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Policy Implications for Geography and Scope of Services for Telehealth

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Policy Implications for Geography and Scope of Services for Telehealth

Final Report. December 2003

Executive Summary

Telehealth uses communications and information technology to deliver health and health care services and information over large and small distances. Inherent in the definition of telehealth is the ability to link or cross community, regional, national, and international boundaries and ultimately remove geographical distance and access barriers.

In Canada, telehealth has gained considerable attention. At the national level, both the Romanow and Kirby reports called for considerable expansion of telehealth, often as a way of improving access to health care for rural and remote areas. Yet, although telehealth has been greeted with much expectation and has spawned several exciting pilot projects with support from funding agencies and health care organizations, it is still a relatively minor part of Canadian health care delivery.

Most efforts to explain why this is the case have concentrated primarily at the meso (individual organization) level of analysis and focussed upon such immediate barriers to implementing telehealth applications as accreditation, licensure, reimbursement, and confidentiality, or upon 'political will', 'organizational readiness' or 'resistance to change'.

To date, little attention has been paid to *why* this resistance exists and to how telehealth fits into a larger policy context. This study was designed to concentrate upon two key system-level policy issues for telehealth services: the *scope of services* being offered by telehealth and how this matches existing arrangements for insured

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services; and how are telehealth services that allow barriers associated with *geography* to be minimized dealt with in a system organized and financed on provincial / regional boundaries. Specifically, this project addressed the following research questions:

- What sorts of services are being offered by Canadian telehealth programs?
- How well do the scope of services being offered match existing definitions of insured services?
- How are telehealth services currently financed
- How do telehealth programs address the complexities that arise from the conflict between a system oriented towards geographically-based coverage and the ability of telehealth to erode distance and access barriers?
- What do these findings mean for the ability to integrate telehealth services into the Canadian health care environment?

This case study of 43 Canadian telehealth programs employed a variety of approaches to data collection, including document review, utilization data, and 53 semi-structured interviews. In addition to material bearing on the research questions, we also report data concerning sources of funding, who provides services, and the nature of services provided.

Among the key findings reached by the research team are the following:

- Although the majority of telehealth programs term their programs 'permanent', most do not have secure funding. This reliance upon time-limited and non-renewable funding sources (in particular, the Canada Health Infostructure Partnerships Program (CHIPP)) seems likely to provide a challenge to the sustainability of these programs. Although the expectation from funders was that these programs would transition into routine services, it is notable that some of the telehealth programs we examined have already ceased to operate after their federal funding expired.
- Programs provided clinical, educational, and administrative services. Utilization data was available from 33 programs; estimates of clinical use ranged between 0% and 90%, with seven telehealth programs not providing any clinical activity and only five with more than 75% clinical use. Although most discussions of telehealth focus largely upon clinical activity, these activity reports suggest that telehealth is extensively used for professional education and administration, and is seen as being very valuable for those purposes. Indeed, eight programs indicated that they spent more than 50% of their time on educational activity.
- A major barrier to access on demand is inherent in the structuring of telehealth programs. With the exception of the three teletriage programs (that provide health information and advice over the telephone), all other telehealth programs require that telehealth activity be scheduled in advance. This is not surprising, as technicians must ensure that the facilities are set up and providers must be available. Several telehealth programs indicated that they have 'standing' clinics (e.g., a dermatology clinic scheduled on a monthly basis). In any event, in most programs it was not realistic to expect rapid access to telehealth services on an emergency or unscheduled basis.
- This requirement to have equipment available and to schedule services minimized the extent to which the theoretical ability to transcend geography was in fact realized; most programs restricted access to specified geographical

boundaries. The requirement for telehealth activity to be scheduled at the provider site is a form of gatekeeping that controls the access of receiving sites to telehealth services and it controls, if not eliminates, the opportunity for individuals outside the pre-defined geographical area of a telehealth program to access the service, unless permission is granted. There are also major implications for power relationships between sites.

- The results of this research indicate that scope of services is not yet a serious issue within telehealth. However, it is important to recognize that not all services offered (e.g., education and travel costs traditionally incurred by patients) fall within the provisions of the *Canada Health Act*. With telehealth the patient does not have to travel, but the telehealth program must absorb the costs associated with providing the telehealth service at the receiving site (e.g., cost of staff, room, equipment, etc.). Although the total cost of providing these additional services through telehealth may be lower (versus traditional health care delivery), the government has traditionally not paid for transportation except under specific circumstances (e.g., travel grants to residents of rural / remote communities). The question of which costs should be assumed by individuals and which should be assumed by government is likely to become increasingly important as telehealth moves from targeted programs into the 'mainstream' of Medicare.

Accordingly, the team suggests the following recommendations:

1. Do not base evaluations of telehealth solely upon clinical service applications. Our study clarified that these systems are being used heavily for educational and administrative purposes. In our view, such uses of telehealth are both appropriate and valuable, and should receive formal recognition.
2. Match the technology to the needs. Not all applications need elaborate (and expensive) systems; some functions can probably be handled adequately by telephone.
3. Ensure stable funding. The reliance upon time-limited and non-renewable funding sources seems likely to provide a challenge to the sustainability of these programs. Indeed, a number of the programs we examined are unsure of their continued survival; some have already terminated once their funding expired.
4. While the rhetoric around telehealth cites improved access for regions and persons more marginal in their ability to access services under the current system, our results suggest that complex, expensive technologies may inherently restrict 'access on demand' from remote sites through scheduling restrictions and control of technology. This shift may benefit consumers in remote areas (e.g., by simplifying their access to follow-up care), but policies and mechanisms should recognize that certain new technologies may move power towards the 'centre', i.e., to specialized sites.
5. Recognize that technological, administrative, and funding patterns may restrict the extent to which telehealth erodes geography, despite the rhetoric of 'virtual health care'. These restrictions extend far beyond the issues of licensure and standards that have received most attention by analysts of telehealth. Policies may be needed to promote cross-jurisdictional boundaries for services that should have a broader geographic scope.
6. Identify and recognize that telehealth in many cases may represent a shift towards public payment for formerly private costs (especially defraying costs of travel and health education). It will be important to clarify policies regarding

which services should be included as insured services. In addition, to the extent that certain regions decide to extend beyond the level required by the *Canada Health Act*, policy makers will also need to determine how much variation in coverage is considered acceptable.

7. Recognize that the expectations for telehealth as a way of improving access to consultation care for rural / remote areas 'on demand' or improving provision of personalized health information and advice to patients' homes do not match well with current activities and seem unlikely to do so, given the current technology. Unrealistic goals are likely to result in unwarranted disappointment when they are not met.

1 Background

1.1 Defining Telehealth

Telehealth is defined as "the use of communications and information technology to deliver health and health care services and information over large and small distances."¹ Telehealth is an umbrella concept covering categories such as telemedicine, teletriage, telemonitoring, tele-education, and electronic health records. Clinical telehealth services can be grouped under three broad categories: treatment services, diagnostic or management services, and information or educational services.²

All telehealth applications share two common elements: 1) geographical separation between two or more individuals involved in health care, and 2) the use of telecommunications for delivering health care services and / or gathering, storing, and disseminating health-related information.³ Inherent in the definition of telehealth is the ability to link or cross community, regional, national, and international markets and ultimately remove geographical distance and access barriers. Telehealth applications can be defined based on the technology being used (e.g., videoconferencing, telephone-based services), by the activity undertaken (e.g., continuing health education, administration, clinical services), by setting (e.g., rural telehealth), and / or by medical or health care discipline (e.g., telepsychiatry).⁴

Although various technologies can be used for telehealth, including the telephone or fax machines, the two most common types (that appear to be synonymous with telehealth programs) are 1) video teleconferencing (which involves the real time transmission of voice, data, and / or video images between two or more users) and 2) store-and-forward (which stores images and other information for later transmission, often by e-mail). Whereas store-and-forward can enable facilities to employ off-site expertise, it cannot provide real time service. Most of the telehealth programs in Canada employ videoconferencing systems that can be used by health professionals for diagnosis and therapy, clinical consultations, education and training, and administrative activities.

1.2 Advantages of Telehealth

Telehealth is seen as a way of "reshaping how health care is delivered: remotely instead of person to person; in the home rather than in hospital; to groups rather than to individuals; and across traditional institutional boundaries."⁵

A key advantage of telehealth is its ability to facilitate communication of information between and among health care providers and consumers and provide an alternative to the standard mechanisms for delivering health information in support of service delivery, education, and health promotion / disease prevention to both providers and consumers. Telehealth is accordingly seen as a way to promote greater and more equal access to insured health services, provide improved services, and reduce or eliminate a patient's need to travel to receive health care services. Although telehealth programs were originally designed to link under-serviced areas such as rural communities with urban medical centers, in Canada an increasing number of hospitals, both urban and rural, are now using some sort of telehealth technology.⁶

Telehealth technologies may have far-reaching implications. For example, they may bring people together and facilitate social cohesion, but "they may lead to social exclusion and a control regime for the provision of health (e.g., a mechanism to help control the costs of health care)."⁵

1.3 Telehealth in Canada

In Canada, telehealth has gained considerable attention. Among the numerous factors contributing to the expansion of telehealth in Canada are increasing technological capacity, increased federal funding for telehealth projects, recognition of the ability of videoconferencing to deliver professional education to health professionals and reduce the isolation of health professionals in remote areas, and the perceived need to deliver specialty services to rural and remote communities.^{7,8}

The predicted financial investment in telehealth is significant. In 1997, the Industry Canada Sector Competitiveness Framework Report predicted that Canadian governments would spend \$500 to \$750 million over five years in telehealth applications. In the early 2000s, Industry Canada reported that over 350 Canadian Telehealth companies employed about 1700 people and had annual revenues of nearly \$30 million.⁹

Over the past decade almost all federal, provincial, and territorial governments across Canada have started to implement strategic information systems initiatives, including HealthNet/BC, Alberta Wellnet, Saskatchewan Health Information Network, Smart Systems for Health, Inforoute Santé, and Nova Scotia Telehealth Network.⁹ At the Federal level, the Office of Health and the Information Highway (OHIH) was created within Health Canada in 1997, with the responsibility to develop federal telehealth policy. Among the programs it manages is the Canada Health Infostructure Partnerships Program (CHIPP) established in April 2000, which has provided seed funding for a number of telehealth and electronic health record initiatives. CHIPP, which requires matching funds, was given \$80 million, received over 100 submissions, and funded 29 projects.

Jennett et al. have traced the formal structures around telehealth in Canada.⁹ These begin with the 1994 creation of the Information Highway Advisory Council (IHAC) whose formal mandate was to investigate how the information highway could be developed and used in a wide variety of areas, including economic, cultural, and social. In 1995, this group issued a report with 300 recommendations including the

creation of an advisory council, in order to identify new information technology applications within the health sector. In 1997, the federal government established the Canadian Network for the Advancement of Research, Industry and Education (CANARIE, now CANARIE Inc.), whose vision paper described a Canadian health 'lway'.¹⁰ The same year, the Advisory Council on Health Infostructure (ACHI) was established. Its final report, issued in 1999, reaffirmed the need for and the advantages of setting up a nationwide health information highway, particularly with regard to improving quality, accessibility, and efficiency of health services across the entire spectrum of care in Canada.¹¹ In response, Health Canada established the Office of Health and the Information Highway as its focal point for the use of information and communication technologies (ICTs) in the health sector.

The current national structure for telehealth is based within the Advisory Committee on Health Infostructure (ACHI), established in 1999 as a committee for the federal / provincial / territorial Deputy Ministers of Health. The ACHI has working groups that address five priorities: strategic planning, telehealth, protection of personal health information, health surveillance, and electronic health records.¹² In 2001, they developed a 'tactical plan' with recommendations and action steps needed to establish a pan-Canadian health infostructure.¹³ The report emphasized collaboration, noted the significant increase in telehealth activity, but suggested that "the policies to enable telehealth are still not fully in place, especially for provider reimbursement, clinical accountability, and professional licensure."

In 2001, the Government of Canada committed to an investment of \$500 million to create and fund an independent corporation mandated to accelerate the development and adoption of modern systems of information technology such as electronic patient records, so as to provide better health care.¹⁴ This funding initiative is vested in the Canada Health Infoway Inc. (Infoway) created in 2002.

The emphasis on telehealth as a component of health reform was reinforced by both the Romanow¹⁵ and Kirby reports,¹⁶ often in the context of mechanisms for improving access to health care for rural and remote areas. Indeed, Romanow specifically suggested targeted funds for Rural and Remote Access, some of which might be used for equipment, education, training, and other support to allow for telehealth technology to be used effectively.¹⁵ Kirby has suggested that telehealth applications should foster the sharing of information and integrating health care delivery through mechanisms such as Electronic Health Records (EHR), and an Internet-based health information system¹⁷ (the tendency to lump together telehealth and e-health can be found in many of these reports).

Provincial reports have made similar recommendations.¹⁸ In Alberta, the Mazankowski Report¹⁹ and the Alberta Government's response²⁰ contained many recommendations related, to some extent, to telehealth or the development of telehealth policy.

1.4 Policy Development and Implementation

Policy can operate at the macro- (system), meso- (organizational) or micro- (individual) level. There are a number of stages of the policy development cycle, and

developing an excellent policy does not ensure that it will be successfully implemented. The policy implementation stage of the policy cycle has been defined as "the process whereby programs or policies are carried out; it denotes the transition of plans into practice."²¹ Telehealth policy, like all other policies, is not self-executing.

The literature on the many problems that can arise at the stage of policy implementation - drawing from examples in such diverse policy fields as welfare, transportation, and education - has found that implementation failure at the macro-, meso-, and micro-levels is common²²⁻²⁶ and includes lack of communication, impediments within organizational structures, insufficient financial resources, unsupportive attitudes of those involved in implementation, and lack of emphasis on those likely to be affected by proposed policies.^{21,27,28}

As Howlett and Ramesh²¹ note, policy implementation is, accordingly, embedded within a social, political, economic, and technological context. They further distinguish between 'top-down' and 'bottom-up' approaches to policy implementation, each with its own advantages and disadvantages. The telehealth field has typically taken a bottom-up approach to implementation and it has taken advantage of champions and opportunities as they arise, rather than seeking to first identify system-level priority needs.²⁹ While this approach has produced some successful programs, it may stall where champions do not exist. In addition, some reports that argue for a top-down approach suggest that those wishing to influence the development and future direction of telehealth must establish policy early; otherwise, globalization and the fact that telehealth transcends national borders may allow the first involved to influence global developments in telehealth, so that they are consistent with their own policy objectives while constraining those slower to act. Others, however, continue to argue that government should not attempt to manage telemedicine or to instigate complex bureaucratic approval or control mechanisms.³⁰

1.5 Implementation within Telehealth: Perception of Barriers to the Growth of Telehealth

Although telehealth has been greeted with much expectation and has spawned several exciting pilot projects, with funding agencies and health care organizations increasingly willing to fund research or pilot projects, it is still a relatively minor part of Canadian health care delivery. At the time of this writing, few pilot projects had matured to a sustainable status or reached a steady state of operation.

Most of the literature examining barriers to the growth of telehealth has focused on the meso- (organizational) level. A further constraint is that telehealth programs are still new, and few have moved beyond the pilot or feasibility stage.³¹⁻³³ The findings from evaluations of these pilot projects tend to be consistent with the suggestions of the meso-level policy implementation literature,^{28,34,35} which note the importance of such organizational-level factors as communication, financial resources, implementor attitudes, and bureaucratic structure.²⁸

A number of these evaluations have noted that introducing telehealth services into a health care organization results in significant social and technical changes at various levels of organizational functioning. Stumpf et al.³⁶ identified the following

implementation issues:

1. inadequate project leadership;
2. lack of physician buy-in;
3. no feasibility study;
4. unavailability of technical expertise or support;
5. staff resistance to changing habits and assuming that one implementation strategy will succeed across multiple sites; and
6. lack of evaluation.

They suggest that the telehealth has followed a backwards, 'bottom up' approach, whereby implementation comes first, followed by feasibility analysis, policy review, and then research. They believe that reversing the order might improve sustainability of telehealth. Hailey³³ focused on health professional issues (e.g., increased workload for coordinators and staff, telecommunication problems, lack of medical practitioner support, and higher equipment costs than anticipated. Jennett and Andruchuk²⁹ suggest five key issues for telehealth implementation:

1. 'readiness' of the environment (e.g., professional standards, leadership);
2. a systematic needs analysis;
3. consideration of interconnectivity and interoperability, and equipment and information technology;
4. staged implementation; and
5. program evaluation.

The same group then developed strategies to help ensure the successful and sustainable implementation of telehealth: integration; policy goal-setting; recognition and resolution of policy barriers / challenges; collaboration; partnerships and sharing; identification of high-impact areas for telehealth; evaluation and research; and investment.³⁷ Shannon et al.³⁸ identified ten issues in developing and implementing integrated regional programs:

1. limited volume of utilization to date;
2. lack of clear strategies for promoting wider utilization in particular specialities or geographical areas;
3. lack of uniform standard for health technology assessment;
4. limited dissemination of results based on the experience to date;
5. lack of necessary infrastructure in many remote areas;
6. limited technical resources to assist under-served areas in developing systems;
7. rapid obsolescence of technology and the attendant lack of interoperability;
8. uncertainty about practical and reliable solutions and security of patient data;
9. inconsistent quality assessment; and
10. geographical licensure barriers that limit professional privileging.

The extensive and helpful list of challenges in improving a 'fragmented' *status quo*, identified during the Canadian National Telehealth Interoperability Workshop³⁹ by a group of governmental and non-governmental public sector and industry stakeholders, focused on several types of 'operability'. The stakeholders defined *operational interoperability* in such terms as ease of use, cost-benefit, privacy, and human resource / education. *Clinical interoperability* included such issues as licensure, patient records, risk management, and remuneration. *Technical interoperability* was

defined in terms of connectivity, technical standards, peripherals, and security. *Organizational interoperability* included funding challenges, First Nations environments, levels of regional integration and political environments, better integration with other health care initiatives (e.g., electronic health records), integration of services at a local to national level, and improved credibility, stability, and accountability of telehealth services.

Similarly, in their excellent summary of the policy barriers seen as limiting the success of programs and constraining the widespread adoption of telehealth - as highlighted in telehealth policy studies - Jennett et al. pointed to the following issues: **Professional issues** of credentialing, licensing, and registration; **Legal issues** of privacy and security; **Ethical issues** of confidentiality, consent, and authorization (data access); **Reimbursement and other operational issues** (funding); **Accreditation**; **Commercial issues** of intellectual property and copyright; **Interoperability** (technical, professional, organizational); and **Communication issues** such as cross-border acceptance and use of common 'language'.⁹

A recent report by the National Initiative for Telehealth Guidelines (NIFTE) identified what was seen as four important sets of issues within telehealth. These were categorized as:

- **Organizational** (e.g., organizational readiness, processes, leadership, and resources; management resources and decision making; funding; quality assurance measures and continuous quality improvement; accountability and accreditation; linkage and coordination with all services; legalities, regulations, policies, service jurisdictions, liabilities, and partnerships; local mergers, privatization, regionalization, and globalization; need for planning and a business-case approach; handling continual change);
- **Human Resources** (e.g., telehealth-specific policies, regulation, license, and qualifications relating to hiring or job performance criteria; telehealth-specific roles and responsibilities; liability and malpractice issues; remuneration; staffing; orientation; on-the-job training or continuing education, including formal and informal training in telehealth; professional issues and changes to practice norms; cross-jurisdictional human resource issues);
- **Technology and Equipment** (e.g., equipment standards; environment and safety; reliability, security and maintenance; procurement policies; costs and funding; interoperability; interactive, integrated, and supportive systems; realistic human and technological interface; continuity); and
- **Clinical Standards and Outcomes** (e.g., standards, ethics, best practices, and quality of clinical care; clinical outcomes; communication with patients / clients and client-provider partnerships; informed consent; confidentiality and information security; safety; equity; accessibility; timeliness; efficiency and effectiveness; application of current knowledge).⁴⁰

An examination of eight Canadian telehealth videoconferencing (VC) programs that connect to approximately 150 sites in Canada found telehealth applications in Canada to be in a state of transition between pilot project and program status.⁴ It was noted that telehealth was expanding, and the following barriers to its widespread adoption and implementation were described: lack of sustainable funding; insufficient infrastructure; absence of the required culture change; lack of standardization and defined policies; and lack of available valid and reliable evaluation frameworks.

Other researchers have concluded that successful implementation of telehealth projects requires addressing the challenges of technical and organizational issues by conducting a needs assessment; ensuring participant buy-in; establishing clear goals and organizational structure; communication; developing an implementation plan; assessing technology; and support.⁴¹⁻⁴⁵ Charles⁴⁶ postulates that prior to implementing telemedicine programs, health care providers should assess whether they would receive a reasonable return on investment by evaluating all associated costs and estimating the amount of payment they can expect.

Picot³² and Harrison³¹ postulate that in order to gain insights into what contributes to a successful implementation, it is necessary to evaluate telehealth programs that have moved beyond the pilot state. Notably, they identify issues at the macro- (systems) level as well as those at the meso-level usually emphasized. For example, Picot³² discusses the conditions needed for long-term success. These conditions include:

- *Matching needs to appropriate solutions* (while needs assessment can identify needs, adopters must view, test, and experience potential solutions under a number of circumstances);
- *Change and new technology* (technological implementation brings both foreseen and unforeseen changes that are difficult to forecast; pilot projects can create artificial expectations);
- *Awareness of context* (there has been a pervasive tendency to treat telemedicine or telehealth as separate from the context of health care delivery, but telemedicine is only a communication and information tool and should not be considered as separate from other health care delivery activities); and
- *Availability of long-term funding* (while loans, government grants, and private sector partnering can bridge gaps temporarily, sustainable solutions require that savings from existing systems can be applied to pay for telehealth and telemedicine installations).

Similarly, a recent report on the G-8 Global Healthcare Applications project, a project whose objective was to establish an international concerted action on collaboration in telemedicine, telehealth, and health telematics went beyond purely meso-level issues. It concluded that in order to promote and facilitate the implementation of telemedicine networks around the world, the following key issues needed to be addressed: interoperability of telemedicine and telehealth systems; the impact of telemedicine on health care management; the evaluation and cost effectiveness of telemedicine; clinical and technical quality and standards; and medico-legal aspects of national and international applications.⁴⁷

In Canada, a comprehensive analysis by Jennett et al.³⁷ resulted in the following recommendations and conclusions:

- To be successful and sustainable, telehealth must be fully integrated into existing health structures and processes in a practical and policy manner;
- Integration can be achieved through aligning telehealth initiatives with existing strategic health plans, policy goal-setting, accompanying action steps, and resolution of policy barriers;
- Establishment of a policy forum that focuses on telehealth policy would facilitate these needs;

- Telehealth applications should incorporate capacity for education, research, and administrative functions as well as health and clinical functions;
- Federal / provincial / territorial partnerships in telehealth should be established where there are opportunities to improve efficiency in health care and decrease duplication;
- As telehealth continues to evolve, input from all key stakeholders (including patients, health care providers, and the public) into policy development is required. Consideration of needs as well as practical experience are essential for a meaningful exchange of information and views; and
- Consistent terminology and definitions around telehealth, e-health, and related terms should be adopted across jurisdictions.

This brief review clarifies that most efforts to explain barriers to implementation have concentrated primarily at the meso-level of policy analysis and upon the immediate barriers to implementing telehealth applications within particular organizations. The literature provides excellent analyses of issues such as technology, accreditation, licensure, reimbursement, and confidentiality which can indeed pose significant challenges. However, there is a tendency to fall back on references to 'political will', 'organizational readiness' or 'resistance to change'^{29,30,48-51} without considering why organizations might be unwilling, unready, or resistant. Indeed, suggesting a need for political will or culture change is less a solution than a mechanism for avoiding consideration of why these organizations and individuals are not eager to implement particular changes.

1.6 Macro Policy Issues in Telehealth

To date, there has also been less examination of telehealth in the larger policy context that Scott et al. define as "a set of statements, directives, regulations, laws, and judicial interpretations that direct and manage the life cycle of e-health."⁵²

This study was designed to concentrate upon two key system-level policy issues; the scope of services offered and the implications of geography. If telehealth is to move beyond its current state, there is a need to gain a clear understanding of how best to integrate telehealth services into the Canadian health care environment, determine the scope of services being offered by telehealth and how well this matches existing arrangements for insured services, and address the complexities that arise from the conflict between a system oriented towards geographically-based coverage and the ability of telehealth to erode distance and access barriers.

1.6.1 Issues of Scope of Services

The *Canada Health Act* (CHA) sets the terms and conditions that provincial insurance plans must meet in order to obtain full federal funds. Provinces are allowed, but not required, to go beyond the provisions of the CHA. Among the national conditions is the requirement that provincial plans provide universal coverage, without co-payments, for all insured services provided to insured persons. One provision of the *Canada Health Act* requires 'comprehensiveness' in defining insured services, i.e., all services deemed 'medically necessary', but only if they are delivered in a hospital or by a physician.⁵³

If care moves outside of hospitals or to non-physician providers, there is no

requirement that it be insured. Indeed, the Romanow¹⁵ and Kirby¹⁶ reports have recommended modifying the definition of insured services to encompass certain care (especially home care for those discharged from hospitals and home palliative care) that had escaped from guaranteed coverage as technology allowed care to move from hospital to home and community.

Information and communication technologies multiply the ways in which information and services can be delivered, affecting both the scope and the settings (e.g., home, hospital, clinic, etc.) of service delivery. Telehealth thus offers an immediate challenge to current definitions of insured services. For example, although teletriage is usually described as a service that helps to determine which emergencies require immediate attention, in practice many such services provide the sorts of health and wellness advice that might also be delivered in person (by a health care provider) or electronically (e.g., through a web site). It is ambiguous, from a policy viewpoint, to what extent such services are insured under the *Canada Health Act*, as opposed to being 'add on' services for which user fees are currently permitted. Accordingly, telehealth can, in effect, represent an (unrecognized) expansion of insured services to encompass advice and wellness services as well as educational and administrative activities. Such expansion may be appropriate; a survey of 'policy elites' about the boundaries of Medicare found fairly strong support for extending coverage to certain services that currently are not required to be insured, including telephone-based advice.⁵⁴ Yet it will be important for policy-makers to directly address the issue of whether they wish to expand the scope of insured services and, if so, how.

1.6.2 Issues of Geography

Health care in Canada is under the jurisdiction of provincial governments. It is financed, organized, and delivered largely on the basis of geopolitical boundaries; the trend towards increasing regionalization and population-based approaches in all provinces except Ontario (which itself has regionalized specific sectors such as home care and public health) has placed increased focus upon encouraging ever more integration of responsibility for a defined population. Telehealth, in contrast, is based upon the ability of a more 'boundaryless' information economy to erode distance and access barriers. There is an obvious disconnect between health care and the rest of society in terms of telecommunications. Telehealth presents challenges to the traditional notions of regulation and reimbursement in situations where potential clients do not need to visit the physician's office or the hospital. Accordingly, mechanisms for regulation and reimbursement will have to deal with services that may be delivered by providers outside the jurisdictional boundaries of the organizations that have traditionally regulated health providers and paid for their services.

Reimbursement and licensure have been recognized as major issues in realizing the potential of telehealth. One set of issues is whether telehealth is recognized at all (e.g., some provinces pay physicians through their provincial medical reimbursement schemes for telehealth consultations and services to patients). Another issue, however, is dealing with services to patients outside of the defined geographical boundaries.

2 Research Objectives

The purpose of this research was to examine the two less-considered macro policy issues for telehealth services: the *scope of services* being offered by telehealth and how this matches existing arrangements for insured services; and how are telehealth services that allow barriers associated with *geography* to be minimized dealt with in a system organized and financed on provincial / regional boundaries. Specifically, this project addressed the following research questions:

- What sorts of services are being offered by Canadian telehealth programs?
- How well does the scope of services being offered match existing definitions of insured services?
- How are telehealth services currently financed?
- How do telehealth programs address the complexities that arise from the conflict between a system oriented towards geographically-based coverage and the ability of telehealth to erode distance and access barriers?
- What do these findings mean for the ability to integrate telehealth services into the Canadian health care environment?

3 Methodology

The project is a case study of Canadian telehealth programs. We employed a variety of approaches to data collection, including document review and semi-structured interviews. By triangulating data sources we were able to limit the shortcomings of any given approach and increase the reliability and validity of the data.⁵⁵

3.1 Scope of Study

Since telehealth has been broadly defined so as to include all information and communications technology, it is important to define the scope of telehealth projects that were included in this study. The study's unit of analysis is the telehealth *program*, rather than the individual or organization. We defined telehealth programs as those offering clinical, educational, and / or administrative services at a distance and included programs that employed videoconferencing or the telephone. Projects related to electronic health records were beyond the scope of this study and are not included.

Similarly, the scope of the project was restricted to those involved with telehealth projects; we did not interview senior policy makers within federal, provincial, or regional governments, although a subsequent study might well seek to do so. Although the unit of analysis was the program, we do provide demographic information about those interviewed.

It is important to note that policy is a moving target; our findings apply as of the dates the telehealth programs were contacted. The extent to which the nature of services delivered or the sources of funding may have subsequently changed will of course not be captured in this study. In addition, although the proposal was approved with a time frame of 24 months and with the understanding that it would form the basis of the PhD thesis of Nancy Kraetschmer, subsequent developments within the Office of Health and the Information Highway's Knowledge Development and Exchange Program required re-configuration of funding to a new time frame of 16 months, as well as a corresponding limitation of the extent to which subsequent changes would be captured. The study does address all of the issues proposed but can only present the results of analysis as of August 2003, with the understanding that additional

interviews and analyses are still underway for Nancy Kraetschmer's PhD thesis work, albeit without OHIH funding (NK does hold a CIHR fellowship).

3.2 Acknowledgments

The material in this report forms a portion of the PhD thesis work of Nancy Kraetschmer. The material was conceptualized, the study designed, and the analysis performed under the supervision of Raisa Deber, with guidance of the co-investigators Drs. Paul Dick and Penny Jennett as well as Dr. Whitney Berta (thesis committee member). We also benefitted from the advice of our advisory committee consisting of: Dr. Ed Brown, Valerie Hagerman, Dr. Robert Filler, Dr. Vivek Goel, Dr. Richard Scott, Sandra Rencz-MacDonald, and Peter Sargious. All data were collected by Nancy Kraetschmer.

3.3 Ethics Approval

The project was submitted to The University of Toronto Ethics Review Board, was reviewed on September 25, 2002 and approved.

All survey findings are reported in aggregate form only so that no respondent can be identified without permission, unless that material was already in the public domain. Completed surveys are kept in a locked location accessible only by the research team. Computer files are stored in a password-protected University of Toronto computer system, in the Department of Health Policy, Evaluation and Management, Faculty of Medicine.

3.4 Literature Review

A literature review was conducted of relevant studies on telehealth, both published and from the 'grey literature' (working papers, Internet, etc.) dealing with the following areas: federal / provincial / territorial initiatives, barriers, issues, and interoperability. The strategies employed for the literature review included electronic database literature search using the Medline database (1966 to October 2003), Health Canada's Information and Communications Technologies in Health Online Literature Catalogue, and the Telemedicine Information Exchange (TIE); Internet searching, hand search of journals and conference proceedings. We appreciate the assistance of our co-investigators and advisory committee in locating material, particularly 'grey literature'.

The general inclusion criterion was that the documents address telehealth as it relates to geography and scope of services. Relevant articles and reports were retrieved and reviewed.

The focus of this study was not the telehealth literature per se. Accordingly, we have highlighted some key findings in the Background section of this report and refer the interested reader to other reviews.^{4,9,30,56-58}

3.5 Key Informant Interviews

We conducted 53 semi-structured interviews (telephone and face-to-face) with individuals involved in researching and delivering telehealth programs across Canada. These in-depth, one-on-one interviews are a valuable research method for collecting

data, gathering opinions and perceptions, as well as identifying contacts and information sources. The methodology selected allows for obtaining more in-depth opinions than would be available with mailed surveys. Because there is not a comprehensive telehealth stakeholder database in existence within Canada, the list of potential interviewees was obtained through triangulation, in order to help ensure that a representative sample of telehealth stakeholders would be captured. The following methods were employed:

A preliminary sampling frame was obtained by combining all telehealth projects listed on the Office of Health and Information Highway (OHIH) web site with those listed in a modified version of the National Initiatives for Telehealth (NIFTE) Guidelines Stakeholder Database. On behalf of the project research team, NIFTE sent an e-mail to all individuals listed in the NIFTE Stakeholder Database asking if they would be willing to participate in our research project. If individuals preferred that their name and contact information not be provided to the University of Toronto research team, they were to notify the NIFTE Database Coordinator by return e-mail by December 12, 2002; otherwise, it was assumed that the individual agreed to have their name and contact information shared with the research team.

A copy of the NIFTE Stakeholder Database was received by the University of Toronto research team in January 2003. Using a snowball-sampling technique, we then developed a list of potential interviewees based on recommendations from the research team, the advisory committee, and stakeholders already interviewed. Individuals selected for the key informant interviews were contacted in person; they were told about the purpose of the study and were asked to participate. Prior to the interview, those who agreed to participate were sent an e-mail that contained information about the study and a copy of the key informant interview questionnaire. Interviews were scheduled at times that were convenient for the interviewees; the majority were conducted during the day, but some were conducted in the evening.

All interviews were conducted by one interviewer (NK). Prior to the interview, the interviewer explained that the interviews would not be taped, the participant could refuse to answer questions, and that anonymity would be ensured (e.g., no results that would identify individual programs or respondents would be reported, unless that material was already in the public domain or specific permission was given). Interviews lasted 45 minutes to 2.5 hours. Interviewees agreed to be contacted in the future regarding additional questions / clarification of information provided during the interview. We very much appreciate the high degree of cooperation we received from the telehealth field in conducting this study.

The key informant interviews commenced in mid-February 2003. This report reflects the 53 interviews with representatives of 43 Canadian telehealth programs across Canada completed by August 2003; a limited number of other interviews are still being scheduled. There were no refusals to participate. Of the 53 interviews, 49 were conducted by telephone and 4 were conducted in person. All interviews were conducted in English and no incentives were provided to participants.

3.6 Document Review

The key informant interviews were supplemented with documentary material about the telehealth project and telehealth activity statistics, where possible. These documents

included activity reports, annual reports, evaluations, commissioned studies / operating plans, as well presentations made by individuals involved with the programs.

3.7 Development of Survey Instrument

The semi-structured questionnaire was developed by the research team and pilot-tested between mid-November and mid-December 2002, with the first four key informants selected for interviews. The survey instrument was finalized in February 2003. The key informant questionnaire focussed on collecting the following types of information about the telehealth program / service:

3.7.1 Scope of Services

- Is it a pilot project or has it been integrated into your organization on a permanent basis?
- What telehealth services does your telehealth program provide (e.g., clinical, education)?
- Does your organization / telehealth program(s) have formal and / or informal relationships with other telehealth stakeholder outside your region to provide telehealth services, information or protocols?

3.7.2 Geography

- How do you define your geographical service area for your telehealth program?
- How many patients do you treat with telehealth service(s) within and outside your geographical area?
- Do you target specific populations for your telehealth service(s)? Why?

3.7.3 Services / Funding

- Which of the telehealth service(s) that you provide would be classified as insured hospital or physician services under the provisions of the *Canada Health Act*?
- Which of the telehealth services that you provide fall within /outside the provincial schedule of benefits?
- To your knowledge, how are the telehealth service(s) that you provide paid for (e.g., research grants, federal / provincial / regional sources)?
- Do you charge patients a user fee for telehealth service(s) not included under the schedule of benefits (e.g., educational information)?

3.7.4 Future Plans

- How does your organization / facility / program determine what telehealth services to provide?
- Are there telehealth services that your organization / facility / program would like to provide but cannot?

3.7.5 Interviewee Demographics

- What is your profession (e.g., physician, administrator, nurse)?
- Position within organization?

- How much of your time is devoted to telehealth activities per week?

3.7.6 Other

- Do you publish an annual report on your telehealth program?
- Do you have an evaluation program that involves collection of individual data (e.g., surveys)? Was this shared with funders and service providers?
- Is there anyone else to whom we should speak (including other programs at your organization, other organizations, and your 'customers')?

3.8 Methodology for Data Synthesis and Analysis

The questionnaire was coded and analysed using the Statistical Analysis System™ (SAS) for the quantitative data and N*VIVO software package for the qualitative data. For the qualitative data, emergent themes in the interviews were coded and summarized based on theoretically pre-determined topics reflected in the interview schedule (e.g., the procedures used to access services). Although ethics approval to audio tape the interviews was received approximately one month after interviewing began, we found that this was not necessary; responses were instead typed directly into computer files for subsequent analysis.

3.9 Research Dissemination / Mobilization Plan

This research will form a portion of the PhD thesis for Nancy Kraetschmer. The final PhD thesis will be deposited and available through the Library at the University of Toronto. In addition, so as to ensure transfer of information to key stakeholders in the telehealth community, the research team plans to work with the advisory committee and use identified dissemination channels to ensure research transfer.

The current dissemination plan includes the following activities: transfer of research findings to the broader stakeholder community (e.g., NIFTE, the Canadian Society of Telehealth, service providers, and decision makers at various levels). Co-investigator Paul Dick has already presented preliminary results to the Canadian Society of Telehealth (CST) Conference in October 2003 in Halifax, Nova Scotia. Results will also be posted on relevant web sites, including www.m-thac.org, the site of the CIHR-funded 'From Medicare To Home And Community' research group. This network ties together community and research partners, and will provide an excellent dissemination mechanism for the findings.

We will have a meeting of the Advisory Committee to discuss the preliminary findings and conclusions, and we have also invited a representative from Health Canada. We expect that they will make recommendations for additional dissemination activities.

4. Results

To identify telehealth programs currently operating in Canada, an assessment of relevant documentation was undertaken, as well as a review of the NIFTE Stakeholder Database. This report reflects interviews with 53 stakeholders representing 43 telehealth programs in every province / territory except Prince Edward Island. Note that some provinces such as Nova Scotia, Saskatchewan, Manitoba, and Yukon have a single telehealth program, and other provinces have multiple telehealth

programs (Table 1).

Table 1
Programs Interviewed, by Province

Province	Telehealth Programs Interviewed	Interviews Conducted
Alberta	7	8
British Columbia	5	7
Manitoba	1	1
New Brunswick	5	4
Newfoundland	3	3
Northwest Territories	1	1
Nova Scotia	2	3
Nunavut	1	1
Ontario	12	18
Quebec	4	4
Saskatchewan	1	2
Yukon	1	1
Total	43	53

Respondents were asked to indicate the operational status of their telehealth program. The majority of telehealth programs (72.1%) considered their telehealth program to be permanently integrated, 14.0% indicated that it was a pilot project, 4.7% said that it was an implementation project, 4.7% said that it was a combination of both pilot and permanent projects, and 4.7% of telehealth programs were no longer in existence, due to lack of financial resources.

4.1 Funding Sources for Telehealth Programs

Respondents were asked to indicate, to the best of their knowledge, the sources of funding for the telehealth services their program provides. The results indicate that financial support for telehealth projects comes from a variety of sources; however, the largest funding source is the government (provincial / territorial / federal) (see Table 2). The main three funding sources reported were: provincial / territorial sources (74.4%), in-kind contributions such as hospital / service global budget (51.2 %), and federal sources (44.2%). Of those programs that received federal funding, one-third (32.6%) received funding through the Canada Health Infrastructure Partnerships Program (CHIPP).

Table 2
Funding Sources for Telehealth Programs

Funding Source	Report Receiving Any Source (n = 43)		Report that Source is a Major Funding Source (n = 42)	
	n	%	n	%
Provincial / territorial sources	32	74.4%	30	71.4%
Contributions-in-kind	22	51.2%	20	47.6%
Federal sources	19	44.2%	15	35.7%
Regional sources	12	27.9%	9	21.4%
Research grants	11	25.6%	5	11.9%
Other	11	25.6%	6	14.3%
Hospital global budget	10	23.3%	9	21.4%
Industry	8	18.6%	1	2.4%
User fee	3	7.0%	1	2.4%
Special program	3	7.0%	1	2.4%

These results confirm that although the majority of telehealth programs term their programs 'permanent', most do not have secure funding. This reliance upon time-limited and non-renewable funding sources (in particular, CHIPP) seems likely to provide a challenge to the sustainability of these programs. Although the expectation of funders was that these programs would evolve into routine services, it is notable that some of the telehealth programs we examined have already ceased to operate after their federal funding expired.

It is important to recognize that the vast majority (93%) of telehealth programs do not charge user fees. Those that do charge user fees do not bill individual patients (although there may be charges for educational programs); they bill the providers. In one case, participating hospitals are charged a fee to belong to the telehealth network.

4.2 Who Provides Telehealth Services?

Respondents were asked to indicate who provides their telehealth services. In almost all cases the programs involved physicians (92.9%), nurses (88.1%), and allied health professionals (81%). However, the vast majority of these health professionals are not paid through the telehealth budgets, but rather through other budgets such as fee-for-service payments or salary for physicians, and hospital global budgets for payment of nurses and other health professionals. Only 12.8% of telehealth programs reported that the participating physicians were paid through their budget, with one telehealth program reporting that physicians were paid through a combination of the telehealth budget and other budgets. Only 16% of telehealth programs indicated that nurses were paid through the telehealth budget and 2.8% reported that allied health professionals were paid through the telehealth budget. In that sense, telehealth

programs are already heavily subsidized by the health care budget of individual hospitals or regions, although this is not always recognized by the telehealth programs.

4.3 Scope of Services

Respondents were asked to indicate what telehealth service(s) their telehealth program provide(s). Of the 43 telehealth programs surveyed, 90.7% reported that they offer educational services to health professionals, 86.0% offered clinical services, 83.7% used telehealth for administrative purposes, and 60.5% provided general health information to patients / the public. Three of the 14 telehealth programs that provide triage / diagnosis / treatment planning to the public were specifically designated as telephone-based teletriage lines (see Table 3).

Table 3
Telehealth Service Provided

Telehealth Service (43 programs surveyed)	n	%
Education to health professionals	39	90.7%
Clinical	37	86.0%
Administration	36	83.7%
General health information to patients / public	26	60.5%
Labs / diagnostics	22	51.2%
Triage / Diagnosis / Treatment planning to general public	14	32.6%
Managing existing patients at home	12	27.9%
Other (e.g., televisitation)	11	25.6%

Further insight into the programs being provided was gained by considering utilization data. The results presented below reflect data from 33 of the 43 telehealth programs. Note that utilization activity is inherently ambiguous, because programs can categorize on the basis of time or on the basis of services. Since each clinical encounter will generally consume far less time than an educational session or administrative meeting, understanding the basis of the statistics is important. Some sites base statistics on time, others on sessions. We have sought to standardize this, to the extent possible, in order to reflect time allocations, while recognizing that all programs may not have categorized their activities in precisely the same way. Of the 10 telehealth programs whose data are not reflected in this analysis, 6 indicated that categorized utilization data were not available to them (either because they did not collect activity data or they were not able to access them, due to software limitations); one program declined our request for this information; and data for certain activities from the three remaining programs are forthcoming. We report the data, as broken

down by the programs, under three categories: clinical, education, and administration.

There was a great deal of variation in utilization for all three categories (see Table 4). Clinical use ranged from 0% to 90%, with seven telehealth programs not providing any clinical activity and only five telehealth programs spending more than 75% on clinical activities. Although most discussion of telehealth focuses upon clinical activity, the activity reports suggest that telehealth is extensively used for professional education and administration, and is seen as being very valuable for those purposes. Although the category 'educational use' includes both education to health professionals and general information to patients / the public, the majority of this education is to health professionals. Time spent on educational and administrative services ranged from less than 10% to 74%. Eight programs indicated that they spent more than 50% of their time on educational activity. Administrative use ranged from less than 10% to 74%, with seven programs reporting that they did not provide any administrative activity, and only two programs spent more than 50% of their time on administrative use. Of the three programs that were designated as telephone-based teletriage providers, triage accounted for 77-90% of their activity.

Table 4
Percentage of Activity, by Classification

Percentage of Activity	Telehealth Activity					
	Clinical (n = 33)		Education (n = 32)		Administration (n = 31)	
None	7	21.2%	3	9.4%	7	22.6%
Less than 10%	1	3.0%	3	9.4%	8	25.5%
10% to 24%	7	21.2%	9	28.1%	6	19.4%
25% to 49%	6	18.2%	9	28.1%	8	25.5%
50% to 74%	7	21.2%	8	25.0%	2	6.5%
75% to 89%	3	9.1%	0		0	
90% and over	2	6.1%	0		0	

Two-thirds (67.4%) of respondents indicated that they target specific populations for their clinical telehealth services within their geographical area. The vast majority of telehealth programs were not able to provide us with the age distribution of patients serviced by their program.

4.4 Scheduling of Telehealth Activities

A major barrier to access is inherent in the structuring of telehealth programs. With the exception of the three teletriage programs (that provide health information and advice over the telephone), all telehealth programs require that telehealth activity be scheduled in advance. This is not surprising, as technicians must ensure that the facilities are set up, and providers must be available. Only one telehealth program reported that it has a combination of both scheduled and unscheduled activity. However, there is a great deal of variation in the time required to schedule telehealth

activities.

For clinical activity, the *minimum* notice required appeared to be 24-48 hours. Most programs preferred one to two weeks advance notice, although many telehealth programs did indicate that they would attempt to accommodate urgent cases, when required. Several telehealth programs indicated that they have 'standing' clinics (e.g., a dermatology clinic scheduled on a monthly basis). In any event, respondents agreed that it was not realistic to expect rapid access to telehealth services on an emergency basis.

Educational sessions for health professionals are usually scheduled months in advance; some are even scheduled a year in advance.

Nearly three quarters (73.2%) of the telehealth programs reported that they use a centralized scheduling system; 14.6% indicated that they use a decentralized system and 12.2% use a combination of centralized and decentralized systems. Regardless of whether the scheduling system is centralized, decentralized, automated or manual, all telehealth programs reported that they track the sources of the calls / clients of their telehealth service.

Of the telehealth programs which reported that telehealth activity needs to be scheduled, the activity appears to be largely scheduled by a designated person such as the site coordinator. Less than 10% of the activity had to be scheduled by a health professional. Only one telehealth program reported that patients are permitted to schedule telehealth activity directly.

4.5 Geographical Boundaries

The requirements to have equipment available and services scheduled minimized the extent to which the theoretical ability to transcend geography was in fact realized. Most programs had geographical boundaries. Indeed, the majority (81.0%) considered these boundaries to be official, with another 14.3% of respondents indicating that the boundaries were service-dependent. As a result, they considered the geographical boundaries to be both official and unofficial. Only 2 programs (4.8%) considered their boundaries unofficial.

Few programs appear interested in expanding their services beyond their specified geographical area. Only 38.1% have tried to expand; this expansion tends to refer to educational activities rather than to clinical services. However, just over half (52.5%) reported that they have succeeded in contracting their services to all organizations within each program's geographical area with whom they had intended to work. This expansion, coupled with insecure funding, led programs to feel 'stretched'. Nearly three-quarters (73.8%) indicated that they were not able to service all the telehealth needs of their geographical area, for reasons such as funding, equipment issues (e.g., availability), lack of human resources or because they were not aware of the telehealth needs of their area. Only 7 programs (16.7%) felt that they were able to serve all of the needs in the area, and another 4 programs (9.5%) indicated that they did not know.

Although one-third of the respondents indicated that their respective telehealth programs have tried to expand beyond their geographical boundaries, only a minimal number of the patients they saw were from outside of their particular geographical

area. Two-thirds (67.4%) of telehealth programs were able to provide information on the percentage of patients they treat with telehealth services within and outside their geographically defined area. Of those that did report this information, 48.3% (14 telehealth programs) reported that 100% of their patients are from within their geographical area and 51.7% reported that between 77% and 99% of their patients are from within their geographical area.

The requirement for a telehealth activity to be scheduled at the provider site is a form of gatekeeping that controls access of the receiving sites to telehealth services. This requirement controls, if not eliminates, the opportunity for individuals outside the pre-defined geographical area of a telehealth program to access the service, unless permission is granted.

5 Discussion

The majority of telehealth programs provided clinical, educational, and administrative services and were seen as valuable by the individuals we interviewed. Nearly three-quarters of the telehealth programs studied were of the opinion that their program was permanently integrated into their organization. Accordingly, these results are likely to reflect a 'survivor bias', whereby those programs with more established funding and integration were more likely to have been identified and studied.

Even so, the programs are clearly heterogeneous, with considerable variation in the utilization profiles. It is striking that clinical use appears to be minimal in many programs. Most programs have not been integrated into routine clinical care. One reason may be the fact that the funding for telehealth programs is not yet stable, and a large proportion of programs rely on federal grants. Another reason, however, results from the fact that current telehealth technology and models of delivery still appear to be significant barriers to unfettered access by outlying communities. Communities wishing to avail themselves of telehealth must not only acquire often-expensive technology (with the exception of telephone-based systems), but must also position themselves within an existing telehealth network. Within each network, access must generally be scheduled in advance. Thus, gatekeeping appears inherent in most current telehealth systems. This in turn implies that the stated policy goal of eroding barriers for rural / remote areas may be unrealistic, given the current technology.

This reliance on gatekeeping means that, at the present time, geography is more a theoretical than an actual issue. We found that the vast majority of telehealth programs, including those that provide telephone-based triage are not moving beyond their defined geographical boundaries. This implies that issues of licensure across such boundaries are not currently major barriers to the expansion of telehealth. However, there do appear to be major issues relating to how gatekeeping has been - and should be - implemented.

The contrast between telephone-based systems and those using more elaborate technology (e.g., videoconferencing) is evident. Telephone-based systems can be accessed by anyone who has a telephone and knows the relevant phone numbers. Access is, therefore, largely under the control of those seeking the service, i.e., the 'receiving' site. In contrast, under current arrangements, the 'provider' site has the ability to control access to more elaborate services. One cannot contact a videoconferencing-based system unless the receiving site also owns the relevant

equipment, has the staff needed to operate it, and 'permission' has been given by both sides to make a connection. Arranging for acceptance of a telecardiology call differs considerably from arranging to have a telephone call answered. In addition, the requirement to schedule telehealth (other than telephone-based triage lines) allows the provider site to determine who has access to its services. The more sophisticated the technology, the greater the ability for control mechanisms to be utilized. However, even a simple technological system such as telephone-based triage can and has imposed control mechanisms (e.g., 1-800 telephone numbers) to restrict access only to individuals from within the defined geographical area.

Similarly, the early stage of most telehealth programs in Canada has meant that scope of services is not yet a serious issue within telehealth. However, it will be important to recognize that not all services offered fall within the provisions of the *Canada Health Act*. Indeed, many services (e.g., patient education, travel costs) are often incurred by patients, unless they qualify for a specific travel grant program. Other services (e.g., administration, continuing education) have traditionally been absorbed within organizational global budgets. With telehealth the patient does not have to travel, but the telehealth program must absorb the costs associated with providing the telehealth service (e.g., cost of staff, room, equipment, etc.). Although the *total* cost of providing these additional services through telehealth may be lower, the distribution of these costs will differ. In particular, the government has traditionally not paid for transportation, except under specific circumstances (e.g., travel grants to residents of rural / remote communities). The question then becomes: Which costs should be assumed by individuals, and which by government?

Our results also indicate that the majority of the clinical services provided are consultation-type care -- through videoconferencing -- to remote sites. In addition, several programs are involved in providing services - mostly information and advice, as in teletriage or televisitation - to individuals at home. Other telehealth activities (e.g., remote surgical support or remote procedures) that might garner public interest (anecdotally) have not developed into programs to the same extent and remain isolated research and innovation activities.

6 Recommendations

The research team suggests the following recommendations:

1. Do not base evaluations of telehealth solely upon clinical service applications. Our study clarified that these systems are being used heavily for educational and administrative purposes. In our view, such uses of telehealth are both appropriate and valuable, and should receive formal recognition.
2. Match the technology to the needs. Not all applications need elaborate (and expensive) systems; some functions can probably be handled adequately by telephone.
3. Ensure stable funding. The reliance upon time-limited and non-renewable funding sources seems likely to provide a challenge to the sustainability of these programs. Indeed, a number of the programs we examined are unsure of their continued survival; some have already terminated, following the expiration of their funding.
4. While the rhetoric around telehealth cites improved access for regions and persons more marginal in their ability to access services under the current

system, complex, expensive technologies may inherently restrict 'access on demand' from remote sites, due to scheduling restrictions and control of technology. This shift may benefit consumers in remote areas (e.g., by simplifying their access to follow-up care), but policies and mechanisms should recognize that certain new technologies may move power towards the 'centre', i.e., to specialized sites.

5. Recognize that technological, administrative, and funding patterns may restrict the extent to which telehealth erodes geography, despite the rhetoric of 'virtual health care'. These restrictions extend far beyond the issues of licensure and standards that have received most attention. Policies may be needed to promote cross-jurisdictional boundaries for services that should have a broader geographic scope.
6. Identify and recognize that telehealth in many cases may represent a shift towards public payment for formerly private costs (e.g., defraying costs of travel and health education). It will be important to clarify policies regarding which services should be included as insured services. In addition, to the extent that certain regions decide to extend coverage beyond the level required by the *Canada Health Act*, how much variation is considered acceptable?
7. Recognize that the expectation for telehealth as a way of improving access to consultation care for rural / remote areas 'on demand' or improving provision of health information and advice to patients' homes does not match well with current telehealth activities and seems unlikely to do so, given current technology. Unrealistic goals are likely to result in unwarranted disappointment when they are not met.

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