

[Telehealth picture]

Telehealth in British Columbia

A Vision for the 21st Century

Discussion Paper - August 1999

About this paper...

This discussion paper is an attempt to develop a British Columbia Government vision for telehealth. Telehealth has been defined in the paper as follows:

"The use of communications and information technology to deliver health services and transmit health information over both long and short distances."

The paper has been jointly developed by an Inter-Agency Telehealth Committee with representation from the Ministry of Health, the Ministry of Employment and Investment, the Information, Science and Technology Agency, and the B.C. Health Industry Development Office.

A diagram illustrating a conceptual model as to how Telehealth relates to HealthNet/BC has been included in the Appendix for your information.

The Telehealth Committee invites you to read this document and provide your feedback. A special telehealth website can also be found at the URL below:

<http://www.hinetbc.org/telehealth/telehealth.html>

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I Introduction

The Canadian health care system is unique in the world. The combination of the Canadian philosophy that health services should be universally accessible and the continued commitment to this objective make it incumbent upon us to develop strategies to support its continuation.

Strategies and technological advances that remove the barriers of distance and which avoid any trend towards two tier health care need to be developed and implemented. These applications must be integrated with the needs of patients/clients, providers and payers.

HealthNet/BC¹ is the overall framework for health information sharing within the province of British Columbia. It is a secure telecommunications backbone network that links to the national Information Highway.

HealthNet/BC is comprised of applications, databases, computer technology, communication networks, and necessary supporting services, implemented on a common set of standards, which, once completely implemented, will allow health system participants to access all the information they need to effectively do their jobs. HealthNet/BC applications that use technology to extend the reach and range of clinical, administrative and educational functions beyond their providers' immediate physical location are referred to as Telehealth. The term is especially relevant to direct clinical/diagnostic and educational applications delivered to under-serviced rural areas via telecommunications technology.

HealthNet/BC, consisting of infrastructure, standards, and applications, is illustrated as the potential backbone of a provincial telehealth model². These applications may be province-wide, e.g. Pharmanet, or contained between specific locations e.g. teleradiology in the

Northwest. As technology advances and applications are developed there will be a greater emphasis on partnerships between the telehealth industry and the health service providers, and some coordination will be required.

Telehealth has the potential to improve access to affordable health care for residents of British Columbia and create health service delivery efficiencies that ultimately improve the quality of care provided. However, in order to ensure that telehealth applications are consistent with both regional and provincial health information management goals and objectives, and that potential economic development and trade opportunities are not overlooked, this discussion paper has been developed as a starting point from which a Vision for Telehealth in British Columbia can be produced.

British Columbia Telehealth Initiative

The purpose of the provincial telehealth initiative is to bring some cohesiveness and coordination to the various activities already taking place and to ensure that future projects meet provincial public policies and objectives. As well, the establishment of a provincial strategy, or framework for telehealth, will help lever funding from agencies such as CANARIE (Canadian Network for Advancement of Research, Industry and Education), Industry Canada, the Canadian Foundation for Innovation and the provincial Knowledge Development Fund.

The British Columbia Ministry of Health (MOH), Ministry of Employment and Investment (MEI), the Information, Science and Technology Agency (ISTA), and the BC Health Industry Development Office (BCHIDO) all have interests in Telehealth and are collaborating to define a "Telehealth" initiative that will help direct activities related to the commercialization and implementation of telehealth applications in British Columbia. From the British Columbia government's perspective, the goal of the initiative is for a future where the development and adaptation of communications technology improves access to quality health services for all British Columbians and beyond. It will therefore be incumbent upon government, industry, service providers and researchers to collaborate and exhibit the necessary leadership to adapt health service delivery to the realities and opportunities of the next century.

Provincial Vision Statement for Telehealth

"A health system in which telehealth technology is used effectively as a tool to improve the health of the people of the province, by enabling the delivery of accessible, affordable and efficient quality health services."

Broad Objectives of the Initiative

- To guide the development and implementation of telehealth applications within British Columbia and to maximize the utilization and cost-effectiveness of telecommunications

- in the provision of clinical, preventative, diagnostic and educational services.
- To encourage public/private sector collaboration in the research, development and implementation of provincial telehealth applications to maximize the economic development potential and strengthen British Columbia industry ability to address provincial health needs, and from success in this arena, export market opportunities.

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II Background

Telehealth - Defined

Telehealth can be defined as:

"The use of communications and information technology to deliver health services and transmit health information over both long and short distances."

Telehealth is about the adoption of technology that complements and supports health public policy and enhances the delivery of quality health services within a regional health model. Telehealth can help eliminate distance barriers and improve access to services that otherwise are not available in rural communities.

Applications range from remote specialist consultation services and continuing medical education via video conferencing methods to pre-surgical planning using state of the art shared 3 dimensional workspaces over ATM (Asynchronous Transfer Mode) high speed communications networks.

Telehealth in Canada

Telehealth is an area of growing interest in almost every province and territory across Canada. Funding agencies such as CANARIE, The Canadian Foundation for Innovation, and Industry Canada have identified telehealth as a focus area for their respective programs. The federal government has identified the sector as a priority sector for the 1998/99 Canadian International Business Strategy (CIBS) and has recently completed a Sector Competitiveness Framework on the Telehealth Industry.

Provincial initiatives like New Brunswick's TeleCare project, a province-wide medical hotline to help reduce unnecessary emergency department visits, is said to save \$3 for every \$1 spent and handles 10,000 - 15,000 calls per month.

Nova Scotia has recently announced the implementation of a province-wide telehealth network and Quebec stated that it will expand its telehealth network in the hopes of saving \$300 million annually in costs!

The Alberta WellNet project blue print was completed in January 1998. It is a 10 year delivery plan to connect and share information between all physicians' offices, pharmacies, health authorities and the Ministry of Health. Expected cost is \$700 million with anticipated benefits of \$2 billion over 10 years.

While the introduction of telehealth is occurring in all provinces and territories, the general consensus is that it is happening in an uncoordinated way and that health systems are not keeping up with the changes in technology. The major impediments to this are limited capital equipment and operating budgets as well as the inability of provincial health systems to deal with the many issues related to implementing telehealth, such as privacy concerns and practitioner reimbursement policies. To date, only Nova Scotia appears to have introduced a reimbursement schedule in preparation for the implementation of its province-wide telehealth network.

Telehealth Activity in British Columbia

Over the last several years, British Columbia has encouraged liaisons between industrial, educational and public sector organizations to study technological advances in telecommunications as they apply to their field of interest. In health, network providers, equipment manufacturers and systems integrators have been brought together with researchers and users from health and education. The result of these group efforts has been a strong understanding of the capabilities and limitations of new telecommunications technologies and how these can be deployed on a daily basis for the benefit of a broad spectrum of customers.

When we talk about Telehealth, it is important to distinguish between the applications that are developed and delivered via the use of telecommunications and the infrastructure required on which the applications will run, i.e. the networks, equipment and standards. The following broad categories have been assigned to provincial telehealth projects. A detailed list of provincial projects can be found on the Health Industries web site, HiNet at URL: <http://www.hinetbc.org/telehealth/telehealth.html>

a) Applications

i) Clinical

- Diagnostic Image Management Systems - for remote consulting and diagnostic assessment of pathology, radiology, dermatology, and ophthalmology

applications.

- Remote Medical Consultation - use of video conferencing technology for remote specialist consultation.
- Electronic Patient Records

ii) Educational

- Distance Education - use of video conferencing technology for the delivery or enhancement of education and training services such as continued medical education (CME) through distributed/open learning approaches.
- Health Education and Promotion - web-based or telephone consultation and database support for triage purposes, health education and wellness promotion to the general public.

iii) Administrative

- Health Administration Applications - administration systems including pharmacy management, and practitioner billing and claims systems.

b) Infrastructure

- Networks, Equipment, Standards - telecommunications networks, equipment, systems architecture, data and technology standards.

Expected Benefits and Outcomes

A coordinated approach to the adoption of telehealth in British Columbia is expected to provide many positive benefits to the health system including:

- enabling British Columbia residents, physicians, nurses and other health service providers access to specialists hundreds of kilometers away;
- providing timely access to patient/client data thereby reducing unnecessary duplication of tests and improving quality of care;
- reducing the need for patient travel/transfer and physician travel by transmitting data and diagnostic quality images instead of people;
- improving links between physicians, nurses, hospitals, pharmacies and other health providers in a cost-efficient manner;
- creating efficiencies and savings that will offset capital and operating costs;

as well as the following economic outcomes for British Columbia into the 21st century:

- leveraging investment in applied research and attracting investment in BC's telehealth industry;
- increasing provincial telehealth capacity and ability to meet domestic and export needs;
- generating export revenues for re-investment in the provincial health system;
- establishing British Columbia as a leader in Canada in telehealth technology;
- creating an exciting working environment and supporting the creation/retention of regular, high paying jobs in BC's health and advanced technology workforce;
- establishing Telehealth Centres of Excellence.

Issues

There are a number of issues that need to be addressed. One of the main purposes of the B. C. telehealth initiative is to address these issues in a cooperative and collaborative manner. Major issues include:

- Inadequate information sharing mechanisms and uncoordinated infrastructure planning for telehealth applications;
- Reimbursement policies;
- Patient/client confidentiality;
- Needs assessment, cost/benefit analysis and evaluation;
- Medical-legal issues;
- Professional licensing and regulatory requirements to practice across borders;
- Financial policies related to the use of operating budgets for capital expenditures;
- Limited capital and operating budgets for ongoing operation of new technologies;
- Access to sources of capital and research funds;
- Inability of the health system to deal with the many issues related to the development and deployment of the technology;
- Lack of reference sites for BC developed applications;
- Absence of a coordinated approach and industry strategies;
- Lack of profile within BC and in Canada;
- Perception that BC and Canada are falling behind in implementing telehealth applications;
- Capacity of BC Hospitals to handle growing demand for network applications.

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III Where Would We Like To Be and How Do We Get There?

Our Goal

To improve the health of the people of the province by establishing British

Columbia as a recognized Canadian leader in the adoption of Telehealth applications and provider of Telehealth products, networks and expertise.

British Columbia's Strategic Advantages

The British Columbia Health System is recognized as one of the most automated provincial health systems with the on-line practitioner billing system "Teleplan" which became operational in 1985, the introduction of Pharmanet - perhaps the most comprehensive pharmacy network in North America - in 1995 and HealthNet/BC in 1996.

British Columbia is also considered a leader in terms of its computer science and engineering capabilities, telecommunications infrastructure, research and good science. This, combined with innovative health policy development, an enthusiastic health care community and an expanding information technology industry, provides a climate conducive to the establishment of centres of excellence in a number of Telehealth disciplines.

a) The Network

CA*net3 is a unique nation-wide high performance network that will offer OC48 level bandwidth (2.4 Gigabits/sec) for research and development use. It is the world's first national optical internet based on WDM technology developed under CANARIE's leadership. The introduction of CA*net3 demonstrates the commitment on the part of the federal government to the continued development of national networks across the country.

Canada can continue its leadership role in this field and needs to ensure that no barriers to this program impede its progress. It is the distinctive Canadian philosophy of sharing which has supported the system evolution to date, and it is critical that this must remain as an essential element of the federal government's commitment to the CA*net3 initiative.

Rnet BC, the Research Networking Association of BC, facilitates the development and implementation of broadband communications based projects within British Columbia. Established in 1994, Rnet promotes the development, demonstration and testing of pre-commercial applications that use high bandwidth telecommunications, including connectivity to the national CA*net3 network.

Utilizing services provided by local communications carriers (Telus [BC Tel], MetroNet etc.), Rnet works with developers and users of broadband technology to accommodate provincial, national and international connections. >p> Currently, Rnet provides connections to BC's major hospitals, universities and broadband-focused industry sites.

As explained in the introduction, **HealthNet/BC** is an overall framework for health information sharing. It has many components, not the least of which is an electronic network, which has

been in place since 1995, providing connectivity to all community pharmacies, hospitals, and health offices. The network services are used for e-mail, secure (encrypted) file transfers, Ministry supplied web applications and dedicated HL7 EDI messaging applications such as PharmaNet and the Health Registry. All HealthNet/BC communications use the TCP/IP protocol, and security of sensitive information is ensured by use of authentication and encryption facilities.

HealthNet/BC's most recent innovations have included the implementation of advanced security products (HNSecure) which will allow future HealthNet participants (Physicians, Labs, care facilities, etc) to securely communicate data via any internet compatible service provider. This is, in essence, a Virtual Private Network (VPN) for all authorized health providers, regardless of the telecommunications suppliers and, allows a multitude of computers to communicate over what appears to be a single network.

b) The Industry

High growth potential industry sectors such as Telehealth are characterized by a reliance on significant R&D investment, a highly skilled workforce, intellectual property assets and global export markets.

The "Telehealth" industry sector is growing rapidly with recent investments by companies such as; GE Medical Systems in ALI Technologies, a Richmond based health information technology company; Newbridge Networks and affiliate companies' expansions; and more recently the announced establishment of a Pacific Development Centre by IBM Canada.

c) Regionalization

A coordinated introduction of telehealth applications within the province also has the ability to become an integral component of the health system regionalization process.

Maintaining Our Lead

With these strategic advantages, British Columbia has the opportunity to be a world leader in the telehealth field, both from the delivery of health and educational services to the provision of products, technology and expertise needed to deliver these services.

However, if we are to fully realize this opportunity, efforts must be made to position telehealth applications within the framework of a provincial telehealth strategy.

The Role of Government

As previously stated, the British Columbia Ministry of Health, Ministry of Employment and

Investment, the Information, Science and Technology Agency, and the BC Health Industry Development Office each have an interest in the development and adoption of Telehealth in British Columbia.

General role of government:

- identify emerging trends;
- facilitate commercial opportunities;
- ensure that the adoption of new systems and technologies serves public sector policies, objectives and priorities.

More specifically, government has a role in:

a) Appropriate use of technology

- address policy and legislative requirements, set data, security and technology standards for public sector applications.

b) Access to the electronic highway

- provide British Columbians with universal, affordable access to networks, and services provided by the networks, that meet public policies, objectives and priorities.

c) Industry development

- provide a climate for collaboration and coordination, information sharing and identification of opportunities;
- encourage "industry" partnering;
- increase awareness of funding sources for the advancement of research to commercialization stage;
- identify sources of capital through public sector procurement and strategic investment.

d) Awareness

- contribute to a greater degree of "telehealth" awareness within health authorities, government agencies and the general public;
- raise the profile of BC's expertise in telehealth with various levels of government, the investor community and export markets.

The Consultation Process

There are many stakeholders within the health community that need to be part of the strategy development process. It is therefore incumbent upon government to put in place a vehicle for consultation and collaboration between government, academia, health administrators and practitioners, and industry to ensure that major systems decisions are made within the context of a provincial strategy and implementation plan. The consultation process will therefore endeavour to engage participation from the public and private sector, from hospitals, universities, research organizations, network providers, software developers, professional associations and the like in order to bring everyone's ideas and concerns to the table.

Accomplishments to Date

While there is still much to do to get where we want to go, it is worth noting that the following positive steps have already been taken:

- Inter-agency committee established in 1997 with representation from MOH, MEI, ISTA, and BCHIDO;
- MOH Telehealth committee established with representation from Ministry for Children and Families;
- Inventory of BC telehealth projects developed;
- Network of key stakeholders informally established;
- Communications Plan developed;
- Live demonstrations of telehealth applications during November 1997 APEC;
- BC representation at Health National Sector Team meeting, Industry Canada/CANARIE-sponsored telehealth workshop and annual conference;
- BC representative invited to attend the G7 Telehealth Forum in Germany;
- Telehealth web site established April 1998 as part of HiNet BC - <http://www.hinetbc.org/telehealth/telehealth.html>;
- BC Telehealth projects listed on federal government's STRATEGIS/CINCH Telehealth web site - <http://strategis.ic.gc.ca/cinch>;
- Collaboration occurring between major hospitals in Vancouver and links being established with northern locations and between provinces;
- Communications established between organizations involved in CME and telehealth to identify common areas of interest and potential collaboration.

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For more information on telehealth projects in British Columbia, please visit: www.hinetbc.org/telehealth/telehealth.html

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Appendices

Appendix A: HealthNet/BC



HealthNet/BC is the overall framework for health information sharing within the province of British Columbia. It is a secure telecommunications backbone network that links to the national Information Highway.

HealthNet/BC is comprised of applications, databases, computer technology, communication networks, and necessary supporting services, implemented on a common set of standards, which, once completely implemented, will allow health system participants to access all the information they need to effectively do their jobs.

The diagram above describes HealthNet/BC as an information sharing facility that is primarily in place to assist with the health improvement of BC residents. Therefore, this diagram has the clients or patients at the centre. Services for these clients are provided and supported by

resources in the next circle, which includes providers, health facilities, managers and researchers. The people serving the public use a telecommunications network, surrounded by state of the art security systems to collect, store, manage and transmit critical health information. For illustration purposes, we have divided all the services and related information into three categories: Clinical, Administrative/Financial and Educational.

Appendix B: A Telehealth Model



HealthNet/BC, as the backbone of the system, consists of an infrastructure and a set of standards. Operating within HealthNet/BC are a series of applications, which may be province-wide, e.g. Pharmanet, or localized, e.g. teleradiology.



coordinating are operated by the provincial government and by health authorities. Health authorities may also establish Centres of Excellence, to be the major referral point for a specific function or discipline. As technology advances and applications are developed there will be a greater emphasis on partnerships between the telehealth industry, other agencies, and the health service providers, and some co-ordination will be required. The above model makes provision for networking these agencies through a co-ordinating body.

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