

Title: Home Telehealth Programs in Canada

Date: 30 May 2008

Context and policy issues:

Chronic diseases are prolonged conditions that normally do not improve with time and are rarely cured completely.¹ Diabetes mellitus, congestive heart failure (CHF) and chronic obstructive pulmonary disease (COPD) are examples of chronic diseases. Chronic diseases may cause premature deaths, adversely affect quality of life of individuals, and have negative economic impact on the individuals' families and society.² In Canada, the total cost of illness, disability and death due to chronic diseases exceeds C\$80 billion annually. Cardiovascular (CV) diseases account for C\$28 billion per year, diabetes accounts for C\$14 billion per year, and respiratory illnesses account for C\$8 billion per year.³ Chronic illnesses are associated with approximately 48,023 deaths annually; 21,946 from CV diseases, 3,617 from chronic respiratory diseases and 1,927 from diabetes.⁴ It was estimated that there were 350,000 Canadians (1% of the population) with CHF in 2002.⁵ In 2005, approximately 754,700 Canadian adults over the age of 34 were diagnosed with COPD (4.4% of that age group).⁶ However, it is possible that more than 50% of COPD patients are undiagnosed,⁵ so the numbers may be much larger than reported.

Chronic disease management is a systematic approach to improving the health of patients with chronic disease and long term conditions.¹ Patients can play a more active role in their own care, and health care providers are supported with the necessary resources and expertise to better assist their patients in managing their disease.¹ Home care is an integral part of chronic disease management. As hospital stays have been shortened or avoided altogether due to advances in treatments, medication and technology, the demand for home care services has increased.⁷ Health care providers may deliver home care services by visiting a patient's home or by the use of information and communication technology, also known as home telehealth.

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Technology

The home telehealth infrastructure consists of four components:⁵

1. Client devices: Client condition-specific software, hardware and services used to assist in managing and monitoring the client's condition.
2. Central systems: Applications used to assist clinicians in managing multiple clients through the centralized monitoring service, and mobile clinical staff providing local support to these clients. The central client management system also serves to collect and display the client's condition-specific vital signs and stores clinical and assessment documentation.
3. Communication network: Hardware, software, network, and communication infrastructure required for service delivery and operational support to maintain the integrity of the system.
4. Provider devices and care team activities: Software and hardware used for health service delivery to clients using home telehealth services and for client-to-provider and provider-to-provider information sharing. It also includes clinical staffing and the professional services necessary for consultative support to users and clients using home telehealth services.

This topic was selected for a full Health Technology Assessment (HTA) by the Devices and Systems Advisory Committee (DASC), which is comprised of representatives from the federal, provincial, and territorial health ministries. The committee provides advice to the Canadian Agency for Drugs and Technologies in Health (CADTH) Board of Directors and to the HTA Directorate to enable them to meet their goals and objectives. Committee members also recommend priorities for device and health system assessments. The HTA report, "Home Telehealth for Chronic Disease Management," is expected to be published in fall 2008 and will address questions on clinical outcomes for the management of medical conditions (i.e. diabetes, COPD, and CHF), economic impact, foreseeable health human resources implications and privacy or ethical concerns and known risk management frameworks associated with real-time and asynchronous home telehealth programs. The environmental scan on home telehealth programs in Canada is an excerpt of this report.

Research questions:

1. What specific chronic diseases have been managed through real-time and asynchronous home telehealth approaches in Canada?
2. What criteria and tools have been developed to identify patients suitable for the provision of home telehealth services?
3. What strategies exist that could be used, or are being used, for integration of home telehealth into existing delivery models in Canada?
4. What technologies are available within Canada for the provision of home telehealth for chronic medical conditions?

Methods:

An environmental scan of home telehealth programs available in Canada was conducted through communication with the appropriate contact person for each jurisdiction and one provincial report.⁸ The questions asked to each jurisdiction were as follows:

1. Is there a home telehealth care program currently available in your jurisdiction?
2. If yes, what are the target population and co-morbidities monitored or treated?
3. What home telehealth services (i.e. real-time or asynchronous) are delivered to the patients?
4. What criteria and tools were developed or applied to identify patients suitable for the provision of home telehealth services in your jurisdiction?
5. Are there any strategies in place to integrate home telehealth within existing delivery models in your jurisdiction? If yes, please describe the strategies.
6. Is there available cost or health services utilization or anonymous patient data (either raw or in a report) resulting from your home telehealth program.
7. If a regional or provincial home telehealth program does not exist in your jurisdiction, are there plans to establish one in the near future? If yes, please provide a brief description.

Summary of findings:

Information on home telehealth programs available in jurisdictions who responded to our queries is presented below. Six out of ten provinces [British Columbia (Interior Health Authority), Alberta (Northern Lights Health Region), Ontario (University of Ottawa Heart Institute), Quebec, New Brunswick, and Prince Edward Island] have an established home telehealth program within their jurisdiction. Other jurisdictions or regional health authorities (RHAs), such as the Vancouver Island Health Authority and Northern Health Authority in British Columbia, Saskatchewan, the Ontario Ministry of Health and Long-Term Care, and Nova Scotia have a pilot project in progress. Manitoba, Newfoundland & Labrador and the Territories do not have a home telehealth program but may be planning one or have a call center that serves its community population.

Most home telehealth programs in Canada target populations with chronic diseases, such as diabetes, COPD, asthma, depression, and cardiovascular diseases or palliative care. Moreover, the Interior Health Authority in British Columbia has a pilot project underway for patients with wounds.

Home Telehealth Programs by Jurisdiction:

British Columbia

Vancouver Island Health Authority (VIHA)

Home Telehealth Program

No, but a home telehealth program is planned for 2009.

Target Population

The program will focus on CHF patients with one or more co-morbidities, such as diabetes, COPD and hypertension.

Health Services Delivered

The home telehealth services will be delivered using store-and-forward technology to measure the patient's vital signs (i.e. weight, blood pressure, heart rate, and oxygen saturation levels). Patients with diabetes may also download their most recent glucose meter readings.

Patient Criteria for Service Provision

The criteria are currently under development. The final version will be added to a clinical policy and procedure manual set to be completed prior to the home telehealth program launch in 2009.

Integration within Health Care Systems

VIHA's home telehealth program will be integrated with the RHA's home and community care program as well as an integrated health network being funded through Health Innovation Funds.

A CHF nurse in the community will be responsible for the caseload of CHF patients regardless of where they live on Vancouver Island. Subsequently, the CHF nurse will liaise with general practitioners, cardiologists and VIHA's heart function clinic to identify those patients suitable for home monitoring services.

Notes

British Columbia has submitted a provincial project charter for telehomecare through the Ministry of Health to Canada Health Infoway. VIHA is taking the lead on this project and Interior Health will also be a partner in the project. Program approval is pending.

(Jennifer Cormie, Vancouver Island Health Authority, Victoria, BC: personal communication, 2008 Feb.)

Interior Health Authority

Home Telehealth Program

Yes

Target Population

Patients with CHF

Health Services Delivered

Asynchronous service delivery using ordinary phone line. Once the technology is placed in a patient's home, health care providers can monitor the patient from a distance, improving access to care for CHF patients in rural communities.

The home monitoring system, using text and voice prompts, guides the patient through the vital signs collection process. The patient's vital signs (i.e. weight, blood pressure, heart rate and oxygen saturation levels), along with responses to individualized subjective questions, are encrypted and automatically transmitted to the Health Authority Server (Central Station), which can be accessed by health care providers. The Central Station software triages patient data, suggests the extent to which immediate intervention is required, and whether or not a patient should be referred to their physician and/or have a home visit on that day. Health care providers access the Central Station to run vital sign collection report from Monday to Friday. Patient vital signs are collected seven days a week.

Patient Criteria for Service Provision

The admission criteria applied is based on the New York Heart Association Functional Classification, and patients need to be level 2, 3 or 4 before they are eligible for the program. The patient's family physician is involved in providing the referral.

Additional criteria includes: the patient needs to be able to manage the equipment (or that a family member can help manage the equipment), they have to be able to stand on the scale to weigh themselves and they have to have cognition. The home also needs to be safe for the equipment.

Integration within Health Care Systems

Yes. The Interior Health Regional Health Authority is considering expansion throughout the East Kootenay Health Service area (and later throughout the Health Authority). TeleHomeCare is integrated within the existing CHF program. There is interest in expanding the service model to include chronic disease management and COPD.

Notes

A business case has been prepared to expand TeleHomeCare throughout Interior Health for CHF, chronic disease management and COPD.

(Loretta Zilm, Interior Health, Kelowna, BC: personal communication, 2008 Jan.)

Northern Health Authority

Home Telehealth Program

A pilot project on home wound care (TeleWoundCare) for the home and community care (HCC) is currently underway.

Target Population

Patients with wounds.

Health Services Delivered

HCC nurses upload images of the patient's wounds to an application, Pixalere, for electronic charting of the patients.

Patient Criteria for Service Provision

Patients with wounds are entered in the PixaLere application and images are taken at each home visit. The patient's file is updated regularly until they are well.

Integration within Health Care Systems

A plan for a regional implementation of the TeleWoundCare program is currently in progress.

(Paula Young, Northern Health, Prince George, BC: personal communication, 2008 Mar.)

Alberta

Home Telehealth Program

There are existing home telehealth programs delivered by Alberta regional health authorities and provincial boards. For example, the Northern Lights Health Authority has been using home monitoring technology for a range of services for over two years. RHAs are in the planning phase for a home telehealth program. Planning is intended to be complete and implementation is expected in summer 2006.

Target Population

As a province-wide initiative in home telehealth, the target populations were patients with diabetes, COPD and cardiovascular diseases. Subsequently, each RHA will decide as early as fall 2008 what other target populations to include to meet their community needs.

Health Services Delivered

Health services delivered include monitoring the patients' vital signs and transferring physiological patient data to health care providers.

Patient Criteria for Service Provision

In the province-wide initiative, the patient criteria were selected based on facilitating data collection of clinical outcomes for conditions with high needs (e.g. diabetes, COPD and cardiovascular diseases).

Planning is also being undertaken by each RHA to define the additional inclusion criteria to address their population needs. Some of the existing programs operated by Alberta regional health authorities are also using videophone technology.

Integration within Health Care Systems

Each RHA will define the integration strategies prior to implementing their home telehealth program.

(Tim Bulger, Alberta Health & Wellness, Edmonton, AB: personal communication, 2008 May)

Saskatchewan

Home Telehealth Program

SaskTel has launched a number of trials using a service call LifeStat™. This service will be launching commercially in the first quarter in 2008.

Target Population

Existing physiological measurements include blood pressure, blood sugars, weight, and Pulse Oximetry. Many other measurements will be coming soon for diseases such as hypertension,

diabetes, COPD, asthma and CHF. Also, the service targets “lifestyles” via monitoring of lifestyle, diet and exercise conditions.

Health Services Delivered

Currently, asynchronous data transfer with real time call back is delivered. In the future, real-time event monitoring (such as post acute discharge) will be allowed.

Patient Criteria for Service Provision

Exclusionary criteria for patients were created by specialists across the country.

Integration within Health Care Systems

LifeStat is currently integrated with select electronic medical records and has been designed to interoperate with the proposed “pan-Canadian” electronic health record solution. In addition, the team is working with the Personalised Information Platform for Life & Health Services group and HealthLine in Saskatchewan.

(Colin McAllister, Salveo, Regina, SK: personal communication, 2008 Feb.)

Manitoba

Home Telehealth Program

None

(Donna Champagne, CADTH, Winnipeg, MB: personal communication, 2008 Jan.)

Ontario

University of Ottawa Heart Institute (UOHI)

Home Telehealth Program

The UOHI hosts the largest telehome monitoring (THM) program in Canada serving cardiac patients in the Champlain Local Health Integrated Networks (LHINs) in Ontario, Northern Ontario, and Western Quebec and throughout Canada.

Target Population

The target population includes heart failure patients with one readmission in one month or two in six months, de novo heart failure patients, patients recovering from cardiac surgery, patients requiring vital sign and/or arrhythmia monitoring, cardiac patients with co-morbidities such as diabetes and hypertension.

In summary, any cardiac patient requiring frequent monitoring or trending of information to facilitate optimal clinical management is eligible.

Health Services Delivered

Cardiac clinical applications include: monitoring of fluid status, medication management, vital sign and arrhythmia monitoring, risk factor education, self-care education, and caregiver support.

Administrative and management applications include: coordination of care, care integration using other technologies, such as telemedicine and interactive voice response (IVR) follow-up and timely communication of patient data to primary care physicians and specialists.

Telemedicine tends to be real time, THM may be either synchronous/asynchronous and IVR can be both but tends to be more asynchronous.

Patient Criteria for Service Provision

See target population for inclusion criteria. Home care visits are not provided. Patients install the monitor in their own home and return the equipment by bus. Therefore, access to care is assured to remote rural and urban areas. Physician and non-physician referrals are accepted.

Integration within Health Care Systems

A Regional Cardiac Telehome Monitoring program for the Champlain LHINs is being implemented. This hub and spoke model of care has our community partners identify patients and deploy monitors to these patients who send their transmissions to the UOHI for follow-up. Three community centers are complemented and new communities will be added as funding becomes available.

Notes

The province is pilot-testing the use of home monitoring in family practice settings. In the Champlain LHIN, a model that uses home monitoring during the acute phase and then moves cardiac patients to IVR (automated calling) will be brought forth. There is interest from family health teams (primary care physicians) regarding the IVR being explored.

(Christine Struthers, University of Ottawa Institute, Ottawa, ON: personal communication, 2008 Jan.)

Ministry of Health and Long-Term Care

Home Telehealth Program

A Telehomecare is available in a limited Phase One Program in Ontario. The Phase One Program is deploying Telehomecare to 600 patients from six Family Health Teams (FHTs), working in collaboration with Community Care Access Centres (CCACs). Implementation of the Program began recently and is expected to run until October 2008. The results of the Phase One Program will inform ministry decision-making about future expansion of Telehomecare.

Target Population

The Telehomecare Phase One Program is for chronic disease management patients with COPD and/or CHF. Diabetes may be included if there are insufficient patients identified for participation in the Phase One Program.

Health Services Delivered

Based on a collaborative model of care delivery that integrates the services of multiple providers focusing on the needs of the patient and the patient's capacity to self-care:

- FHTs will play a key role in collaboration with local CCACs

A specialized Telehomecare registered nurse (RH) based in the FHT will:

- Conduct the selection and eligibility assessment of patients
- Provide patient education
- Remotely monitor patients' clinical status
- Patients use devices such as: Blood Pressure Monitor, Stethoscope, Heart Rate Monitor, Peak Flow Meter, Pulse Oximeter, Breath Sound Auscultation, and Weight

Scale to monitor their condition and readings are transmitted daily to a server and reviewed by the Telehomecare RN. Live videoconferencing capability for conducting remote visits will also be provided to a subset of patients that would benefit from this functionality (e.g. isolated patients).

- Follow established clinical guidelines and protocols for COPD and CHF in consultation with the primary care practitioner responsible for the overall care of the patient.
- The Phase One Program is a time-limited intervention designed to enhance patient self-management skills and improve patient health status

Patient Criteria for Service Provision

The Phase One Program is currently using the following criteria for patient enrolment (for which we would expect to see significant benefit from Telehomecare):

Patients of the Family Health Team who:

1. are over 18 years of age
2. have an established diagnosis of COPD or CHF
3. require regular monitoring of their condition by a health practitioner
4. have had at least one emergency room visit or a hospital admission in the last year related to COPD or CHF
5. have their Primary Care Practitioner's approval for admission
6. are willing to participate in the Telehomecare Program
7. are capable of learning and understanding instructions or have a caregiver who is capable
8. live in a residential setting with a telephone line

FHTs have generally been using their electronic medical records to identify prospective patients meeting the eligibility criteria.

Integration within Health Care Systems

Integration strategies are currently under development as part of the Telehomecare Phase One Program

(Vytautas Mickevicius, Ministry of Health and Long-Term Care, Toronto, ON: personal communication, 2008 Jan.)

Quebec

Home Telehealth Program

Yes

Target Population

Patients with chronic diseases, specifically heart disease, diabetes and high blood pressure.

Health Services Delivered

The home telehealth services delivered are primarily asynchronous.

Patient Criteria for Service Provision

Each RHA is responsible for developing patient criteria for service provision for its population.

Integration within Health Care Systems

Each RHA is responsible for developing integration strategies within the health region.

(Christian-Marc Lanouette, Ministère de la Santé et des Services sociaux, Quebec City, QC: personal communication, 2008 Mar.)

New Brunswick⁸

Home Telehealth Program

A provincial telehomecare demonstrator project called Extra-Mural Program care@home (EMPCare@home) was established in River Valley Health in 2005.

Target Population

Patients with CHF and/or COPD and a higher level of previous hospital admission or require more than one professional home care visit per week were the focus; however, patients with other conditions, such as diabetes and hypertension are also eligible.

Health Services Delivered

Plain old telephone service was selected to monitor a patient's weight, temperature, blood pressure, pulse, oxygen levels, and is equipped with customizable pre-recorded messages that ask the patient a series of subjective questions about their condition. The home monitoring system is also designed to accept information from other diagnostic peripherals, such as a blood glucose monitor.

Patient Criteria for Service Provision

Patients selected for the project must have been eligible for the EMP.

Integration within Health Care Systems

All family physicians in the region were invited to an education session about the project. Information on the project was also mailed to family physicians. Family physicians were involved on an individual basis if their patients were enrolled in the project.

Notes

EMPCare@home was defined as a disease management approach to patient care with chronic disease, enabled by telehomecare.

Nova Scotia

Home Telehealth Program

Currently, there are no home telehealth programs available in the province. A yearlong research/pilot project using home telehealth for the treatment of heart failure patients in Nova Scotia just began. This project is being done in collaboration with Atlantic Health Sciences Corporation, Region 2 in Saint John, New Brunswick.

Target Population

Heart failure specialty care is provided to patients with a diagnosis of heart failure who may have difficulty with access to care. Patients will be enrolled for a period of one year.

Health Services Delivered

Patients take their weight, heart rate and blood pressure on a daily basis, and this information is automatically downloaded to the central provider stations at the Capital District Health Authority

for monitoring and trending. Also, patients undergo a bi-weekly scheduled and structured interactive telehealth visit to assess the patient's heart failure clinical status. This live interactive telehealth visit has been further broken down into two groups. Half of the patients who receive home telehealth for heart failure will be receiving home units with video and audio interactive capability, while the other half of the units will be strictly used for monitoring and the interactive visit with the patient will take place by using the telephone. At any time, should their condition necessitate, an unscheduled telehealth visit may occur.

Patient Criteria for Service Provision

This is a new research project at the Capital District Health Authority. Inclusion and exclusion criteria were developed to identify the patient population.

The initial target population includes patients who currently receive heart failure specialty care within the Halifax Infirmary Heart Function Clinic and who may also be new admissions or frequent flyers, diagnosed with heart failure on the cardiology units. In 2008, the Capital District Health Authority plans to reach out to other jurisdictions in Nova Scotia to enroll patients who may have difficulty with access to heart failure specialty care by working in conjunction with primary care physicians and cardiologists throughout the province. Interested participants are brought in to the Halifax Infirmary for an initial face-to-face visit and a detailed heart failure care plan will be provided for them.

Integration within Health Care Systems

At the Capital District Health Authority, home telehealth will be integrated into the health care system as another method of delivering heart failure specialty care from the heart function clinic at the RHA.

(Michelle Currie, QEII Health Sciences Centre, Halifax, NS: personal communication, 2008 Jan.)

Prince Edward Island

Home Telehealth Program

A telehome care program does exist, but it is only offered within one home care region in the province.

Target Population

The target population has mostly been seniors (≥ 65 years old) although there is no restriction on the age limit. Some of the diagnoses include palliative care, hypertension, depression, COPD, asthma, post-myocardial infarction, post-cerebral artery, and diabetes.

Health Services Delivered

The service provided is a video monitoring unit that is manufactured by American Telecare. Clients and health care providers are able to see each other, and vital signs, such as blood pressure, pulse, oxygen saturation monitor, heart and lung sounds are monitored.

Patient Criteria for Service Provision

The telehome care program's initial objective was to provide the patient and their family with the opportunity for the patient to die at home with dignity and with the least amount of medical and social stress possible.

Integration within Health Care Systems

At present there are no integration strategies. TeleHomeCare is a permanent program in the province's home care service delivery.

Notes

When the program began in 2000, it was a pilot project focusing only on palliative care. Since then, it has evolved and has been incorporated into the province's home care program to serve a broader range of clients.

(Virginia Ferris, Department of Health-Home Care, O'Leary, PE: personal communication, 2008 Feb.)

Newfoundland & Labrador

Home Telehealth Program

No

Notes

The province has developed a Telehealth Strategic Plan and home telehealth is one of the 5 strategies identified. A needs assessment and scoping phase for home telehealth will be taking place in early 2008 for three to four months that will engage all the RHAs and key stakeholders to determine the needs, criteria, direction, and anticipated costs of implementation for home telehealth in the province.

(Cindy Mosher, CADTH, St.John's, NL: personal communication, 2008 Jan.)

Northwest Territories

Home Telehealth Program

No

Notes

A nurse call center (telecare) is available to the public for all services applicable. In the current setting, the nurse phone support lines are not usually considered as home telehealth. There are no plans to establish a home telehealth program in the territory in the next three years.

(Ashley Geraghty, Telehealth Services, Yellowknife, NWT: personal communication, 2008 Jan.)

Yukon

Home Telehealth Program

No

Notes

There is a territorial-wide telehealth network with stations located in the health centres and care facilities in all the small communities. This setting allows for communication on client issues and staff training, as well as discharge planning and follow-up from Whitehorse.

(Liris Smith, Continuing Care, YTG, Whitehorse, Yukon: personal communication, 2008 Jan.)

Nunavut

Home Telehealth Program

No

Target Population

Persons with chronic diseases.

Health Services Delivered

Nursing personal support, home making and case management.

Patient Criteria for Service Provision

Identified need.

Integration within Health Care Systems

Services provided in collaboration with other service providers.

Notes

A telehealth network in Nunavut provides some communities with an array of health care services, social programs and other services through teleconferencing both within and outside the territory.⁹

(Gogj Greeley, Department of Health and Social Services, Iqaluit, NU: personal communication, 2008, Feb.)

Conclusions and implications for decision or policy making:

The availability of home telehealth programs in Canada vary by jurisdiction. Home telehealth programs exist in six provinces and pilot projects are in progress in various regions across the country. Most home telehealth programs target populations with chronic diseases. One RHA in Western Canada has a pilot project for the treatment of wound care using home telehealth. In some jurisdictions without a home telehealth program, a telehealth network is in operation.

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