within each community differ, as do their access to secondary and tertiary care.

The table below summarizes the telehealth applications which will be implemented in each community. These applications were identified through a detailed needs assessment involving extensive community consultations about health priorities and issues relating to telehealth. The needs assessment process involved: qualitative interviews with key informants (health centre personnel, community leaders and opinion leaders, and secondary/tertiary centre partners); review of health status information gleaned from local or regional health statistics or records; review of background information on communities' social and demographic characteristics.

Telehealth Applications Selected for Five Communities					
Community	**Population**	**Referral Sites**	**Telehealth Applications (First three priorities)**		
Anahim Lake	659 band members 400 non band members 5,000 tourist season	Williams Lake	Trauma triage and early intervention	Cardiology	Mental health services
Berens River	1759 band members	Winnipeg	Diabetes prevention and clinical care	Mental health services: patient assessment and counselling; specialist consult, group therapy	Continuing medical education programs for health care staff, administrators and paraprofessionals
La Romaine	100 off-reserve	Sept-Iles Quebec City	Diabetes medical consultations: remote home care, retinal examination, skin examination	Cardiovascular health: tele ECG, telemonitoring (heart rate, saturometer, blood pressure)	Ear-Nose-Throat remote specialist consultations
Fort Chipewyan	2900 total 1864 in area	Fort McMurray	Rehabilitation services: Occupational, speech and physiotherapy	Distance education for health staff	Telefamily/ televisitation
Southend	918 in community, one of several in Peter Ballantyne Cree Nation	La Ronge Prince Albert Saskatoon	Specialist consults	Diabetic education and management: monitoring, outreach and education	Mental health: remote consultation for adults and children

Literature review of telehealth applications

A review of the research literature on those telehealth applications to be implemented by the five communities has shown that relevant information is available from empirical studies of these applications. However, there is greater literature coverage in the areas of mental health, diabetes management, dermatology and emergency medicine, with relatively little focus on rehabilitation, ENT and continuing medical education. Moreover, the quality of the studies varies greatly: few have appropriate control groups, long-term follow-up, or assessment of patient health outcomes. In addition, the studies tend to be conducted in rural but not necessarily remote locations. Below, we summarize the main general conclusions across all applications. A detailed summary of the lessons learned from the articles on relevant telehealth applications may be found in Appendix 1.

- To date, the research literature in telemedicine has tended to concentrate on the accuracy and reliability of information and diagnoses provided through telehealth applications. In general, these studies show adequate levels of agreement between remote and in-person consultations. In this sense, it can be said that there is at this point, relatively strong evidence that quality of care provided through telehealth is comparable to that provided through usual channels. However, other aspects of quality of care, including continuity and comprehensiveness, have not been addressed.
- It is unclear as yet whether telehealth represents an improvement in the quality and accessibility of care, versus a shifting of the same care to less costly methods of delivery.
- The organizational implications of implementing telehealth are not well documented, although some studies mention changes in work loads and work organization for health personnel. Scheduling telehealth consultations seems to consume more time than expected. The discussion sections in some studies emphasize that the success of telehealth depends mostly on human factors: planning, cooperation, and an accepting organizational culture.
- While many studies address the cost-effectiveness of telemedicine, they tend to limit their assessment of costs to the time involved from the specialty physicians. These studies usually show that telehealth is cost-effective. More comprehensive studies including equipment, telecommunications, and organizational costs suggest that cost-effectiveness is not guaranteed, and at the very least must be assessed over a relatively long amortization period.
- Levels of use of telehealth systems are often less than expected. No studies have systematically examined the proportion of eligible patients in a given practice population who use telehealth. Usage level is a major factor in cost-effectiveness when the cost of equipment and communication infrastructure is considered. (It is also central to the evaluation of this project, as a minimum of 30 different patients per community receiving services over the telehealth system during the life of the project (January to September 2000) will be required for valid quantitative analyses, including the cost-effectiveness assessment.)
- Cost reductions have been examined in terms of decreased travel (patient transfers to specialized centres) and decreased wait time. Use of telehealth may diminish patient transfers, but not in all cases. While avoidance of transfers or of in-person visits depends greatly on the applications, very roughly speaking we could expect that about 40-50% of transfers might be avoided by using telehealth. The extent to which telehealth defers rather than replaces in-person consultations has not been addressed.
- Reactions among local health providers (in most studies, general practitioners) are generally quite positive, and there is some evidence that telehealth provides learning opportunities for them, thus indirectly improving the quality of care received.

- Patient satisfaction with telehealth is high. In studies where it has been assessed, patients report that their quality of life is improved by using telehealth. Moreover, in some types of applications, patients report that they feel more empowered or in control of their interactions with health professionals when using telehealth. Patients also express feeling reassured by seeing their practitioner interact with a specialist.
- Financial and administrative practices may be major barriers to implementation, especially for remunerating remote personnel. Legal barriers have been overcome in some settings but have limited the deployment of telehealth in others.
- Technical problems are not absent in telehealth use, and are more frequent in the early stages of implementation. Adequate training and learning time are required, and skill levels must be maintained. Difficulties with audio and images are more frequent than connection problems. Lighting and camera operation have the greatest impact on image quality.
- Overall, the research literature in telehealth suggests that it has the potential to improve health services delivery while maintaining patient health outcomes, but that its cost-effectiveness and implementability have yet to be clearly demonstrated.

Project Evaluation

Evaluation Questions

The evaluation has been designed to address, as comprehensively as possible, three issues central to the project objectives:

- telehealth impacts on patient and community access to needed, quality care
- role of telehealth in health services delivery, including cost-effectiveness and
- linkages of telehealth with existing health resources.

Since each community among the five is unique in terms of its history, culture, needs, preferences, resources, social organization, political organization, resource people and infrastructures, the evaluation must be appropriate and responsive to each community while at the same time providing information relevant to telehealth implementation across all five sites as well as for other First Nations communities.

The evaluation questions relating to each of the above issues were developed though the literature review, the needs assessments and consultations with project officers, with support from existing general frameworks for evaluation questions, including Treasury Board guidelines[1] and other major approaches to evaluation of health and social programs[2]. There are two sets:

- questions common to all the participating communities (the horizontal questions)
- questions specific to each community (site-specific questions).

1 Treasury Board of Canada, Program Evaluation Branch, Office of the Comptroller General (1991). Program Evaluation Methods: Measurement and Attribution of Program Results. Ottawa: Minister of Supply and Services; Treasury Board of Canada, Program Evaluation Branch, Office of the Comptroller General (1989). Working standards for the evaluation of programs in federal departments and agencies. Ottawa: Minister of Supply and Services.

2 Stufflebeam, D. (1987). The CIPP model for program evaluation. in G. Madaus, M. Scriven, D. Stufflebeam (Eds.), Evaluation Models: Viewpoints on Educational and Human Services Evaluation. Boston: Kluwer-Nijhoff.

Indicators have been developed for each question. Examples are provided in the tables below.

Horizontal evaluation questions (all sites)

Issue	Specific evaluation questions	Indicators
Access to needed, quality care	To what extent do the telehealth applications respond to the community's needs, as defined by the needs assessment?	Stakeholders views of telehealth application responsiveness to needs identified in the needs assessment
	To what extent do patients and families find each telehealth application acceptable?	Proportion of eligible patients who accept and refuse to use telehealth; refusal reasonsPatient reports of acceptability and satisfaction
	To what extent has telehealth improved access to needed, quality care?	Proportion of eligible patients receiving relevant specialist care, with and without telehealth;Delays to access relevant specialist care, with and without telehealth;Views of health personnel on quality and accessibility of links to specialists and on communication flow
	To what extent are services provided through telehealth consistent with established means of improving patient health outcomes?	Proportion of telehealth interventions which meet accepted standards of care (clinical guidelines); Proportion which improve likelihood of meeting accepted standards of care;
Health services delivery	To what extent has telehealth use been organized successfully?	Health staff reports of organizational problemsProportion of patient encounters involving scheduling difficulties
	To what extent have the professional skills and competencies required for telehealth been identified and successfully addressed through training?	Health staff reports of skill and competency requirements for using telehealth/ Health staff assessments of training adequacyNumber and type of difficulties encountered which could been prevented through training
	To what extent are telehealth applications used by eligible patients in the community?	Proportion of patients with targeted health conditions as primary or secondary diagnosis using telehealth/ Proportion of health centre visits of patients with targeted health conditions as a primary complaint using telehealth
	To what extent does telehealth improve competencies and confidence of local health personnel?	Health personnel and tertiary provider views of own and each others' competency and confidence in application areas
	How and how much does telehealth affect staff workload, task allocation and professional practices?	Health staff workload : active cases, patients per week, time spent on non-transferred patients; Task allocation and professional practices: shifts in types of services given, integration of telehealth responsibilities into ongoing responsibilities
	To what extent does telehealth result in cost increases, decreases or shifts for health service delivery within the communities?	Direct costs : health personnel time, other staff time, telecommunications, supplies, training etc./ Costs avoided : costs of patient transfers avoidedOpportunity costs : shift of staff time to curative from preventive care

Issue	Specific evaluation questions	Indicators
Health services delivery *(continued)*	What is the level of technical success of the platforms, applications and suppliers in the implementing communities?	Ease of meeting infrastructure requirements (space, telecommunications)Proportion of down time/ Proportion of patient encounters affected by technical problems/ Number of incidents requiring technical supportTraining time required/ Staff views of ease of use and technical quality
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, or integrated into the negotiations of transfer agreements?	Stakeholders' views of telehealth sustainability : post project, short term, long termSustainability plans and budgetsIntentions of community leaders to continue support
	To what extent have the telehealth applications become linked and integrated to provincial initiatives?	Provincial health systems' views of strength and compatibility of links
	To what extent does telehealth improve access of secondary, tertiary and education providers to local health service providers?	Secondary, tertiary end education provider views of access to local health centre staff
	To what extent does telehealth improve health service providers' awareness and knowledge of local conditions and resources?	Tertiary providers views of own awareness and knowledge of local health conditions and resources

Site specific evaluation questions

Based on our discussions with project officers and teams, specific evaluation questions have emerged as priorities for each site. (These questions must be validated by the participating communities.) While some of these questions will also be addressed by the cross-site evaluation, they will be given special emphasis in the sites where they are a priority.

Community	Evaluation Questions	Indicators
Fort Chipewayan	1. To what extent does telehealth increase accessibility of rehabilitation services? 2. To what extent and with whom does telehealth position the community as a source of expertise in First Nations rehabilitation care?	Proportion of eligible patients receiving relevant rehab care in community; Delays to access rehab care;Stakeholder views of impacts on referral and request patterns to Fort Chipewyan

Community	Evaluation Questions	Indicators
Anahim Lake	1. To what extent does telehealth increase access to tertiary, secondary and education resources? 2. To what extent does telehealth create perceived inequities in access to specialized services? 3. What is the net effect of telehealth on workload of nursing staff and translators? 4.How have telehealth applications in mental health contributed to social development issues management in the community?	Proportion of eligible patients receiving relevant specialist care; Delays to access relevant specialist care; Views of health personnel on quality and accessibility of links to specialists and on communication flow; Patient perceptions of access equityHealth staff and translator workload : active cases, patients per week, time spent on non-transferred patientsStakeholder views of relations to other social development initiatives
La Romaine	1.To what extent does telehealth contribute to an increasing emphasis of the community health centre on community health and prevention? 2.To what extent does telehealth increase the confidence and capacity of health personnel within the community? 3. How well do home telehealth applications work in this community?	Staff time spent in curative versus preventive servicesHealth personnel and tertiary provider views of own and each others' competency and confidence in application areasHealth provider and CHR views of home telehealth success. Rates of home telehealth usage and complications
Berens River	1. To what extent does telehealth improve case management for patients with chronic disease? 2. To what extent does telehealth produce more timely diagnoses through more immediate access to specialists? 3. What is the net effect of telehealth on workload of nursing staff and translators? 4. To what extent does telehealth produce cost savings for escorted health-related travel? 5. To what extent does telehealth help Berens Rivers become a referral hub for other First Nations communities? 6. To what extent does CME through telehealth improve local capacities?	Proportion of patients for whom outcomes are judged in expert opinion to have been improved by telehealth use Proportion of eligible patients receiving relevant specialist care; Delays to access relevant specialist care;Views of health personnel on quality and accessibility of links to specialists Costs avoided : costs of patient transfers avoidedStakeholder views of impacts on referral patterns to Berens RiverStakeholder views of competencies developed
Southend	1.To what extent does telehealth increase access to specialists? 2. To what extent does telehealth improve the specialist-health centre information flow? 3. To what extent does telehealth shift curative care into the community and shift community resources away from prevention programs? 4. What is the net effect of telehealth on workload of health staff and translators?	Proportion of eligible patients receiving relevant specialist care; Delays in access to relevant specialist care;Views of health personnel on quality and accessibility of links to specialists and on communication flowStaff time spent in curative versus preventive servicesHealth staff workload : active cases, patients per week, time spent on non-transferred patients

Evaluation Methods

The overall approach to the evaluation uses multiple methods to assess changes over time from the perspectives of patients, personnel, communities and other stakeholders. It is based on the following principles:

- Consistent with the overall project philosophy, there will be community involvement in the evaluation at every phase, from the planning and development of tools and procedures, through the analysis of the data and interpretation of the results. Concretely, the evaluation team will visit each of the communities at the beginning of the project (in spring 2000) in order to adapt the proposed evaluation instruments and procedures and to plan the data collection. The evaluation will also try to build capacities for communities to conduct ongoing evaluation of their telehealth applications beyond the end of the formal research phase, 1) working directly with interested communities to build evaluation skills and resources, 2) adapting evaluation tools as closely as possible to existing procedures and resources, and 3) developing evaluation tools and instruments which are easy to use and inexpensive yet valid.
- The evaluation will try to minimize the amount of data collection activity required from the project sites.
- The conduct of the evaluation will respect the principles and assumptions of the Project Accountability framework. The Ethical Principles for Research with First Nations Communities set forth in Chapter 6 of the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans will also be respected. Moreover, to protect community privacy, the procedures have been designed so that the evaluation team will not have access to any patient identification information.
- The evaluation will be as rigorous as possible, and conclusions and recommendations will not go beyond the evidence found, particularly in the areas of patient outcomes and cost-effectiveness.

Monitoring telehealth system usage

Monitoring the use of the telehealth applications will provide information on the nature, level, quality and cost of usage. The main data collection tool will be patient encounter forms completed by health personnel and by remote health providers.

Nursing station patient encounters. During the study period, nursing station staff will be asked to record basic information about each encounter with patients who have the health conditions that would make them eligible for using a telehealth application. In order to assess the impact of the telehealth applications in the patient population, a record will be kept of patients seen at the nursing station who would be eligible for using telehealth, but who do not.)

These data will be recorded on a checklist-type form immediately after each encounter with an eligible patient. The forms will include:

- date, time and length of usage, as a proportion of total encounter
- health problem prompting the consultation
- who was present, at the local and remote sites
- what was done during the telehealth encounter
- the results of the visits in terms of subsequent actions

- any technical problems during the usage
- the implications of using telehealth in terms of costs incurred or avoided.

Draft versions of the patient encounter forms have been developed for each community, taking into account the applications to be implemented (Appendix 2). (The form has also been adapted for use in the one community using store-and forward technology.)

It is important to note that the section of the forms recording what was done during the visit provide indicators of quality of care. For those telehealth applications which address conditions for which guidelines for appropriate primary clinical practice have been established (diabetes, mental health, and cardiology), the forms include check points for the recommended components of appropriate care. These data will allow the evaluation to assess the extent to which care provided through telehealth meets accepted standards of care, as a proxy measure of the extent to which patient health outcomes are equivalent in telehealth and usual care.

Each patient will be assigned a code, to be used on all visits to the nursing station during the study period. The telehealth coordinator will be responsible for assigning codes to patients and for maintaining a master list of patients' names and codes. No nominative information will be sent outside the health centre. However, it will be essential that the same code be used for patients who visit the health centre more than once in the study period for health problems related to the telehealth applications, so that the analyses can examine the extent to which telehealth affects subsequent steps in patient care, including transfers.

The telehealth coordinator in each site will be asked to fax the completed encounter forms every two weeks to the evaluation team. These will be received at a secure fax site at McGill University.

Remote centre patient encounters. Practitioners (nurses or physicians) in the remote centres will be asked to complete a very brief patient encounter form after each telehealth encounter for patients in the study group in each site. This encounter form will include (see Appendix 3):

- date, time and length of usage
- what was done during the telehealth encounter
- the results of the visits in terms of subsequent actions
- any technical problems during the usage
- the implications of using telehealth in terms of costs incurred or avoided
- satisfaction with the session.

The telehealth coordinator will fax the required form to the provider before the session, with the patient's code already filled in, and the provider will return the completed form by fax after each session. These forms will be faxed to the evaluation team at the same time as the health centre forms, every two weeks. The two forms will be matched by the nursing station's patient code.

Patient satisfaction

All patients using telehealth in each community will be asked to complete a brief satisfaction questionnaire or interview to assess their reactions to and comfort with the telehealth system. The questionnaire (Appendix 4) has been developed from existing studies of telehealth. This questionnaire will be completely anonymous, and to the extent possible, completed in confidentiality from the nursing station staff (for example, self-administered and returned in sealed envelopes).

Qualitative interviews

Qualitative interviews will be conducted at two points in the study period, in the middle and near the end of the project. The first set of interviews will be conducted by telephone, and the second during in depth data-gathering visits to each community (likely in January of 2001). They will be conducted with stakeholders in each community, in the participating health systems, and at the national level. The stakeholders will be asked to respond as key informants giving their views on the evaluation questions from their perspectives within the project and the communities. They will be identified in collaboration with project leaders, health centre staff and other relevant sources such as the Peer review Committee.

Approximately ten semi-structured interviews will be conducted in each site at each time point, and will be one half hour to one hour in length. They may also be conducted as group consultations if this is more appropriate in the community. With participants' permission, the interviews will be tape-recorded.

The qualitative interviews will be conducted with four types of informants:

- **Nursing station personnel** (managers, nurses, CHRs, social services providers, translators): addressing local organization of telehealth, patients' reaction and outcomes, population coverage and accessibility, impacts on health centre work including workload, organization, skilling vs. deskilling, and relationships with tertiary providers;
- **Remote centre and education telehealth partners** (physicians, nurses and technical teams in the health centres linked to the participating communities; staff in educational institutions linked to the communities): addressing impacts on remote centre service organization and workload, patient reactions and outcomes, impacts on accessibility and quality of care and on relationships with community providers
- **Community leaders** (elders, council members and health committee members): in continuity with needs assessment data, addressing community level impacts on health care quality and accessibility, role of telehealth in service provision and management, overall positive and negative social and economic impacts and implications.
- **Federal and provincial agency representatives**: where relevant, addressing the integration of telehealth-based systems and services into provincial health networks and related legal, professional and administrative issues.

Relevant documentation on the telehealth project which may relate to the key informants' experiences (meeting minutes, tapes of community meetings, etc.) may also be reviewed and summarized. Appendix 5 contains a draft list of questions for the semi-structured interviews.

Financial data

Communities will be asked to provide the financial data required for us to conduct the cost-effectiveness part of the evaluation. This information will include:

- Direct costs for telehealth system:
  - equipment and supplies
  - maintenance contracts
  - renovations and systems upgrades
  - staff training and support.

- Per transfer costs for all patient transfers during the study period

  For each transfer :
  - patient identifier code (same code as used on patient encounter forms)
  - dates of transfer out and in
  - transfer location
  - transport method
  - transportation and accommodation costs borne by the community
  - staff time costs for accompanying personnel.

- Telecommunication costs
  - costs for long distance to remote health centers using a) telephone and fax; and b) telehealth system, by month, for the study period

- Average hourly wage and benefits of health centre staff during the study period, by type and/or level.

Summary of Proposed Evaluation Methods

Method	Data gathering activities	Done by whom	When
1. Monitoring telehealth system usage	Logs of patient encounters using telehealth	Health centre staff; Remote health staff	Continuously throughout study period
2. Patient satisfaction assessment	Questionnaires or interviews	Patients	Continuously throughout study period
3. Qualitative interviews	Key informant interviews (10+ per site, at two points)Review of documents	Evaluation team in collaboration with health centre staff	By telephone in mid project;In person, near end of project
4. Cost assessment	Compilation of cost data	Health centre management	At end of project

Ethical Issues

Informed consent to participate in the evaluation

Each patient who visits the health centre and uses telehealth will be asked for informed consent to participate in the evaluation, at the time of their first visit. Their consent will be obtained orally, by the health centre staff member who conducts the session, prior to the session. The telehealth system will be explained, stating that the care provided will be equivalent or better to usual care. The evaluation procedures will be explained, stating that 1) the staff members will record information about the visit, and 2) the patient will be asked to rate their satisfaction with the session (optional). It will be explained that the data will be confidential and that no individual will be identified by name, that participation is voluntary, that declining to participate will in no way affect care or services, and that the patient can change his mind about participating at any time. The consenting patient will sign

a witnessed consent form or give witnessed oral consent. The signed consent forms will be retained in the health centre files for five years, in a location apart from the evaluation data. Appendix 6 shows a draft patient consent forms for adults and guardians of children who are patients.

As mentioned earlier, patient data transmitted to the evaluation team will be completely denominalized. Matching of patients over multiple encounters and with transfer information will de done through a patient code generated and managed within the community. The evaluation team will be aware only of the patient's community.

Key informants will not be asked to sign a consent form, as participation in this type of assessment may be considered as part of their social roles or professional responsibilities. However, they will be formally asked for consent to participate, and they will be told that they are free to decline participation without consequence. They will also be told that their responses will be kept confidential, and that no respondent will be identifiable in the evaluation reports. Once the audio-tapes of the interviews have been transcribed, the tapes will be destroyed and no identifying information will appear in the transcripts.

Because this evaluation will occur in the work settings of nursing station staff, particular care will be taken to preserve the confidentiality of information related to work organization, work performance and staff relations, in order to protect the interests of all participants in the project.

Analyses

All data from the patient encounter forms and satisfaction questionnaires will be entered into databases and analyzed using SPSS. Qualitative data from the key informant interviews will be transcribed verbatim and analyzed with the assistance of NUDIST.

In-depth, embedded case studies of each site

A multiple case study methodology will be used to integrate information from all of the available data sources . Each community involved in this project will constitute a case, for which the horizontal and site specific evaluation questions will be examined in a holistic, comprehensive fashion. A case report will be produced for each site, to be reviewed and validated before it is released.

Horizontal analysis

In addition, a comparative analysis of cross-case findings would be produced, addressing the horizontal evaluation questions. These would include quantitative analyses of telehealth usage, penetration, problems and impacts, as well as an overall qualitative appreciation of the success of the telehealth program and its potential for improving health delivery in First Nations communities.

Economic analysis

Although the potential overall cost savings for telehealth is of great interest in First Nations communities, it is our assessment that a strong cost reduction business case will be unlikely at the end of the project. Based on our review of the literature, given the expected usage levels and the expected proportion of transfers avoided in relation to the direct and indirect costs of telehealth (including equipment, maintenance, telecommunications, coordination, renovations; amortized over five years) we expect that the costs of telehealth will exceed the cost savings in the first several years of the project.

Moreover, in terms of benefit to patients, cost-effectiveness analysis is not appropriate because: 1) the sample sizes will be too small to detect any important health effects (e.g. diabetes complication avoided); 2) the number of practitioners is both small and confounded with the applications, so it will be difficult to separate issues of professional competence and telehealth impacts (for example, for a teledermatology application, it would be ideal to assess patient outcomes with several dermatology specialists, some with and some without telehealth, in order to say that any effects observed were due to the system and not the physicians' competence.) The evaluation will instead assess the extent to which the services provided using telehealth can be shown to be consistent with accepted guidelines for clinical practice, for applications where these exist. These data will not lend themselves to cost-effectiveness analyses because they cannot be directly translated into patient health outcomes or costs.

For the economic analysis, we will use the cost-consequence analysis matrix developed by McIntosh & Cairns. While more qualitative, it will allow us to include the many intangible consequences of telehealth (e.g. nurse empowerment; patient satisfaction). The approach will entail categorizing health and non-health consequences of telehealth, as measured in the evaluation data collection, as: beneficial, little difference, negative, or with insufficient consequence evidence. The costs of each of these consequences would be categorized as producing savings, little difference in cost, greater costs, or with insufficient cost evidence. The overall pattern of positive versus negative consequence for greater or lesser costs would be the basis for the business case.

Evaluation Schedule

The main milestones in the evaluation timetables are:

April 2000	Visits to communities to adapt and plan the evaluation
April 30 2000	Patient encounter data collection begins
September 1- 15 2000	First set of key informant interviews
January 31 2001	Patient encounter data collection ends
January 2001	Visits to communities: second set of key informant interviews
February 1 to 15	Case studies analyses and reports
February 15 to March 15 2001	Review and validation of case studies by communities
February 1 to 28 2001	Horizontal data analyses
March 1 to 31 2001	Report preparation
March 31 2001	Final report submitted