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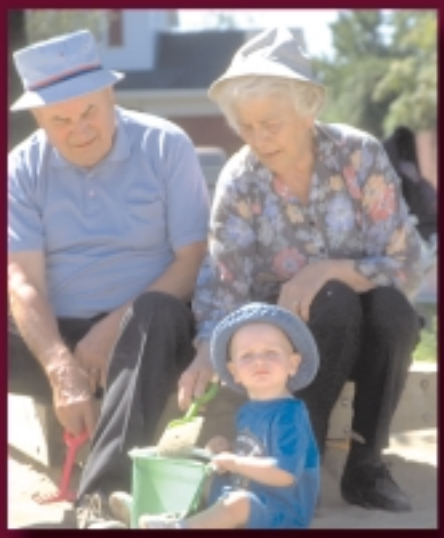

SYNTHESIS SERIES

Rural Health/Telehealth

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SYNTHESIS SERIES

Rural Health/Telehealth

Raymond W. Pong, PhD
Research Director
Centre for Rural and Northern Health Research
Laurentian University

This report is one in a series of 10 syntheses of HTF project results covering the following topics: home care, pharmaceutical issues, primary health care, integrated service delivery, Aboriginal health, seniors' health, rural health/telehealth, mental health, and children's health. The tenth document is an overall analysis. All are available electronically on the HTF website (**www.hc-sc.gc.ca/htf-fass**), which also contains information on individual HTF projects.

Executive Summary

The Health Transition Fund (HTF), a joint effort between federal, provincial, and territorial governments, was created out of the 1997 federal budget to encourage and support evidence-based decision-making in health care reform. Between 1997 and 2001, the HTF funded approximately 140 different pilot projects and/or evaluation studies across Canada. In order to communicate research evidence from the projects to decision-makers, experts were employed to synthesize the key process and outcome learnings in each of nine themes or focus areas: home care, pharmacare, primary care/primary health care, integrated service delivery, children's health, Aboriginal health, seniors' health, rural health/telehealth, and mental health. This document summarizes the key learnings from 33 projects in the rural health/telehealth theme area. It has been prepared by Raymond W. Pong, PhD, Research Director of the Centre for Rural and Northern Health Research, Laurentian University.

Health of Rural Canadians

Although there is no universally accepted definition of "rural," most people would agree that much of Canada is rural. From about a quarter to nearly a third of the Canadian population can be considered rural, depending on whether the Statistics Canada definition or a less restrictive definition is used. In other words, as many as 10 million Canadians live in predominantly rural areas or communities.

Accordingly, rural health refers to the health of people living in rural, northern, and remote areas, as well as in small towns. It can mean many things, including:

- the health status of people in rural areas;
- the conditions of rural communities that have an impact on health;
- the ways that rural residents view health issues or respond to health concerns;
- the policies, technologies, therapeutics, and approaches used to deal with health problems in rural areas; and
- the organization of services and providers to meet the health needs of rural people.

There are growing signs that all is not well in the rural health scene. From journalistic accounts to scientific studies, one learns that rural communities are not necessarily healthy places to live in and that the health status of rural Canadians tends to lag behind that of urban residents.

Rural denotes long distances from major cities, remoteness, isolation, sparse population, and often poor transportation and harsh climatic conditions. The geographic and demographic characteristics of a community often have a bearing on its economic activities and social relationships, which, in turn, may have an impact on lifestyle, health behaviours, attitudes towards health, and, indirectly, on health status. The location and the size of a community also determine, to a greater or lesser extent, what health resources and services are available. This availability could shape health care delivery strategies and patterns of use. All these factors contribute to the unique nature of rural health.

The significant findings of the HTF projects and studies are presented under three main themes: rural health, telehealth, and health human resources.

Rural Health

The lack of ready access to health services is a common complaint by rural residents. The smaller and more remote the community, the greater the problem of access. Contributing to access problems are difficulties associated with transportation, which is often inconvenient and costly in rural areas, and the

lack of health care resources. Among the inadequate resources mentioned, lack of health human resources is considered the most critical.

Most of the HTF projects were attempts to explore ways to deal with difficulties experienced by rural inhabitants in accessing health care, in overcoming the shortages of health care practitioners, and in developing a better health services delivery system. These attempts include the integration of services, community development, mobile services, innovative health workforce strategies, and the adoption of telehealth.

A number of the HTF studies have pointed out that rural health problems are often the results of more deep-rooted factors: the social, cultural, behavioural, economic, and environmental determinants of health. The argument is that unless these fundamental conditions are changed, merely adding more practitioners or services may not substantially improve the health status of the rural population.

Telehealth

Telehealth, broadly defined, is the use of communications and information technologies to overcome geographic distances in the delivery and provision of health care. It is increasingly considered an important tool for enhancing health services delivery, particularly in rural and remote regions, where health care resources and expertise are often scarce and sometimes non-existent.

The HTF telehealth-related projects all saw telehealth as a way to improve rural health services delivery by bringing diagnostic, treatment, and rehabilitation services to rural and remote areas; reducing the number of patient transfers to distant locations; and providing continuing education programs to rural practitioners.

Most of the HTF telehealth-related projects reported user satisfaction. Some projects successfully used telehealth for patient education and to bring continuing education programs to rural-based practitioners. The latter was considered very important from a recruitment-and-retention perspective, as it might help reduce the sense of professional isolation. Telehealth also helped reduce the need for patients to travel long distances in order to seek medical care. These generally favourable results were often achieved at substantial costs. At the same time, patient participation in some of the telehealth projects was low, thus raising the question of whether the costs were justified.

Health Human Resources

The most critical concern identified by the HTF projects, as well as by other rural health studies, is the acute and persistent shortage of health care practitioners in rural areas. Some of the HTF projects tried out new approaches that could be adopted by others.

A shortage of personnel often means that rural practitioners may not have the necessary expertise, skills or competency to provide the right kinds of care or make the right kinds of clinical judgment. Therefore, several of the projects attempted to address the issue by expanding the knowledge base of rural practitioners. In the long run, this is likely to be the most viable and sustainable strategy because it seeks to maximize a rural community's self-sufficiency in health human resources.

Another approach is to use interdisciplinary teams. It is believed that by working together in teams, practitioners can maximize their productivity and generate knowledge synergy. One type of interdisciplinary collaboration that has been adopted by several HTF projects is the collaboration between physicians and nurse practitioners. This model may be especially suitable for rural communities, where physicians are often in short supply or overworked.

Another strategy to overcome shortages of health human resources is personnel substitution, in which one category of health care personnel do the work

typically performed by another. In rural settings where certain kinds of health care practitioners are difficult to find, it makes sense to use available human resources to the fullest extent possible, as long as the health and safety of the patients or the public are not jeopardized. An example of this strategy is the use of physiotherapy assistants to supplement physiotherapists in order to improve rural rehabilitation services.

Finally, several projects used informal or lay caregivers – individuals who provide care on a voluntary basis – as part of their health human resources strategy. Although informal care occurs everywhere, lay caregivers play a particularly important role in rural settings because of the shortages of health care practitioners and the unavailability of many formal services.

Problems and Unresolved Issues

Problems and unresolved issues include the following:

- In order to undertake the kinds of ambitious reform to rural health services delivery envisaged by some of the HTF projects, comprehensive planning and an understanding of the broader health system or policy context are needed. However, not all projects paid sufficient attention to these issues.
- Some attempts to use innovative health human resources strategies, such as collaborative practice between physicians and nurse practitioners, were frustrated by not having obtained prior agreement from local doctors to co-operate, by health care funding models that "penalize" the use of alternative providers and by rigid legislation and regulations, such as inflexible scope-of-practice stipulations in health occupational laws.
- Several telehealth projects encountered technical difficulties that could jeopardize the successful implementation of telehealth in remote communities, where the technical know-how to deal with such problems is virtually non-existent.
- The introduction of an innovative way to deliver care, such as using telehealth to improve access to services closer to home, could be met with a lack of co-operation or with misunderstanding by service users. Patient or consumer education may need to occur before adopting a new way of providing care.
- Some telehealth projects had difficulties not because of technical problems, but due to organizational and human-relations problems (e.g., people and agencies belonging to the same network but not interacting with one another). Also, not enough attention was paid to the integration of telehealth into the existing health services delivery system.
- Both existing health care policies and the lack of policies have been identified as barriers to the wider adoption of telehealth in Canada. The most frequently mentioned impediment is the lack of policies on reimbursing physicians for providing telehealth services.

Implications for Policy

Several "big picture" policy issues have been identified:

- The 33 studies reviewed and synthesized in this report do not constitute, and were never meant to present, a comprehensive picture of rural health. However, there is an urgent need to document and examine rural health in a comprehensive, systematic, and thorough manner, if policy decisions and program planning are to be grounded on systematic evidence and not based on anecdotes.
- Many rural health problems cannot be effectively solved by piecemeal measures. Since rural health, as the HTF studies have collectively shown, is a function of the many conditions that shape rural life, unless the adverse social, economic, occupational, and ecological conditions are changed, the health status of the rural population may not improve substantially. To effectively address rural health issues, one may have to take actions on many fronts, sometimes simultaneously.

- Health workforce maldistribution has been and will continue to be a major challenge. Although conventional recruitment and retention programs are still useful in certain circumstances, they alone will not overcome the shortages of rural health care workers. A comprehensive and multi-pronged strategy is needed.
- Not all solutions to rural health problems are to be found in the health care domain. In other words, when dealing with rural health problems, one may have to think "outside the box" for answers.
- Telehealth is going to be important for rural health because it can help overcome some of the disadvantages associated with large distances and small populations. However, little is known about the effects of telehealth on health services delivery in a rural context, changes in practitioners' roles, patient referral patterns, and long-term implications. Policy implications such as these have yet to receive the kind of attention they deserve.

Recommendations

The 33 HTF projects synthesized in this report have added to our understanding of rural health in Canada and offered insights into what needs to be done. They have led to several broad policy-related recommendations.

- Given the complex and multi-dimensional nature of rural health, an overall strategy is needed, in addition to region-, discipline-, program- or issue-specific solutions. The newly established Ministerial Advisory Committee on Rural Health and similar bodies could be charged with developing such a strategy.
- Many piecemeal and symptomatic solutions have been attempted and found wanting. In order to be effective and have a more lasting impact, an overall rural health strategy must address at least some of the broader determinants of rural health.
- An overall rural health strategy must look beyond the health care domain for effective solutions to some of its problems. Thus, a concerted effort involving many sectors and stakeholders will be needed.
- Meaningful policies and effective programs to support rural health must be grounded on a better understanding of rural health – in other words, they must be evidence-based. There is a need to document and examine rural health in a comprehensive, systematic, objective, and thorough manner. To this end, rural health research needs to be strengthened in this country.
- The shortage of health care practitioners is considered by many to be the most urgent and intractable problem facing rural communities. An effective and long-term rural health workforce strategy cannot depend exclusively on incentives to attract health care practitioners to work in rural settings. Incentive-based recruitment and retention programs should be considered only one aspect of a comprehensive strategy that has many dimensions and components, as noted in Section 6(c).
- Telehealth is a useful technology, particularly for enhancing rural health. In order for it to be effective in supporting rural health, it must be "owned" by rural communities and practitioners, rather than being another urban-imposed solution.
- While telehealth technologies are developing by leaps and bounds, policies that under gird telehealth services and our understanding of the impact of telehealth on the rural health care system are mostly lagging. There is a need to turn attention to these aspects. Otherwise, telehealth will forge ahead largely in a policy vacuum.

Preface

In recent years, Canada's health care system has been closely scrutinized with a view to quality improvement and cost-effectiveness. Fiscal pressures and changing demographics are resulting in initiatives to explore how the efficiency of the health care system can be increased while ensuring that high-quality services are affordable and accessible. Within this context, there has been a need for more research-based evidence about which approaches and models of health care have been working and which have not. In response to this requirement for evidence, and on the recommendation of the National Forum on Health, the Health Transition Fund (HTF) was created out of the 1997 federal budget to encourage and support evidence-based decision making in health care reform.

A joint effort between federal, provincial and territorial governments, the HTF funded 141 pilot projects and/or evaluation studies across Canada between 1997 and 2001, for a total cost of $150 million. Of that, $120 million supported provincial and territorial projects and the remaining $30 million funded national-level initiatives. The HTF targeted initiatives in four priority areas: home care, pharmaceutical issues, primary health care, and integrated service delivery. Various other focus areas emerged under the umbrella of the original four themes, including Aboriginal health, rural health/telehealth, seniors' health, mental health, and children's health.

The HTF projects were completed by the spring of 2001. In order to communicate research evidence from the projects to decision-makers, experts were employed to synthesize the key process and outcome learnings in each theme area. This document summarizes the key learnings in the rural health/telehealth theme area. It has been prepared by Raymond W. Pong, PhD, Research Director, Centre for Rural and Northern Health Research, Laurentian University.

Unique Nature of the HTF Projects

The HTF was quite different from other organizations that fund health-related research in this country, such as the Canadian Institutes for Health Research and its predecessor the Medical Research Council.

- It was a time-limited fund, which meant that projects had to be conceived, funded, implemented, and evaluated all in four years – a very short time in the context of system reform.
- It was policy-driven; policy-makers were involved in the project selection process, and wanted to focus on some of the outstanding issues in the four theme areas in the hope that results would provide evidence or guidance about future policy and program directions.

In order to encourage projects to address issues and produce results that would be relevant to decision-makers, the HTF developed an evaluation framework consisting of six elements (access, quality, integration, health outcomes, cost-effectiveness, and transferability). Each project was required to have an evaluation plan addressing as many of these elements as were relevant. In addition, all HTF projects were required to include a dissemination plan (for which funding was provided) in order to ensure that results were effectively communicated to those best able to make use of them. In addition to these individual dissemination plans, the HTF Secretariat is implementing a national dissemination strategy, of which these synthesis documents are one element. This emphasis on evaluation (systematic learning from the experience of the pilot initiatives) and dissemination (active sharing of results) was unique on this scale.

Most national projects were selected by an intergovernmental committee following an open call for proposals, while provincial/territorial initiatives were brought forward by each individual jurisdiction for bilateral approval with the federal government. At both levels, applications came not just from academics in universities, or researchers in hospital settings, but also from non-traditional groups such as Aboriginal organizations, community groups, and isolated health regions. Groups that had rarely, if ever, thought in terms of research, evidence, evaluation, and dissemination began doing so, and these developments bode well for improved understanding and collaboration among governments, provider organizations, and researchers. The role of federal, provincial, and territorial governments in the selection process ensured that the projects delved into the issues that were of high concern in each jurisdiction. By the same token, there was considerable scope in the range of project topics, and the body of projects was not (and was never intended to be) a definitive examination of each theme.

This unique focus and selection process imparts specific features to the HTF body of projects. The projects that were funded represent good ideas that were put forward; they do not represent a comprehensive picture of all the issues and potential solutions in each of the theme areas. The relatively short time frame meant that many researchers struggled to complete their work on time and the results are preliminary or incomplete; some pilot projects might take a number of years to truly show whether they made a difference. This must be left to others to carry forward and further investigate. Perhaps the greatest value in the large body of HTF projects comes from the lessons we can learn about change management from the researchers' struggles and challenges as they undertook to implement and evaluate new approaches to longstanding health care issues.

Acknowledgements

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1. Setting the Context

But deep down, deep down where our hearts beat, who we are is rooted in the land. Though Canada is one of the most urbanized countries on earth, it is the land that has moulded us.

(Cruise & Griffiths, 1999)

1.1 What Is Rural?

Although most people have an intuitive notion of what "rural" means, there is no universally accepted definition of the word. There appear to be as many definitions of rural as there are researchers. For example, the Canadian Medical Association defines rural communities as those with a population of 10,000 or less. This definition appears to be similar to the definition of "rural and small town Canada" used by Statistics Canada, which refers to people living outside the commuting zones of larger urban centres. Other researchers prefer the OECD definition or a definition based on postal codes.[1] Most people would agree that rural includes northern communities, because much of the Canadian "far north" is sparsely populated and very isolated. Still others argue that some remotely located small cities, which may not fit the official Statistics Canada definition of rural, are in fact rural in terms of geographic isolation, economic and labour force characteristics, and access to services and amenities. As one researcher has pointed out, however, the search for a single, all-purpose definition of rural is neither desirable nor feasible. How rural is defined should depend on the task at hand.

Thus, from approximately a quarter to nearly a third of Canadians can be considered rural, depending on whether the Statistics Canada definition or a less restrictive definition is used. In other words, as many as 10 million Canadians live in predominantly rural areas or communities.

However, "rural" is not unitary or homogeneous. The rural nature of the outports of Newfoundland is quite different from that of the ranching country of southern Alberta. A village in the Eastern Townships of Quebec and a sub-arctic settlement in Nunavut may have few similarities. As an example, as one Health Transition Fund (HTF) report, *Evaluation of Models of Health Care Delivery in Inuit Regions* (NA485), has noted, while most rural areas in Canada are experiencing population aging because of the out-migration of working-age people, the Inuit population in many regions of the far north is very young and growing rapidly because of high birth rates. Therefore, when considering rural health, it is advisable to take into consideration variations in such factors as economic activity, population characteristics, ethnic composition, community structure, cultural traditions, and ecological conditions.

1.2 Rural Health

Simply put, rural health refers to the health of people living in rural, northern, and remote areas, as well as in small towns. It can mean many things, including:

- the health status of people in rural areas;
- the conditions of rural communities that have an impact on health;
- the ways that rural residents view health issues or respond to health concerns;
- the policies, technologies, therapeutics and approaches used to deal with health problems in rural areas; and
- the organization of services and providers to meet the health needs of rural people.

1. For a more detailed and technical discussion on the definitions of "rural," see Pitblado and Pong (1999).

In addition, rural health issues and other health concerns often intersect. For example, rural health often overlaps with Aboriginal health because a substantial proportion of Canadians of Aboriginal descent reside in rural, northern, or remote regions. Similarly, occupational health relating to agriculture, fishery, forestry, and mining can be considered an aspect of rural health because such economic activities occur almost exclusively in rural areas.

Although there is a lingering idyllic notion of the countryside and rural lifestyle and a lot of talk about a rural renaissance, many rural communities in Canada face demographic, ecological, economic, and social challenges due to geographic isolation, the depletion of natural resources, boom-and-bust cycles in resource-extraction industries, chronic high unemployment, the vulnerability of single-industry towns, population aging, inadequate municipal infrastructure, and so on. These problems have profound implications for the health and well-being of rural Canadians.

Although Canada is justifiably proud of its health care system – considered by many to be one of the best in the world – there are growing signs that all is not well in the rural health scene. From journalistic accounts such as the annual *Maclean's Health Report* to scientific studies, one learns that rural communities are not necessarily healthy places to live. Even the commonly held impression of a clean, wholesome rural environment has been shattered by the water-contamination tragedies in Walkerton, Ontario, and North Battleford, Saskatchewan. Based on data from the Quebec Health Survey, Pampalon (1991) has described the health conditions in rural Quebec:

> It clearly shows a trend towards a progressive deterioration in health as one moves from that area bordering urban centres into the very remote hinterland. This deterioration is revealed through inactivity, dissatisfaction with social support, perceived health and a global health index, osteo-articulary diseases, disability, medication, and little professional consultation. (p. 359)

This may also be an apt depiction of health conditions in other rural regions. For example, a similarly bleak picture has been painted in one of the HTF reports, *Evaluation of Models of Health Care Delivery in Inuit Regions* (NA485). According to this report, the Inuit population has the highest suicide rate and the shortest lifespan among all Aboriginal peoples in Canada – and Aboriginal health status falls far below the national norm. The life expectancy of Canadian men is 75.7 years, compared with 66 years for Inuit men in Nunavut. For women, the national life expectancy is 81.4 years, compared with 71 years for Inuit women. Smoking rates among the Inuit are much higher than Canadian rates. And the list goes on.

Although these Inuit mortality and morbidity statistics may represent an extreme case, many studies have documented considerable rural–urban differences in health status, health behaviour, and health service utilization patterns (Badgley, 1991; Mansfield et al., 1999; Pitblado & Pong, 1995; Pitblado et al., 1999). The much higher prevalence of heart disease in northeastern Ontario (Sahai et al., 2000); the higher prevalence of certain types of cancer among farmers (Fair, 1992) and miners; higher rates of long-term disability and chronic illness among rural residents; substantially higher rates of diabetes and respiratory and infectious diseases in many Aboriginal communities; more accident- and violence-related deaths; and shorter life expectancy and higher infant mortality in rural and small communities (Wilkin, 1992) are just a few examples. But rural "health deficits" are not an immutable reality. In the first half of the nineteenth century, life expectancy was considerably shorter in London and Paris than in the rural regions of England and France. Similarly, the countryside in Sweden had better health status than Swedish cities during the early part of the twentieth century (World Health Organization, 2000).

Besides the aforementioned facts, why is rural health being singled out for special attention? How does

rural health differ from health in general? To answer these and related questions, one has to identify the uniqueness of rural health.

From one perspective, rural is primarily a geographic-cum-demographic concept. It denotes long distances from major cities, remoteness, isolation, sparse population, and often poor transportation and harsh climatic conditions. The geographic and demographic characteristics of a community often have a bearing on its economic activities and social relationships. For instance, many rural communities rely on natural resource–based activities like farming, mining, logging, and fishing. Although advances in communications technology have allowed some individuals in far-flung places to engage in "high-tech" endeavours, they are exceptions rather than the rule. Over time, these geographic, demographic, occupational, and other related factors, such as lower educational and socio-economic levels, may coalesce and give rise to distinct cultural characteristics or even personality traits like conservatism, a sense of place, attachment to the land, rugged individualism, cliquishness, feelings of powerlessness, alienation from mainstream society, risk-taking behaviours, and stoicism. All these characteristics could have an impact on lifestyle, health behaviours, attitudes toward health, and, indirectly, health status.

The location and the size of a community also determine, to a greater or lesser extent, what health resources and services are available. This availability, in turn, shapes health care delivery strategies and utilization patterns, which may mean that the approaches and practices commonly adopted in urban locations may not be applicable to rural settings. Even on such seemingly uncontroversial issues as standards of care, there may be differences in perspective. Commenting on evidence-based medicine, Rosser (1999) has observed:

> The geographical context in which health care is delivered in a country such as Canada, with widely scattered small communities far from major medical centres, creates unique problems for the application of medical evidence. Although there may be good evidence that the quality of life of elderly people can be improved by palliative radiotherapy, the practicality of a frail 85-year-old traveling several hundred kilometres to the nearest radiotherapy centre must also be considered.... Thus, the geographical context of the situation affects decisions about treatment, even though good quality evidence may be available to support a specific course of action (p. 662).

Considerations such as this have prompted a number of HTF projects to examine alternative ways to deliver or strengthen health services in rural areas, including two projects designed to improve rural palliative care.

Another example is medical practice in rural versus urban areas. Many studies have found that rural physicians practise medicine differently than do urban doctors. The 1997 National Family Physician Survey[2] provided a wealth of empirical data on how Canadian family physicians and general practitioners worked. Data from this survey show that rural family doctors typically worked longer hours than their urban counterparts and provided a much more comprehensive range of services For instance, they were more likely to work in emergency departments and to provide on-call, hospital inpatient care and intrapartum care. This may be due to the fact that since there are fewer physicians, especially specialists, in rural communities, those who are in rural practice must fill some of the service gaps.

All this suggests that in many ways rural health is special and that many rural health issues require the attention of policy-makers because they may need special policies, strategies, and programs.

2. The 1997 National Family Physician Survey was commissioned by the College of Family Physicians of Canada as part of the Janus Project. A summary of the results of the 1997 survey can be found in: (www.cfpc.ca/Janus/Janushome.htm)

Conventional wisdom and the tried-and-true approaches developed in urban settings may not work in rural areas. Most of the HTF projects synthesized in this document are attempts to find unique solutions to the unique problems encountered in rural communities or among rural populations across Canada.

Rural health is not something of interest only to rural inhabitants. Many city-dwellers travel regularly to, from, or through the countryside, for various reasons. For instance, more and more urbanites vacation in the hinterland. The populations of some popular resort towns double or triple during the summer months or the skiing season. When travellers and tourists get sick or are involved in accidents, they must rely on rural health services. Furthermore, a growing number of urban residents are retiring to rural communities. Thus, an adequate rural health services delivery system benefits all Canadians.

2. Overview of the Health Transition Fund Studies

Thirty-three studies were reviewed and synthesized under the rural health focus area. The rural health theme contains a subtheme: telehealth. The reason for including telehealth projects under the rubric of rural health is that telehealth is seen by many as a means to address the problems of rural residents access to health care because telehealth transcends distances and geopolitical boundaries. Almost all of the telehealth projects are rural health-related; that is, they use communications technology to help overcome long distances between rural or isolated communities and major centres. Of the 33 projects, 24 are specifically about rural health and the other nine are about telehealth. However, several of the rural health–specific studies also have a telehealth component. A complete list of the projects/studies appear in Appendix A.

The list includes nine "national" studies, in the sense that each of them covers more than one province or territory. The other studies are about projects that took place in a specific jurisdiction: Alberta, British Columbia, Newfoundland, Northwest Territories, Ontario, Quebec, Saskatchewan, or Yukon Territory.

The rural health-specific studies are fairly wide-ranging in terms of the nature of the pilot projects or the issues they deal with. The issues addressed include palliative care (AB301-17), primary health care (AB301-23), home care (NA149), nurse practitioner–family physician collaboration (NA342), care for disabled or chronically ill persons (NT401), prevention of heart disease (QC409), capitation funding for physicians (QC431), health services integration (QC434), agricultural health and safety issues (SK325), roles in the farm economy and consequences for women's health and well-being (SK321), use of alternative providers (SK326), rural health service restructuring (SK401), and adult day program (YT421). As can be seen from this partial list, the scope of the rural health–related projects is very broad and the topics very diverse. But the common thread running through them is the rural health theme. These projects all took place in rural settings, deal with rural populations, and/or have a distinct rural focus.

Most of the telehealth studies are descriptions or evaluations of telehealth pilot projects that sought to link several remote communities or rural and non-rural sites to bridge service gaps or enhance training opportunities. Only two of the studies dealt with telehealth projects that were urban-based and served an urban clientele, but even these projects hinted at a potential rural application.

3. Discussion of Significant/ Relevant Findings

The discussion of significant or relevant findings is presented under three headings. Section 3 focuses first on the rural health theme and then on the telehealth theme. The rural health-specific studies provide the broader context within which the discussion of telehealth issues can take place.

Many of the HTF projects synthesized in this report deal with or have implications for rural health human resources. As a result, health human resources (or health workforce) issues are presented separately and discussed in greater detail as a distinct theme in Section 4.

Problems and issues arising from the HTF projects are discussed in Section 5. In addition to identifying difficulties encountered and issues that need to be addressed, that section also discusses conditions for improving rural health. Policy implications and recommendations are presented in Sections 6 and 7, respectively.

3.1 Rural Health Themes

Several major themes emerge from the rural health-related HTF studies. These themes – access to care, shortages of health care resources and services, the need to adopt innovative approaches, and the broader determinants of rural health – are similar to and consistent with findings from other rural health studies.

3.1.1 Access to Care

The lack of ready access to care is a common complaint of rural residents. It is thus not surprising that most HTF projects explicitly or implicitly mentioned access difficulties. As can be expected, the smaller and more remote the community, the more severe the problem of access. For instance, an Inuit Tapirisat of Canada project, *Evaluation of Models of Health Care Delivery in Inuit Regions* (NA485), took place in six small communities in Labrador, Quebec, Nunavut, and the Northwest Territories. Each had a population of less than 1,000 people. Access to many services at the community or regional level was very limited.

Rural communities in other parts of Canada are facing a similar situation, though their plight may not be as severe as those in the Inuit communities. Contributing to access problems are difficulties associated with rural transportation which tends to be inconvenient and costly. The *Rural Palliative Care Demonstration Project* (NA131), for example, identified the provision of palliative care at home as a challenge because of the shortage of specialists and other services in rural communities. Avoiding unnecessary trips to hospitals would be desirable because of the long distances that rural residents often had to travel to hospitals, and only 55 per cent of those needing palliative care had access to a car. A Nunavik project, *Putting in Place an Integrated System for Persons with Severe and Persistent Mental Problems* (QC434), which took place in 14 isolated communities along the Hudson Bay and Ungava Bay coasts in northern Quebec, identified a similar problem. Because of the lack of locally or regionally available services, the region annually transported 1,600 patients to Montréal for treatment, at a cost of $4 million.

3.1.2 Inadequate Health Care Resources

Closely related to the "access to care" theme is the lack of health care resources. Almost every HTF study on rural health has mentioned the shortages of health care facilities, technologies, personnel, and services in many rural communities as the most challenging problems. The problem of access, mentioned earlier, is a consequence of the lack of health care resources.

Of the various inadequate health care resources mentioned in the studies, shortages of human resources have been noted most frequently and are

seen as the most critical. The Inuit Tapirisat of Canada project (NA485) can serve as an example simply because of the stark reality it has portrayed. In the Inuit communities there were serious shortages not only of doctors and nurses, but also of other health care providers like social workers, mental health counsellors, nursing assistants, midwives, and laboratory technicians. Although all of the communities had front-line nursing services, the study warned that the nursing shortages in the rest of the country could jeopardize the provision of basic health care in some of the smaller Inuit communities simply because these communities would have a hard time competing for nurses with larger communities in southern Canada.

Because of the importance and complexity of the health human resources issues, a more elaborate discussion of this issue appears in Section 4.

3.1.3 Special Approaches

Most of the HTF projects attempted to explore ways of dealing with difficulties experienced by rural inhabitants in accessing health care, overcoming the shortages of health care practitioners, and establishing a better health services delivery system. A few of these strategies are highlighted in the following paragraphs. Telehealth and workforce strategies are also ways to address rural health problems, but they will be discussed separately.

3.1.3.1 Integration of Services

It has been noted by several of the HTF studies that since many rural communities have limited resources and do not have a comprehensive range of services, collaboration among service providers or alignment of existing programs on a local or regional basis is a prerequisite to solving some of the rural health services delivery problems. For example, the *Laurentians Public Health Region* project (QC402) sought to restructure its health and social services by providing more services outside institutional settings and by enhancing the integration of services. Similarly, the Yukon's *Adult Day Program* project (YT421) showed that it was possible to design a small day program to serve a clientele with divergent needs (ranging from people with physical disabilities to those with cognitive impairment) by working closely with other community programs. The day program developed partnerships with other service agencies in accordance with the needs of each client, including home care, Whitehorse General Hospital, Thomson Centre, and Macaulay Lodge. Such an approach may be particularly suited to smaller jurisdictions, which are faced with the need to meet a broad range of needs but have relatively few resources.

In some cases, service integration may need to take place on a regional basis because no one rural community has all the resources or services needed to deal with a particular health problem. For instance, in order to prevent and treat eating disorders closer to home, the *Eating Disorder Project North* (BC403) developed networks within and between 30 rural communities in four health regions in British Columbia. The purpose was to share knowledge, pool resources, and work together. In a similar vein, the *Capitation Project in the Haut Saint-Laurent RCM* (QC431*)* aimed at encouraging the implementation of an integrated network of services to introduce a new way of organizing, delivering, and financing health services at the regional level. Involving about 20 clinical programs, the project attempted to achieve greater complementarity among the institutions in terms of service delivery and to integrate the region's private-practice general practitioners into the care network and service structure.

Another aspect of service integration is to forge stronger links with tertiary health care centres where expertise and resources are more abundant. An illustration of this approach is the *Integrated Community-Based Palliative Care Program* project (AB301-17) of the Lakeland Regional Health Authority. Relying mostly on primary care physicians, the

program promoted ties with tertiary palliative care sites in other parts of Alberta. It indicated that successful rural health strategies may have to rely on using local resources as much as possible and establishing strong linkages with external resources that are not locally available.

3.1.3.2 Community Development

Solving rural health problems may require new ways of thinking or doing things, which may not be welcomed by some rural residents or health care practitioners who resist change or are skeptical of novel approaches. One gets a sense of this from a public opinion survey conducted in Saskatchewan, *An Evaluation of the Impact of Rural Health Service Restructuring and Integrated Service Delivery* (SK401), which found considerable resentment remaining among residents in many rural communities that had lost their local hospitals several years earlier, during a restructuring of the provincial hospital system. Thus, in order to facilitate change, some of the HTF projects, like the *Healthy Towns and Villages* project (QC432), the Nunavik project (QC434), and the *Eating Disorder Project North* (BC403), adopted a community development approach by working with and preparing the community for change.

The Saguenay–Lac-Saint-Jean Health Region project, *Establishment of Regional Network of Clinics for Prevention of Heart Disease* (QC409), can be used as an illustration. This project sought to create a network of rehabilitation and secondary prevention services for patients suffering from cardiovascular diseases. The first eight months of the project were devoted to mobilizing the communities involved and bringing together the various service providers. This approach was seen by the evaluator of the project as essential to its success. Likewise, the *First Nations National Telehealth Research Project* (NA402) revealed that the extent to which telehealth was integrated into the health services delivery system depended on the level of community mobilization and support.

However, not all community development endeavours were deemed effective. The use of a community development approach in Alberta's Youngstown–Cremona–Hussar primary health care project, *Remote Primary Health Care System (Rural)* (AB301-23), was considered by the evaluator of the project as a distraction and as confusing to many rural residents.

3.1.3.3 Mobile Services

Some of the HTF projects employed special strategies to deal with the problem of inadequate access to care. Some rural communities are just too small to support full-time health care practitioners or to have full-scale programs. The next best thing is to have mobile teams that routinely bring services to a series of small communities. This approach has been tried in various parts of the country. For instance, the mobile eye van program and the integrated services for northern children program have been in operation in northern Ontario for many years.

Saskatchewan's *Agriculture Health and Safety Programs* project (SK325) employed a registered nurse to provide health screening and health education to farmers by travelling around the district in a mobile health and safety van. The mobile nature of the project offered an effective way to reach a group of isolated farm workers. Another example is Alberta's Youngstown–Cremona–Hussar project (AB301-23). It attempted to meet the health care needs of residents in three remote communities by providing a mobile team of health care practitioners that visited the towns weekly or semi-weekly. The core team included a physician, a nurse, a pharmacist, laboratory technicians, a respiratory therapist, and a speech-language pathologist. A second ad hoc team provided breast health services, nutritional services, diabetic education, and community outreach. The goal was to improve access to primary health care and reduce the need to access services outside the region.

3.1.4 Determinants of Rural Health

Although many innovative ideas have been put forward and many approaches have been tried out by the various HTF projects, several studies have pointed out or alluded to the fact that rural health problems are the result of more deep-rooted factors. In the health-field or population-health discourse, these factors are often referred to as the determinants of health, the social, cultural, behavioural, economic, and environmental factors that shape the health of a population. The argument is that unless these fundamental conditions are modified, merely adding more practitioners or services may not substantially improve the health status of the rural population.

Some of these health determinants are related to the economic structure or occupational activities in rural areas. For example, in Saskatchewan's *Agriculture Health and Safety Programs* project (SK325), the authors cogently argue that to be successful in promoting health and safety in agriculture and in reducing farming-related diseases, injuries and deaths, one must recognize the unique nature of the farm workplace, which includes the following aspects:

- Farmers typically work in isolation.
- Average farm size has quadrupled in the last 20 years, resulting in fewer neighbours and fewer services being available close to home.
- Children and seniors are often present at the worksite.
- Farmers are exposed to a wide variety of noxious substances, which pose serious risks to human health.
- Farmers are often at the mercy of the natural elements.
- The declining prices of crops have forced many farmers to take risks in order to stay ahead in the highly competitive global marketplace.

In other similarly hazardous occupations, regulations to control workplace hazards are often legislated and enforced. In agriculture, as well as in other mostly rural-based occupations such as fishing, where each operation involves an individual owner/operator, occupational health and safety regulations are deemed unenforceable and are therefore not considered. Thus, according to another study, *Women's Diverse Roles in the Farm Economy and the Consequences for Their Health, Well-Being and Quality of Life* (SK321), farmers have a 40 per cent greater incidence of chronic bronchitis and a 78 per cent higher rate of dermatological problems than workers in other major industries. As well, while fatality rates in mining and construction fell by 78 per cent and 50 per cent, respectively, between 1960 and 1988, the fatality rate in agriculture declined by only 17 per cent during the same period. This study also shows that the financial burden faced by farm families has a negative impact on the physical health and psychological well-being of many farm women, especially in terms of psychological stress.

Similarly, according to the Inuit Tapirisat of Canada study (NA485), merely solving the problem of health personnel shortages will not, on its own, fundamentally change the health status of the Inuit people. Social and economic problems such as violence, alcohol abuse, low educational attainment, and lack of jobs will continue to adversely affect the health status of the Inuit population. The authors of this study emphasized the need to address the underlying problems of the absence of a sustainable economy and widespread unemployment. This was echoed by the *Healthy Towns and Villages* study (QC432), which found that the economic reality of the region made it impossible for the project's ideals to be realized.

3.2 Telehealth Themes

Telehealth, broadly defined, is the use of communications and information technologies to overcome geographic distances between health care practitioners or between practitioners and service users for the purposes of diagnosis, treatment, consultation, education, and health information transfer. Telehealth is increasingly considered an important tool for enhancing health services delivery, particularly in rural and remote regions, where health care resources and expertise are often scarce and sometimes non-existent. Services and expertise from major centres can be brought to such communities with the help of telehealth technology. Although there are still many questions to be answered and many technological breakthroughs are still waiting to happen, the effectiveness of telehealth and its acceptance by both practitioners and users have been demonstrated in many studies both in Canada and abroad. Thus, telehealth should be considered one of the strategies for strengthening health services delivery in rural and remote regions.

3.2.1 Uses of Telehealth

The telehealth-related projects all saw telehealth as a way to improve rural health services delivery. For instance, the demonstration project *Telemedicine Serving Quebec Regions: A Demonstration Project in the Magdalen Islands* (QC425) was intended to bring diagnostic, treatment, and rehabilitation services to rural and remote areas; to reduce the number of patient transfers to urban centres; and to provide continuing education to health care practitioners on the Magdalen Islands.

The *First Nations National Telehealth Research Project* (NA402) had similar objectives. It pointed out that since over a third of First Nations and Inuit communities were found in remote or isolated locations, telehealth had the potential to even out geographic disparities in access to health care. Other projects (e.g., NA403, QC323) hoped that telehealth would lower the costs associated with travel to distant medical facilities or make continuing education programs accessible to rural practitioners.

One project had a more ambitious goal: Quebec's Hôpital Sainte-Justine telehealth project, *Supraregional Mother-Child Network* (QC305), planned to establish the *réseau mère-enfant* (mother-child network) among the hospitals in Montréal and the surrounding rural regions, with a view to improving access to, and the quality of, care for mothers and their infants by coordinating the work of the participating hospitals by means of telehealth.

It should be noted that the use of telehealth has expanded substantially in recent years. Previously, it was used primarily by physicians for diagnosis, consultation, and the transfer of medical data such as X-ray images, as well as for delivering continuing medical education programs at a distance. More recently, as exemplified by some of the HTF projects, the field of telehealth has become considerably broader, comprising tele-triage, tele-monitoring (e.g., NA161, NA403), tele–home care (e.g., ON121), and tele-rehabilitation.

3.2.2 Benefits of Telehealth

Most of the telehealth-related HTF projects reported user satisfaction. As an example, the *Telecentres for Education and Community Health (TEACH)* project (NA366) reported that 90 per cent of its clients rated the telehealth facilities as good or excellent and that almost all of its clients would use telehealth services again.

Several projects had successfully used telehealth for patient education (e.g., NA403) and to bring continuing education programs to rural-based practitioners (e.g., NA402, QC323). The latter was considered very important from a practitioner recruitment-and-retention perspective because it might help reduce the sense of professional isolation or practitioners'

concern that they were not keeping up with developments in their disciplines.

Telehealth helped to reduce the number of patient transfers and patients' need to travel long distances in order to seek medical care. The TEACH project (NA366) reported that some patients who had consulted specialists by means of telehealth saved as much as $3,000 in travel costs. According to the *Nephrology Telemedicine Project* (NA403), 55 per cent of the patients involved in the project believed that the program had reduced their travel costs and had cut down significantly the amount of time they had to spend travelling to hospitals for dialysis treatments.

3.2.3 Costs of Telehealth Services

The results reported above, though generally favourable, were often achieved at substantial costs. Although the evaluation studies were not designed to be a cost-benefit analysis, some reports did raise concerns about the costs involved and wondered if they were justified. For example, the *First Nations National Telehealth Research Project* (NA402) was an expensive initiative, with infrastructure costs averaging $245,000 to $305,000 per site.

At the same time, utilization in some of the telehealth projects was very low. For instance, although Alberta's Keeweetinok Lakes Regional Health Authority telehealth project (AB301-19) was put in place at a cost of $3.5 million, the project evaluator concluded that there were insufficient telehealth interaction episodes to indicate whether or not telehealth was effective. Similarly, as pointed out by the evaluator of the *Nephrology Telemedicine Project* (NA403) in New Brunswick, although expensive telehealth paraphernalia, such as electrocardiogram equipment, teleradiology systems, and computers, had been purchased, they were never or seldom used during the project.

However, it is worth pointing out that telehealth programs typically entail a substantial front-end investment in technology and infrastructure installation. As well, since many rural and remote communities do not have a large population, the potential telehealth clientele is small. Thus, the initial cost per telehealth contact episode tends to be very high. As the utilization rate increases or as technology becomes more affordable, the per contact episode cost is likely to decline.

4. Health Human Resources

The most critical concern identified by the HTF studies and other rural health studies is the acute and persistent shortage of health care practitioners in rural areas. This problem is often aggravated by rapid staff turnover, as exemplified by the high attrition rates of home care workers and other personnel in a project in the Northwest Territories (NT401). It is, therefore, not surprising that many of the HTF projects paid special attention to rural health workforce issues or pilot-tested innovative ways to use personnel more effectively.

4.1 Enhancing Competency

Personnel shortages do not necessarily mean that there are not enough "warm bodies" around to do the work. In many cases, they mean that rural practitioners do not have the necessary expertise, skills or competency to provide the right kinds of care or to make the right kinds of clinical judgments. In small rural communities with rapid staff turnover, this problem is particularly serious, since the loss of expertise when one worker leaves can have an adverse impact on service provision. Therefore, several of the projects attempted to address the health workforce issue by expanding the knowledge base or enhancing the wherewithal of rural practitioners. In the long run, this is likely to be the most viable and sustainable strategy because it seeks to maximize a rural community's self-sufficiency in health human resources

rather than subjecting the community to the vicissitude of the labour market.

This was the approach used by the *Rural Palliative Home Care Demonstration Project* (NA131), which included a comprehensive education strategy to address the learning needs of both formal and informal caregivers. It introduced an intensive education curriculum to prepare family physicians, nurses, and, where available, pharmacists and social workers to provide consultation in complex pain and symptom management and counselling in advanced care planning. Results of the pre- and post-tests indicated increased palliative care knowledge for the participants. Following the "train the trainer" model, these newly minted "experts" were then expected to deliver education sessions on palliative care to their colleagues and other practitioners.

Recognizing that they did not have the necessary expertise to provide care to people with serious mental illness, the staff of the home care program in the *Home Care and People with Psychiatric Disabilities* project (NA149) adopted a similar strategy. Six training sessions were offered by a mental health therapist to the nurses working in the home care program in Taber, Alberta, the majority of whom had felt that their knowledge of mental health was insufficient. In this project, the mental health therapist served as an expert whose task was to provide consultation, guidance, direction, and in-service training. Thus, it appears that not all members of a team need to be experts, as long as one of the members has the requisite knowledge, serves as the consultant, and provides the necessary support and training to the rest of the team.

4.2 Collaborative Practice

The interdisciplinary team approach is an ideal model of health service delivery, but it is not often implemented. Advocates of this model believe that by providers working together in teams, productivity can be maximized and knowledge synergy can be achieved. One type of interdisciplinary collaboration, which has been studied extensively, is the collaboration between physicians and nurse practitioners. This body of research suggests that physician-nurse practitioner collaboration results in care that is clinically efficacious, is well accepted by patients, can achieve a high level of productivity, allows physicians to practise high-quality medicine, and represents the optimal use of medical human resources.[3] It appears that this model is especially suitable for rural communities, where physicians are often in short supply or are overworked.

The Sisters of Charity of Ottawa Health Services project, *Improving the Effectiveness of Primary Health Care Through Nurse Practitioner/Family Physician Collaboration Models of Care* (NA342), was intended to support family physician–nurse practitioner collaborative practice for the delivery of primary care in rural and remote parts of Ontario. Three quarters of the patients involved in this project were very satisfied with the care they had received from the teams. One of the recommendations of the project was to create opportunities at the undergraduate, post-graduate, and continuing education levels for trainees to learn to work collaboratively in primary health care.

Interdisciplinary collaboration is not restricted to physicians and nurse practitioners. There are many opportunities for other health care workers to collaborate. Several of the HTF projects made use of this model. For example, the Yukon's *Adult Day Program* (YT421) put into practice the "team approach" to support its clients. The program staff made many links with other programs that they would call upon when appropriate for a particular client. Similarly, the *Home Care and People with Psychiatric Disabilities* project (NA149) integrated home care with mental health services for people with

3. For a synthesis of research findings on physician-nurse practitioner collaboration, see Pong et al. (1995).

psychiatric disorders. This required practitioners with a home care background and others with mental health expertise to work collaboratively, share knowledge, and support each other.

4.3 Personnel Substitution

Another strategy in overcoming shortages of health human resources is personnel substitution, in which one category of health care personnel do the work typically performed by another category. Because the knowledge bases and scopes of practice of different health occupations overlap to a greater or lesser degree, there is considerable ambiguity in who can or should do what in providing care. In the past, health occupational legislation typically set rigid scope-of-practice stipulations, giving one occupation the sole right to perform certain health-related tasks. This "scope of practice" approach has gradually been replaced by a less stringent "controlled act" approach, with Ontario's Regulated Health Professions Act setting the precedent. The latter allows various health occupations and employers/administrators more latitude in terms of who can do what and, at the same time, provides sufficient protection for the health and safety of the public. It has also allowed a wider scope of personnel substitution to occur.

In rural settings where certain kinds of health care practitioners are difficult to find, it makes sense to use available human resources to the fullest extent possible, as long as the health and safety of the patients or the public are not jeopardized. For example, physician–nurse practitioner collaboration is a form of personnel substitution, in the sense that nurse practitioners take over some of the responsibilities of physicians to allow the latter to concentrate on clinical tasks that only they are qualified or legally permitted to perform. Quebec's Centre de santé de la Basse Côte-Nord project, *Putting in Place an Information-Technologies-Supported Training Program Aimed at Nursing Staff for Delivery of Health Services in Isolated Communities* (QC323), provides an illustration. With the help of video conferencing technology, nurses there acquired additional clinical skills and were able to do things typically done by physicians in less remote regions.

Using a similar approach to make rehabilitation services more available in rural Saskatchewan, the *Enhanced Rural Rehabilitation* project (SK326) attempted to improve rehabilitation services in the Assiniboine District by employing three physiotherapy assistants to work with two full-time physiotherapists and to do some of the work that, without the assistants, would have to be carried out by the physiotherapists. The assistants handled such tasks as clerical work, patient education, and exercise therapies. The project's evaluation noted the success and usefulness of this model, particularly in rural areas, where rehabilitation therapists were often hard to find and keep.

4.4 Informal Caregivers

Informal or lay caregivers are individuals who provide care to others on a voluntary basis. Informal caregiving is very common. Some studies estimate that over 70 per cent of all health care is provided by informal caregivers. As the population ages, informal care is likely to become even more pervasive and important. It has been argued that health human resources should be seen as a continuum that encompasses self-care providers, informal caregivers, and formal caregivers (Pong et al., 1995). The difference between informal and formal caregivers is not necessarily based on training, competency, or the nature of their work. The most important differentiating factor is gainful employment status. Whereas formal caregivers are remunerated for the

work they do, informal caregivers provide their services without financial compensation. Although informal care occurs everywhere, lay caregivers play a particularly important role in rural settings because of the shortages of formal caregivers and the unavailability of many formal services. Very often, those who are sick, disabled, or feeble can only rely on their family members, relatives, neighbours, friends, or other volunteers to look after them.

Several HTF projects mentioned the use of informal caregivers. The Yukon's *Adult Day Program* (YT421) ensured that family caregivers were closely linked with the day program. The two palliative care projects, *An bbbEvaluation of Lakeland Regional Helath Authority Integrated Community-Based Palliative Care Program* (AB301-17) and *Rural Palliative Home Care Demonstration Project: A Collaborative Project between Nova Scotia and PEI* (NA131), also made extensive use of informal caregivers in providing end-of-life care in rural communities.

Although informal caregivers do not receive monetary compensation for their work, in order for them to do an effective job and to prevent burnout, they need to be supported. The *Rural Palliative Home Care Demonstration Project* (NA131) reported that the informal caregivers providing care to dying patients experienced physical fatigue and were stressed and emotionally drained. It also lamented the fact that there was a dearth of respite services for those who provided end-of-life care on a voluntary basis. Informal caregivers also need other kinds of support, such as information and training. Both palliative care projects mentioned the sharing of information with and the training of informal caregivers. In this sense, informal care is not "free."

5. Problems and Unresolved Issues

Some major problems and unresolved issues in the HTF projects are identified below. Consistent with the rest of this report, the presentation first discusses the problems and issues concerning rural health and then discusses those concerning telehealth, although some of these problems and issues are related.

5.1 Rural Health Problems/Issues

a) The need to increase local capacity in relation to health care provision has been noted by a number of HTF studies, even though it is well recognized that most rural communities will never be totally self-sufficient. The Inuit Tapirisat of Canada study (NA485), for instance, has noted that practitioners from southern Canada still provide most health services in the north. It has called for greater participation in health services delivery and decision-making by the Inuit people. In addition, it has pointed out that there are very few instances of traditional Inuit knowledge being incorporated into health research, programs, or service delivery. To a greater or lesser extent, this is an issue relevant to most rural communities.

b) As many of the HTF initiatives were in the form of pilot projects, they tended to be treated as short-term, stand-alone experiments, with little attention given to the broader health service or policy context. This may explain some of the disappointing outcomes. An example is *Primary Health Care Enhancement Project* (NF301) in Newfoundland, which had lofty objectives. But the project's evaluation report pointed out that in order to undertake the kinds of reform envisaged by the project, it would require the proposed reform to include comprehensive planning and to properly position the project

within the health services delivery system. As this did not happen, the impact of the reform was considerably weakened.

c) Two projects (AB301-22, NA342) involved using nurse practitioners to strengthen primary health care delivery in rural settings. In both cases, the success could have been greater if a number of obstacles had been removed. It appears that in both cases, the local physicians were not fully supportive of the use of nurse practitioners or were not as well integrated into the projects as possible. The participation of nurse practitioners in primary health care initiatives inevitably involves working collaboratively with physicians. Thus, it is imperative to secure the support of local physicians before launching such projects.

d) The way health services are funded in a regionalized health care system needs to be taken into consideration. Alberta's Elnora primary health care project (AB301-22) was unable to achieve health service integration, partly because of the regional versus provincial funding conundrum. While the salaries of nurse practitioners were paid by the health regions, fee-for-service medical care was covered by province-wide funding. This two-tier financial arrangement does not make nurse practitioners attractive to the health regions because they are considered an additional cost to the health regions, whereas fee-for-service physicians are not.

   Quebec's Hôpital Sainte-Justine telehealth project (QC305) experienced a similar predicament. In this project, telehealth was used to integrate services on a regional or interregional basis. More specifically, it hoped to shift primary and secondary care to hospitals that were located closer to the patients, thereby lightening the burden on hospitals in urban centres. However, in order to achieve this objective, the problem of budget allocation across regions must be addressed, particularly if the network extends beyond the borders of one health region. Otherwise, few incentives exist for health region or hospital administrators to "repatriate" patients from hospitals in other health regions.

e) Two HTF studies (AB301-22, QC323) mention or hint at health occupational regulation as being an obstacle to expanding the roles of nurse practitioners and nurses in providing primary health care in rural areas. Alberta's Elnora study (AB301-22) points out that in order to allow nurse practitioners to take on more clinical responsibilities, current health occupational legislation, which specifies scope of practice, must be relaxed. In Quebec's Basse Côte-Nord telehealth project (QC323), the physicians were reportedly uneasy about nurses assuming a greater clinical role. Creative and flexible use of available health human resources, which can be facilitated by less rigid occupational regulation, is an important issue for the health care system in general and for rural health in particular.

5.2 Telehealth Problems/Issues

a) Several telehealth projects (e.g., AB301-19, NA402, QC425) encountered technical difficulties, ranging from problems with equipment to inadequate support provided by equipment vendors to glitches with satellite technology. One evaluation report has urged that telehealth technologies should be more developed and thoroughly tested before they are implemented in remote communities, where the technical know-how to deal with such problems is virtually non-existent.

b) The Hôpital Sainte-Justine telehealth project (QC305) aimed at improving access by mothers and their infants to services closer to home by coordinating the work of the participating hospitals, using telehealth. However, there were no observable changes in access patterns during the project implementation phase. This was

attributable to parents' preference to go to the Hôpital Sainte-Justine emergency department, where they knew they would find pediatricians. This specialist-or-nothing attitude sabotaged the intent of the *réseau mère-enfant*, which was to encourage patients to use their family doctors or CLSCs as the initial point of access. It appears that patient or consumer education needs to take occur before introducing new ways of providing care.

c) The aforementioned technical problems are minor irritants compared with the more endemic organizational and human relations problems encountered in some of the HTF telehealth projects. These problems include staffing, staff turnover, role definition, and staff training. One evaluation report (NA402) notes that when telehealth coordination responsibilities were assigned to a nurse in a remote nursing station who also had patient care duties, her workload demand could slow the full implementation of the telehealth program. In addition, the success of a telehealth program depends as much on relationships established among the telehealth sites as on equipment and bandwidth. Ironically, although telehealth is about linking people and places, not enough attention has been paid to communication, connections, and relationships between the people and organizations involved in a network, which can "make or break" a telehealth initiative.

   The most important issue is the integration of telehealth into the existing health services delivery system. This has been emphasized by several HTF evaluation studies (AB301-19, NA402, QC425). As one of these studies has pointed out, telehealth cannot be "layered on" an existing health care system without carefully anticipating how telehealth services will become an integral part of health care delivery. Failure to heed this advice or the fact that human relationships underlie most telehealth activities will likely result in the squandering of millions of dollars of telehealth investment.

d) Some existing health care policies (or the lack of policies) have been identified by several studies (e.g., NA366, QC425) as barriers to a wider adoption of telehealth in Canada. The most frequently mentioned impediment is the lack of policies on reimbursing physicians for their provision of telehealth services. This concern has also been frequently expressed by telehealth communities in Canada and abroad.[4] Other yet-to-be resolved policy issues that could stymie the broader use of telehealth include interjurisdictional licensing of telehealth practitioners, telehealth interoperability, protection of privacy and confidentiality, and accreditation of telehealth programs or services.

6. Implications for Policy

Although many of the 33 HTF studies reviewed have implications for rural health policies, practice, and programs, only a few are highlighted here. The "big picture" issues are emphasized, in view of the target audience of this report.

a) The 33 HTF projects and their corresponding evaluation studies have yielded a considerable amount of information about rural health. Some of the "discoveries" are well known, and others offer new insights. However, these studies do not constitute, and were never meant to present, a comprehensive picture of rural health. The lessons learned tend to be selective, reflecting the HTF's objectives and project selection criteria. Likewise, this synthesis report is not a systematic examination of rural health.

4. For a more detailed discussion of this policy issue, see Pong (2000).

However, there is an urgent need to document and examine rural health in a comprehensive, systematic, thorough, and objective manner. Although there are many rural health-related studies, including many of the 33 HTF studies reviewed here, knowledge about rural health in Canada tends to be fragmentary and unsystematic. Many studies exist that address well-documented issues repeatedly. At the same time, many knowledge gaps remain to be filled. This may be so because, until recently, rural health researchers have tended to work in relative isolation, just like the people and communities they study. This situation must change if policy decisions and program planning pertaining to rural health are to be grounded on systematic evidence and not based on anecdotes. Research granting agencies such as the Canadian Institutes of Health Research and the Canadian Health Services Research Foundation have an important role to play in facilitating and strengthening rural health research. This may have prompted the federal government to include the recommendation to "promote the inclusion of a rural perspective in national research efforts (e.g., Canadian Institutes of Health Research)" in its recently released *Rural Action Plan* (Government of Canada, 2001).

b) Another rationale for documenting and examining rural health in a comprehensive and systematic manner is the fact that many rural health problems cannot be effectively solved by piecemeal measures, even though band-aid solutions have been the typical response. As some of the HTF studies have perceptively pointed out, since rural health is, by and large, a function of the many interrelated conditions that shape rural life, unless the adverse social, economic, occupational, and ecological conditions are eliminated or ameliorated, the health status of the rural population will not improve substantially. Moreover, since rural health services are part and parcel of the broader health care system, one cannot consider the former without also taking into consideration the latter.

c) Collectively, the HTF studies reveal the complexity of rural health. To effectively address rural health issues, actions may have to be taken on many fronts and sometimes simultaneously. For instance, at the individual level, it may have to help people recognize and change their risk-taking behaviours (e.g., SK325). At the intermediate level, a community development approach could be used to foster social cohesion and community resiliency in order for the community to tackle its health problems. At the wider level, it may be necessary to achieve a better understanding of the broader determinants of rural health (e.g., SK321) and to mobilize efforts to effect fundamental changes. Similarly, with respect to health service provision, it may not suffice to focus just on areas where there are deficiencies. It is equally important to examine the broader service delivery or policy context. The following discussion on the rural health workforce illustrates what it means to take action on many fronts to deal with an intractable problem.

d) Health workforce maldistribution has been, and will continue to be, a problem plaguing many rural communities and perplexing many policy-makers. Although conventional recruitment and retention programs are still useful in certain circumstances, they alone will not overcome the shortages of rural health care workers. If Twillingate, Vermilion, and Wawa had problems in recruiting and retaining practitioners in the 1980s and early 1990s, when there was a perceived "oversupply," how are these small rural communities going to compete with Toronto, Victoria, and Winnipeg in the face of major shortages of physicians, registered nurses, medical laboratory technologists, rehabilitation therapists, and so on? They are unlikely to win the bidding war, even with the financial incentives typically offered by ministries of health when supply problems reach crisis proportions.

A comprehensive and multi-pronged strategy is needed, and several HTF studies have explored various aspects of this strategy. An effective and long-term rural health workforce strategy may include many elements, including:

- the strengthening of local capacity by expanding the knowledge base of local practitioners;
- seeing health human resources as a continuum that encompasses not only formal caregivers, but also informal caregivers and self-care providers;
- adopting the most effective and efficient personnel configuration, such as interdisciplinary collaboration;
- using personnel substitution, where appropriate;
- eliminating health workforce policies or practices that are designed to protect turf rather than the public, such as restrictive occupational regulatory measures and "creeping credentialism"; and
- encouraging collaboration and the pooling of health human resources between institutions, programs, and communities.

e) Not all solutions to rural health problems are to be found in the health care domain. In other words, when dealing with rural health problems, one may have to think "outside the box" for answers. For example, some rural residents must travel long distances to obtain certain types of medical or health care. Several of the HTF studies (e.g., NA131, QC434) show that transportation is a major concern for many rural residents who require medical attention, some of whom do not even have access to an automobile.[5] Thus, one way to improve access is to upgrade the rural transportation network. Unfortunately, the reverse appears to be occurring, In the past decade or so, many rural communities have witnessed the curtailment or suspension of rail, airplane, or bus services, and sometimes services have become so expensive that they present a financial hardship for many people.

f) Telehealth will be important for rural health because it can help overcome some of the disadvantages associated with long distances and small populations. But this does not necessarily mean that every rural community needs to have the most advanced and pricey telehealth system. Telehealth encompasses a broad array of technologies that vary in sophistication, ranging from POTS (plain old telephone system) to robotic surgery. In terms of function, it includes tele-triage, tele-home care, tele-monitoring, tele-rehabilitation, tele-diagnosis, tele-consultation, and tele-education. Determining which of these options are appropriate for a rural community should be guided by such factors as needs, resources, and expertise, and it should be done by means of a needs assessment and a feasibility analysis.

To date, much telehealth evaluation has focused on issues pertaining to technological and clinical effectiveness and user satisfaction. By and large, the results have been consistent: telehealth technology works, and patients are happy with it. Although the pilot testing of telehealth technologies, particularly with respect to clinical efficacy, needs to continue because new devices and applications are being developed all the time, the social, organizational, and policy aspects of telehealth should not be overlooked. As several of the HTF studies show, very often the obstacles to successful telehealth implementation are overextended staff in remote communities, human relations problems between telehealth sites, a failure to integrate telehealth with the rural health services delivery system, and a lack of policies on such matters as physician reimbursement. Moreover, little is known about the effects of telehealth on health services delivery

5. For a discussion of the importance of transportation to the health and well-being of rural residents, see Johnson (1996).

in a rural context, changes in practitioners' roles, patient referral patterns, and long-term implications. For instance, does telehealth enhance rural physician recruitment and retention – as many telehealth enthusiasts claim – or is it an excuse for inaction because of the belief that with the advent of telehealth, physician maldistribution is no longer an issue? Does telehealth support or supplant efforts by rural communities to become more self-sufficient in health services provision? Policy implications such as these have yet to receive the kind of attention they deserve.

7. Conclusions and Recommendations

Rural health is gaining public attention not only because much of Canada is rural and a sizable proportion of Canadians live and work in rural areas, but also because rural residents increasingly realize that in terms of health status, allocation of health resources, and access to health services, they are being outstripped by their urban counterparts. There is a growing sense that what is happening in rural health is not consonant with the ideal of the Canadian health care system or is not consistent with the principles of the Canada Health Act. As Allan Rock, the former federal Minister of Health, remarked, Canada does have a two-tier health care system: a first-tier system for those living in major urban centres and a second-tier system for those living in rural areas.

There is a growing desire to redress the balance and take appropriate action before the situation deteriorates further. Although it is premature to call this a rural health movement, some significant and encouraging developments are occurring on the rural health front:

- the founding of the Society of Rural Physicians of Canada and the publication of the *Canadian Journal of Rural Medicine*;
- the development of special programs in almost all provinces and territories to address rural health issues, particularly rural physician shortages, such as the Rural Physician Action Plan in Alberta;
- the creation of the Office of Rural Health within Health Canada;
- the release in 2000 of a *National Rural Health Strategy* by a group of parliamentarians;
- the strengthening of rural health research with the establishment of rural health research centres and networks such as the Centre for Rural and Northern Health Research, the Rural and Remote Health Research Institute, and the Canadian Rural Health Research Society, as well as the recent appointment of a special adviser on rural health research by the president of the Canadian Institutes of Health Research;
- the recent announcement of the establishment of a rural/northern medical school in northern Ontario; and
- the striking of a new federal Ministerial Advisory Committee on Rural Health.

The funding of a significant number of rural health-related projects by HTF also indicates the importance given to rural health by the various levels of government. The 33 HTF projects and their corresponding evaluation studies, which have been synthesized in this document, have added to our understanding of rural health in Canada and offered insights into what needs to be done. Although many program- or practice-specific recommendations could be derived from the findings of the studies, given the nature of the target audience of this synthesis report, only overarching policy-related recommendations are

provided here. These recommendations broadly parallel the policy implications discussed in Section 6.

- Given the complex and multidimensional nature of rural health, an overall strategy is needed, in addition to region-, discipline-, program-, and issue-specific solutions. The newly established Ministerial Advisory Committee on Rural Health and other similar bodies could be charged with developing such a strategy.
- Many piecemeal and symptomatic solutions have been attempted and found wanting. In order to be effective and have a lasting impact, an overall rural health strategy must address at least some of the broader determinants of rural health.
- An overall rural health strategy must look beyond the health care domain for effective solutions to some of its problems. Thus, a concerted effort, involving many sectors and stakeholders, will be needed.
- Meaningful policies and effective programs to support rural health must be grounded on a better understanding of rural health – they must be evidence-based. There is a need to document and examine rural health in a comprehensive, systematic, objective, and thorough manner. To this end, rural health research needs to be strengthened in this country.
- The shortage of health care practitioners is seen by many as the most urgent and intractable problem facing rural communities. An effective and long-term rural health workforce strategy cannot depend exclusively on incentives to attract health care practitioners to work in rural settings. Incentive-based recruitment and retention programs should be considered just one aspect of a comprehensive strategy that has many dimensions and components, as noted in Section 6(c).

Telehealth is a useful technology, particularly for enhancing rural health. In order for it to be effective in supporting rural health, it must be "owned" by rural communities and practitioners, rather than being another urban-imposed solution.

- While telehealth technologies are developing by leaps and bounds, policies that undergird telehealth services and our understanding of the impact of telehealth on the rural health care system are mostly lagging. There is a need to turn attention to these aspects. Otherwise, telehealth will be forging ahead largely in a policy vacuum.

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Appendix A: List of HTF Projects Relevant to Rural Health/ Telehealth

This appendix provides summary information on the HTF projects which were reviewed in the preparation of this document. For further information, please refer to the HTF website (www.hc-sc.gc.ca/htf-fass).

(NA131) Rural Palliative Home Care Demonstration Project: A Collaborative Project Between Nova Scotia and Prince Edward Island

Recipient: Nova Scotia Department of Health

Contribution: $997,800

The Rural Palliative Home Care Project's goal was to implement and evaluate an integrated palliative care project in three rural areas: one in Nova Scotia and two in Prince Edward Island. The project report states that key components of the project included access and referral through a single entry point, the development of a common palliative care assessment tool and home chart, coordination by a case manager, care delivered by an interdisciplinary team, and enhanced education of nursing staff, doctors, and volunteers on palliative care issues. The project had a substantial educational initiative that included front-line education on palliative care issues for health care providers, clergy, and volunteers; resource team education; and continuing medical education for physician and faculty development. The front-line education was given to 226 individuals, and evaluation showed that it was well received and that these individuals retained the knowledge they gained three months after the workshop.

(NA149) Home Care and People with Psychiatric Disabilities: Needs and Issues

Recipient: Canadian Mental Health Association, Toronto

Contribution: $204,900

This national study explored the issue of how adults with serious mental illness (not including Alzheimer's) in Canada might benefit from publicly funded home care services. The project conducted a national evaluation of the accessibility, appropriateness, and effectiveness of existing home care services for adults with serious mental illness by reviewing completed surveys from 77 branches of the CMHA and 140 home care organizations, comments from patients and families in 13 cross-Canada focus group sessions, and information from face-to-face interviews with 142 key stakeholders. Concurrently, site-specific pilot programs were developed, implemented, and evaluated in Taber, Ottawa, and St. John's, showing that there is a variety of ways to integrate mental health and home care. The report recommends a series of changes to policy and practice that would relieve the "revolving door syndrome" of the mentally ill cycling in and out of hospital: making admission planning to home care part of hospital discharge planning, providing more support to caregivers and home care staff, and undertaking intensive case management. The report also makes the case for improving the integration of home care and mental health services in all parts of Canada.

(NA161) Tele–Home Care: Multi-Site Modelling Component

Recipient: The Hospital for Sick Children, Toronto

Contribution: $87,240

This report compares three regionally produced models of tele-home care, one (in Toronto) that was operational and the other two (in Calgary and St. John's) that were theoretical, pinpointing common elements and noting site-specific differences. The project enlisted local hospital and home care personnel to develop the two theoretical tele-home care models by identifying broad service concepts, defining a patient population, pinpointing essential service elements, and making recommendations about technology requirements. The models were then compared with one currently being tested at the Hospital for Sick Children in Toronto. The project developed a "blueprint" for a core Canadian tele-home care service that could enable higher-intensity care in the home for up to six months after hospital discharge: establishing an audio-visual connection between the monitoring centre and the patient, monitoring patients at least once a day, and offering tertiary support to the patient and the community care provider. Tele-home care is an adjunct to, not a substitute for, traditional home care. The result was a better understanding of the nature, advantages, and

adaptability of a new model of service delivery, which may increase health system efficiency but may also help resolve access issues for patients in rural and remote regions.

(NA221) Benzodiazepine Use in the Elderly

Recipient: Association of Canadian Medical Colleges

Contribution: $618,455

This national project tested the feasibility of a Canada-wide drug utilization review as well as a continuing medical education (CME) component for primary care physicians concerning appropriate benzodiazepine prescribing. The inappropriate prescribing of benzodiazepines in the elderly has been well documented. All eight provinces with medical schools have adopted their own approach to the issue. Ontario and Quebec were able to identify physicians with potentially inappropriate patterns of prescribing and to tailor education efforts to these individuals on a confidential basis. Interventions in the provinces included seminars, the mailing of written material, and patient education handouts. Four provinces also used academic detailing. Two provinces used interactive small-group CME. The thrust of the initiative in all locations was non-coercive and educational. At the time of reporting, follow-up analysis had been completed only in Newfoundland and Ontario; Newfoundland showed no major change in group prescribing data, and Ontario showed a very modest decline in individual prescriptions to seniors.

(NA342) Improving the Effectiveness of Primary Health Care Through Nurse Practitioner/Family Physician Collaborative Models of Care

Recipient: Sisters of Charity of Ottawa Health Services

Contribution: $745,695

This study systematically evaluated ways to improve "structured collaboration" between nurse practitioners and family physicians at two intervention and two control sites in rural and remote parts of Ontario. A learning module on collaborative practice was designed, pilot tested, and then introduced at the intervention sites. After completing the module, the participating health care providers (nurse practitioners and family physicians) selected five actions that could be undertaken in the study time frame to strengthen their own collaboration. The project found that changes occurred at the intervention site once an effort had been made to structure the collaboration. Whereas nurse practitioners assumed increased responsibility for curative activities, took on more complex care of patients, and referred fewer situations to family physicians, the physicians did not change their referral patterns – full collaboration, with a high level of two-way referral, was not achieved. Investigators believe that more time and experience is needed for that shift to occur. New, agreed-upon role guidelines were successfully adapted, and, at the comparison site, in-house referrals to physicians increased during the study period.

(NA366) Telecentres for Education and Community Health (TEACH)

Recipient: Memorial University of Newfoundland

Contribution: $199,000

This pilot project aimed to develop, implement, and evaluate a model for delivering primary health care and education in three rural Newfoundland communities by using communications technology. The project analyzed reports from three telehealth sites as well as evaluation forms completed by patients who had used video conferencing or other telehealth applications; researchers also consulted health professionals and technical staff and interviewed key parties, including health care providers. Clients rated telecentre facilities as good or excellent and said that they would use them again. Problems arose, however, with the cost of satellite equipment and the absence of a funding mechanism to compensate doctors for their telehealth work.

(NA402) First Nations National Telehealth Research Project

Recipient: First Nations and Inuit Health Branch, Health Canada

Contribution: $1,998,000

This project studied how telehealth might improve the access to health services in rural, isolated communities – terms that describe a third of all First Nations and Inuit communities. Five First Nations communities were chosen to pilot this two-and-a-half year telehealth project. The goals were for families to "visit" distant hospitalized patients via video conferencing, for patients to be treated in their

communities through electronic connections with health experts, and for isolated health staff to access training, information, and expertise. Costs were incurred through the introduction of technology and the need to service that technology (infrastructure costs averaged $245,000 to $305,000 per community). The technology raised legal and technical challenges regarding privacy and confidentiality, and it also introduced a need for training and technical support. Telehealth coordination required additional personnel with medical qualifications to facilitate communication with remote providers, a challenge in resource-constrained communities that are facing chronic nurse shortages. This study noted that telehealth "decreases efficiency" in terms of workload by increasing pressures on human resources at the local community level. It also increases the costs of certain allied health services. In order for First Nations and Inuit communities to connect with each other and participate in joint initiatives, telehealth equipment must be standardized and made interoperable. The report concludes that although this evaluation shows that telehealth can be successfully implemented in isolated First Nations communities, without the necessary human, financial, or technical resources, "there is a high risk of project failure."

(NA403) National Telehealth Community Care Pilot: The Nephrology Telemedicine Project

Recipient: Beauséjour Hospital Corporation, Moncton

Contribution: $2,983,200

This pilot study in northeastern New Brunswick had three components: a distance education project used video conferencing to inform First Nations people with diabetes about the risks of chronic renal failure and appropriate lifestyle adjustments; a comparison of the effectiveness of distance versus on-site education of patients prior to dialysis; and supervised dialysis treatments delivered in satellite centres via video link and electronic transmission of data. The first two components of this project, using video conferencing for health education, were promising in receiving positive feedback from patients, but the results were inconclusive due to short time frames and small sample sizes. The third component marked the first time in Canada that telemedicine techniques had been applied to dialysis, and project organizers learned a great deal about planning and implementing complicated new technology and software. Although patients saved money by not having to travel and reported satisfaction with the distance consultation, costs were approximately 10 per cent higher per treatment for dialysis in satellite sites than they were at the hospital. Researchers said this difference might eventually disappear if more intensive use was made of satellite locations for other telemedicine applications.

(NA485) Evaluation of Models of Health Care Delivery in Inuit Regions

Recipient: Inuit Tapirisat of Canada, Ottawa

Contribution: $163,800

This study examined the way health care is delivered in the six disparate Inuit regions of Canada, among populations that have the highest suicide rate, lowest life expectancy, and highest birth rate of all Aboriginal peoples in Canada. Using a holistic, population health-based approach in interviews with 41 key informants and an evaluation of commentary from the Inuit Health Policy Forum, this report lays the foundation for a future analysis of models of health care delivery. It finds that mental health issues and suicide prevention are considered top priorities in al Inuit regions and that all communities have basic, front-line nursing services, although staff shortages are straining the system. Regional differences are evident with respect to physician care. There is a general need for an emphasis on prevention, education, and health promotion and a need for Inuit involvement at all levels of the system in order to integrate traditional knowledge and culture.

(AB301) Alberta Primary Health Care Project

Recipient: Alberta Health and Wellness

Contribution: $11,112,759 – 27 Studies

This report is a meta-analysis of the 27 Alberta evaluation and demonstration programs. The projects addressed primary health care through six key strategies: rural/remote access, illness prevention and health promotion through community development, early intervention and education, system restructuring, integrated service delivery, quality improvement, and community health centre models. Findings from these projects contribute, in various degrees, to an understanding of the six national dimensions of primary health care. Some projects found that existing methods of payment to physicians

discourage them from participating in interdisciplinary and multidisciplinary activity. Many projects exemplified successful integrated service delivery and resulted in improved continuity of care. Others revealed a need for greater information sharing among providers, clients, public agencies, and administrators. Yet others emphasized the importance and benefit of early intervention and public awareness strategies. Rural projects demonstrated successful alternative strategies for advancing primary health care such as telehealth, "settlement nurses," remote health teams, and immunization schedule monitoring. All projects completed individual reports and are accompanied by fact sheets and summaries.

(AB301-17) An Evaluation of Lakeland Regional Health Authority Integrated Community-Based Palliative Care Program

This study piloted and evaluated an integrated palliative care delivery model in a rural area of east-central Alberta. The goal of the project was to improve access to and the quality of palliative care services. The project team consisted of a palliative care consultant physician, a project manager, and a palliative care coordinator, who also served as a nurse consultant. Consultation among health professionals and the palliative care team increased; patients, family, and health providers reported that the quality of care improved; and the project achieved a shift from acute care to community care. The percentage of deaths in the pilot area that were in-home increased dramatically, from about 8 per cent pre-program to almost 30 per cent post-program.

(AB301-19) Evaluation of the Usefulness of Telehealth in Providing Enhanced Primary Health Services to the Northern Geographically Remote Communities of Trout Lake, Peerless Lake, and Red Earth Creek

This project evaluated the effectiveness of an existing telehealth service in providing primary health care to three geographically remote communities. Telehealth services are thought to be useful because they may improve the quantity, continuity, availability, and accessibility of care in isolated communities. However, project staff and participants did not receive sufficient training in telehealth operations, and participants found there were not enough telehealth interactions to conclude whether or not this technology delivered quality care, was cost-effective, or increased access. Very little statistical or perceptual data was available to enable researchers to answer the original question of whether telehealth was useful or not. Project leaders concluded that "under the right conditions and guidance," telehealth might benefit the communities studied.

(AB301-20) What Are the Client Characteristics and Their Perceived Barriers for Non-Adherence to Immunization Schedules and What Impact Will an Immunization Refusal Strategy Have on Subsequent Adherence at Six (6) Months, Twelve (12) Months, and Eighteen (18) Months?

This project aimed to increase immunization rates in the Keeweetinok Lakes Regional Health Authority, a geographically large and culturally diverse region of 25,000 residents, almost 50 per cent of whom are Aboriginal. It hoped to increase immunization rates by inviting people who did not wish to update their child's immunizations either to sign a "refusal" form or to make an appointment for a subsequent immunization. It then followed up adherence at the 12-month, 18-month, and pre-school visit stage. Researchers found that parents' lack of knowledge about vaccines may be the most important single barrier to immunization. Lack of access to clinics was also a major factor. Other barriers to immunization included lack of child care and transportation problems. The project increased the region's immunization rates by about 20 per cent. The written refusal option was found not to be an effective strategy for dealing with under-immunization.

(AB301-22) Primary Health Care Project for Elnora Area

This project set out to develop, implement, and evaluate a primary health care model for rural areas that would incorporate community development principles. It hoped to provide Elnora area residents with affordable, accessible, effective and acceptable health care services through the introduction of a nurse practitioner (NP) at the rural health centre. The NP provided extended nursing practices such as prescribing medication, suturing, physical examinations, and ordering and interpreting lab work. The NP also maintained basic emergency supplies, equipment, and related drugs. On the whole, the project concentrated on "health care services" rather than on factors

contributing to health. However, the services of the NP were used and accepted, and people had no trouble differentiating between an illness or injury that needed a physician's attention and one that could be seen by an NP. In addition, they had increased confidence in emergency response management.

(AB301-23) Remote Primary Health Care System

This pilot project provided residents in three targeted remote communities with a mobile team of health professionals that visited the towns weekly or semi-weekly. The core team consisted of a physician, nurse, pharmacist, laboratory technician, respiratory therapist, and speech language pathologist. A second team provided breast health services, nutritional services, diabetic education, community outreach, and a youth justice resource. The project's goal was to improve access to primary health care, improve community perception of health care services, and develop links with appropriate agencies. Strong and harmonious relationships were formed among mobile team members and between staff and community members. Residents reported high satisfaction with the services they received and did not confuse the mobile services with other health services. Also, there was significantly increased compliance with prescriptions for medications and flu shots.

(AB301-26) Primary Health Services in Four Rural Communities

This project attempted to establish integrated primary health services in four rural communities in the East Central Regional Health Authority of Alberta. It focused on working with these communities in partnership to build an integrated and sustainable primary health system that could eventually be transferred across the region. Each community engaged in new activities as a result of this project, ranging from service inventories to information gathering to planned projects such as a community forum to address bullying at a local school. As the project continued, participants felt the region listened to those involved and recognized that each community would approach the initiative in its own way. By the second phase, there was less concern about turf protection, and all respondents felt the project had established successful partnerships.

(BC403) Eating Disorders Project North (EDPN)

Recipient: Northern Interior Health Unit

Contribution: $277,870

This 18-month project sought to help physicians and residents of rural and remote communities better prevent and treat eating disorders closer to home. It involved 30 communities and 385 participants. Organizers convened a committee of regional advisers on a monthly basis, used surveys to investigate community needs and resources, and then prepared and offered a variety of multi-day training sessions on prevention, intervention, and therapy. The study suggests a theoretical framework that could be integrated into a provincial/federal policy on eating disorders. The framework describes and promotes a more comprehensive and integrated approach to prevention, intervention, therapy, and diagnosis, and it makes the case for more resources for treating eating disorders.

(BC422) Integrated Postpartum Care and Lactation Support

Recipient: North West Community Health Services Society

Contribution: $63,037

This project developed a partnership between an acute care hospital and public health services to provide postpartum care in an isolated, semi-urban, northern community in British Columbia. The project was undertaken in response to concerns about the effects of early discharge from hospital on postpartum outcomes, particularly breastfeeding. Women could attend a clinic seven afternoons a week or receive a home visit during the first two weeks postpartum. Topics addressed at the clinic included breastfeeding, baby development, family adjustment, and links with other services. Client satisfaction was high, and health care providers expressed confidence in the service. However, the 12-month time frame did not permit an evaluation of health outcomes.

(NF301) Primary Health Care Enhancement Project

Recipient: Department of Health and Community Services, Government of Newfoundland and Labrador

Contribution: $2,181,823

This project evaluated Newfoundland's Primary Health Care Enhancement Project (PHCEP) at three rural sites within the province. PHCEP, an initiative of the Province of Newfoundland and Labrador that was funded jointly by the HTF and the province, focused on three urgent rural health care issues: the recruitment and retention of health professionals, continuity of care, and the movement toward a primary health care model. Recruitment and retention problems were tackled by multidisciplinary medical services and teaching units at each site. Continuity of care was addressed by establishing nurse practitioners. The third component was the use of video conferencing equipment for clinical consultations, the dissemination of health information, and the creation of professional development opportunities.

(NT401) Improving the Effectiveness and Efficiency of Programs for Aged, Disabled, and Chronically Ill Individuals

Recipient: Department of Health and Social Services, Government of the Northwest Territories

Contribution: $79,000

This project developed and implemented a new Continuing Care Assessment Package (CCAP) to assess clients requiring continuing care in the Northwest Territories. The use of the standardized tool helped direct clients to community-based services that provide a continuum of care as a cost-effective alternative to institutionalization. Data collected through the CCAP also facilitated better planning for service delivery, housing, and other resource needs. The report of this pilot project points out barriers such as resistance to change, but the principal problem was staff turnover. In small jurisdictions, the loss of expertise when a person leaves has a serious effect on program implementation. The authors suggest a written manual and continuing training as solutions to these concerns. They also point out the importance of supportive management in gaining acceptance of a new tool. The CCAP proved to be an effective way of making more objective, standardized assessments, thus making access to continuing care fairer and more effective.

(ON121) Integrated Cardiac Home Monitoring Pilot Project

Recipient: Scarborough General Hospital

Contribution: $650,000

The Cardiac Home Ambulatory Monitoring Project (CHAMP) was a randomized control trial of the home monitoring of patients with congestive heart failure (CHF) after their discharge from hospital following an acute cardio-respiratory episode. The study's primary aim was to see if more intensive, cost-effective monitoring at home could lower readmission rates and improve patient outcomes, functional status, and the cost-effectiveness of the cardio-respiratory program.

The study group received the standard care in addition to being educated about the symptoms of CHF, medication, exercise, and nutrition. Participants were given a "Life Signs System"® monitoring technology that could record and transmit vital signs via the telephone to a central repository where it could be reviewed by project staff registered nurses. Results showed the study group had statistically significant higher health satisfaction scores and that telephone consultation averted 32 per cent of emergency visits in the study group. The rate of readmission was 4 per cent in both groups, but the clinic reported that by monitoring the patients at home, it could increase its volume of patients assessed each week from 50 to 82.

(QC305) Supraregional Mother-Child Network

Recipient: L'Hôpital Sainte-Justine

Contribution: $2,278,514

This project established a "mother-child network" among hospitals in four health regions in Montréal and the surrounding area, reaching into rural areas north of the city, to lighten the burden on urban centres by shifting primary and secondary care to hospitals close to patients. The project used telemedicine technologies and telehealth training

for practitioners. Clinical practice was reorganized to care for mothers and children in hospitals near their home, and the project developed coordination mechanisms to ensure a continuum of care during the transfer process. The evaluation of the project records some success, particularly at the level of operational coordination. The telemedicine aspect of the project also improved access to services in isolated areas where qualified doctors were rare. No estimate of cost-effectiveness could be done because of current data-collection practices. The authors note that one of the most intractable obstacles was that parents preferred to go to a hospital emergency department because they knew they could find pediatricians there. During the short time period of the study, access patterns did not change significantly.

(QC323) Putting in Place an Information-Technologies-Supported Training Program Aimed at Nursing Staff for Delivery of Health Services in Isolated Communities

Recipient: Centre de santé de la Basse Côte-Nord, Lourdes-de-Blanc-Sablon, Québec

Contribution: $748,213

This pilot project developed a continuing education curriculum for nurses in the isolated lower North Shore region of Quebec. Three 45-hour units were delivered through video conference technology. Originally, the project had hoped to teach nurses some advanced techniques because doctors were not likely to be available in these isolated settings. This goal had to be set aside when the Collège des médecins du Québec insisted that protocols related to nurses performing these techniques must be agreed upon by the professional bodies concerned. Alternative curricula were therefore developed and taught. The nurses acquired new knowledge and were generally satisfied with the courses, although a majority of participants reported that limited changes occurred in actual practice. They also asked for clinical supervision in addition to the video conference. The experience resulted in improved collaboration between doctors and nurses and in more positive attitudes to distance education.

(QC402) Impact of Methods for Integration of Emerging Services in the Laurentians Public Health Region in Quebec

Recipient: Régie régionale de la santé et des services sociaux des Laurentides

Contribution: $310,975

The *Régie régionale* of the Laurentians health region of Quebec restructured its health and social services, as required under the province's recent reforms. This study evaluates the results of this region's approach to providing more services outside of institutional settings (*le virage ambulatoire*) and to increasing the integration of services. The evaluation is complicated by the division of the region into five subregions, each with its own approach, based on its distinct geographic, demographic, and socio-economic characteristics. The authors find some association between the characteristics of the subregions and the extent to which the integration of services has been achieved. They conclude that the *Régie régionale*'s initiative has been successful in starting an important process of change in the desired direction and recommend that the *Régie* continue to respect the diversity of the sub-regions, noting that what succeeds in one may not be appropriate for another. The authors make other specific recommendations concerning factors that will promote changes in practice, including making financial incentives consistent with the integration of services. They also recommend measures that will continue to ensure that services respond to the needs of a diverse population.

(QC409) Establishment of a Regional Network of Clinics for the Prevention of Heart Disease

Recipient: Complexe hospitalier de la Sagamie

Contribution: $638,000

This pilot project was designed to create a network of rehabilitation and secondary prevention services for patients suffering from cardiovascular illnesses. Services were provided locally, in communities in six sectors located in the Saguenay-Lac-Saint-Jean health region. These services promoted healthy lifestyle choices as a means to risk management. The first eight months of the project were devoted to mobilizing the communities and developing an organizational and operational structure. All the institutions that were to house a clinic signed a formal agreement before the operational phase; this framework was essential to the

management and success of the project. Patients were referred by their doctors at the hospital and received individual and group counselling about lifestyle issues. The evaluation of the preventive program found some effects on blood lipid levels and activity levels. No analysis was undertaken of possible cost savings to the health system; the evaluation concentrated on the planning and implementation process and described various facilitating factors and barriers that were encountered. The report recommends increasing ties with doctors to improve the rate at which patients are referred to the network.

(QC425) Telemedicine Serving Quebec Regions: A Demonstration Project in the Magdalen Islands

Recipient: Centre hospitalier universitaire de Québec

Contribution: $810,087

The challenge of offering specialized services to people living in remote regions was the driving force behind this telehealth project in the Magdalen Islands. The hospital there was linked, principally by video conferencing, with specialists in hospitals in Quebec City and the Gaspé. The equipment permitted consultations about patient care and continuing education sessions for health care professionals in the Magdalen Islands. Transport to urban centres was avoided in a number of cases; occasionally, a decision to transport the patients was made after consultation. Both professionals and patients were generally satisfied with the process. The authors note that the project's success was helped by the fortuitous arrival of a provincial telecommunications network for health and social services. It also built on previous telehealth experience and on existing hospital and doctor networks. The people responsible for implementation held key posts in their respective organizations and encouraged physician participation and consensual decision-making. The report identifies a number of challenges, particularly technological problems and difficulties related to physician remuneration.

(QC431) Capitation Project in the Haut Saint-Laurent RCM

Recipient: Régie régionale de la santé et des services sociaux de la Montérégie

Contribution: $3,171,031

This extensive project was designed to integrate primary services in a rural *Municipalité régionale de comté* (MRC, a regional county municipality) in the Haut-Saint-Laurent region of Quebec. The purpose was to provide efficient, quality primary health care that was accessible to all of the region's 25,000 residents. Responsibility for coordination on a territorial basis was given to a planning forum under medical leadership. Changes included doctors being remunerated for time spent on organizational and management activities, nurses being hired to work in medical centres, and services being restructured across the MRC to increase *complementarité* (lack of duplication) among the different institutions and organizations. In addition, a communication system for transmitting clinical information between practitioners and institutions was developed, and seven databases were integrated into one. The preliminary results indicate an improvement in continuity; a lack of duplication among institutions, enabling more patients to be cared for in their region; and less use of hospital resources. Researchers note that information in the data bank will contribute to the efficient allocation of resources, in part by allowing managers to track individuals' use of services. Stable funding is currently being sought to continue the project.

(QC432) Citizen Participation in the Emergence of Alternative Solutions to Meet Primary Health Services Needs in "Healthy Towns and Villages" Communities

Recipient: Régie régionale de la santé et des services sociaux de l'Abitibi-Témiscamingue

Contribution: $108,831

This project described and evaluated a community development process for implementing primary care services in five small municipalities (with populations of 200 to 3,000) in Abitibi-Témiscamingue. The community development process, called *Villes et villages en santé* (VVS), brought together committees of citizen volunteers, elected municipal officials, municipal employees, and health service providers, particularly from the CLSC. These committees

determined priorities and proposed innovative responses to local primary care needs. The principal lesson learned from the experience was that community development is a time-consuming exercise and that simultaneously starting up a VVS committee *and* achieving concrete primary care results proved challenging. The authors explore the challenges and conclude that these factors could in time be overcome.

(QC434) Putting in Place an Integrated System for Persons with Severe and Persistent Mental Health Problems

Recipient: Régie régionale de la santé et des services sociaux de Nunavik, Kuujjuaq, Québec

Contribution: $488,238

This pilot project tackled growing psychosocial problems and high suicide rates in Nunavik by housing, supporting, and employing people suffering from severe and chronic mental health problems who might otherwise be sent to Montréal. The project's integrated approach built on pre-implementation work: preparing communities, spelling out objectives and procedures, and clarifying accountability. During the nine months of the centre's operation, 12 clients were served and achieved greater independence. The majority managed to deal effectively with their addictions problems; only one client was hospitalized during the program. As a result of this project, there is now a new resource in Inukjuak, and the study concludes that the materials developed by the project might be useful in other isolated communities.

(SK321) Women's Diverse Roles in the Farm Economy and the Consequences for Their Health, Well-Being, and Quality of Life

Recipient: University of Regina

Contribution: $13,928

This study is a broad-brush look at issues affecting rural farm women in Saskatchewan. The researchers surveyed 717 farm women and interviewed informed professionals; they suggest that specific factors lead to the health care concerns unique to this group, such as stress, financial constraints, high workloads, isolation, and chemical use. The study embraced a wide range of issues, from farm women's concepts of feminism to leisure-time activities and exercise routines.

(SK325) Agriculture Health and Safety Program

Recipient: Midwest District Health

Contribution: $82,681

This project aimed to reduce the incidence of occupational injury and disease among farmers in the Midwest District of Saskatchewan. Almost half the area's working population reports farming as their primary job. The project employed a registered nurse to provide health screening and health education to 159 farmers by travelling around the district in a mobile health and safety unit. Participants were given lung-function tests, hearing tests, back and joint assessments, and stress assessments. The nurse also provided individualized education and referral to other health professionals when needed. Farmers were encouraged to identify their own health risks and to reduce those risks. This project was well received by participating farmers; many said that the program led to changes in their work practices that reduced risk and improved health. Almost all said that they would recommend the program to others, and nearly all felt the mobile approach to care was more effective than the traditional system. A significant number of participants were referred to specialists.

(SK326) Enhanced Rural Rehabilitation

Recipient: Assiniboine Valley Health District

Contribution: $177,513

This project hoped to improve rehabilitation services in the Assiniboine Health District by using three full-time physiotherapy assistants (PA) to work along with two full-time physiotherapists. Three PAs were hired at less cost than full-fledged physiotherapists to carry out a variety of tasks, including clerical work, patient education, and exercise therapies. An internal evaluation concluded that both the number of patients receiving treatment and the frequency of treatments increased while the length of time that patients spent in hospital decreased. Also, there were fewer back, shoulder, and neck injuries to health care workers, and the number of patient falls decreased. However, the study found that patients waited longer for physiotherapy services, possibly as a result of increased physician referrals based on their confidence that the system could accommodate them.

(SK401) An Evaluation of the Impact of Rural Health Service Restructuring and Integrated Service Delivery: A Public Opinion Survey

Recipient: Health Services Utilization and Research Commission

Contribution: $140,130

The restructuring of Saskatchewan's health care system since 1991 resulted in the elimination of acute care in many small rural hospitals and the integration of services under regional health boards. This public opinion survey asked a large sample of residents in the affected areas about how funding cuts had affected their access to health services, their health status, and their community's viability. Despite the fact that health status had not apparently been affected, the study found widespread dissatisfaction with the health care system and lingering resentment about the changes. Higher levels of satisfaction were associated with strong community leadership, the replacement of hospital acute care with acceptable alternatives, local support for innovative solutions, and effective communication with partners both in and outside the community. The study concludes, nonetheless, that information, community involvement, and transparent communication are necessary but not sufficient conditions to create support for changes in systems that have deep roots in a community. The authors note that such discrepancies between perceptions and realities hinder the effectiveness of policy changes and leave the debate mired in rhetoric and fallacies. They recommend more effective communication and consultation processes, particularly regarding informing the public of the real effects of the changes. Study SK422 complements this study; the two initiatives resulted in a common report.

(YT421) Adult Day Program

Recipient: Yukon Government

Contribution: $71,400

This pilot project provided a community-based day program to both people with physical impairments and people with cognitive impairments. The challenge was to meet the diverse needs of these different populations in the same program, as required by the budget of a small jurisdiction. Evaluation after one year indicated a high level of client satisfaction, including appreciation from family caregivers for the respite the day program offered them. The day program saved money by delaying institutionalization and decreasing the number of hours of home care provided to these clients. The report concluded that such a program can work; indeed, longer-term funding has subsequently been obtained to continue the program.