Canadian Home Care Association

High Impact Practices

www.cdnhomecare.ca

TeleHomeCare CHF Program

Breaking down barriers to care regardless of where people live

About High Impact Practices

The Canadian Home Care Association (CHCA), as a national voice, promotes excellence in home care through leadership, awareness and knowledge to shape strategic directions. The Association is committed to facilitating continuous learning and development throughout the home care sector to support and promote innovative and effective practices across Canada.

During the CHCA's annual Home Care Summit, health care leaders from across Canada and abroad share new and emerging approaches to home care and engage in dialogue about their experiences so that leading practices from across the country and, around the world, can be examined and adopted. Every year there are initiatives that stand out – those that clearly will impact the health care system. The potential of these practices is such that home care stakeholders want to hear more and are eager to explore the applicability within their respective jurisdictions. Building on the momentum of the Home Care Summits and recognizing the potential "ripple effect" of expanding the dissemination beyond the Summit participants, the CHCA has undertaken to document and publicize a selection of these innovative practices from across the country as *High Impact Practices*.

EACH OF THE HIGH IMPACT PRACTICES:

- **Promotes** home care that provides evidence-informed service delivery directed toward the achievement of health outcomes in the settings that best support the individual, and family
- **Enhances** the effectiveness of home care
- **Raises the awareness** of the ways that home care contributes to an effective health care system
- **Mitigates** rising health care costs and accentuates existing resources and expertise
- **Enables sharing** and transferring of knowledge, expertise and experience through networking and peer-to-peer learning.

Thank-you to our High Impact Practices Partner…

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The views expressed herein do not necessarily represent those of Health Canada.

Health Canada Santé Canada

TeleHomeCare CHF Program

Summary

More congestive heart failure patients living in distant places are using a monitoring system at home to check their condition and send data on their vital signs directly to their care providers.

The *TeleHomeCare CHF Program* (formally the Electronic Home Monitor CHF Program) is an initiative from the Interior Health Authority that enables remote patient monitoring through a standard telephone line in the client / patient's* home. The *TeleHomeCare CHF Program* is a means of reaching individuals more effectively in order to provide increased observation of their clinical signs and symptoms.

A Congestive Heart Failure (CHF) program nurse is able to connect to the patient via a home monitor the size of a bedside radio. Every day, more than 50 CHF patients in the East Kootenays plug-in to the monitors (using a connected scale, blood pressure cuff, and finger sensor) to measure their weight, blood pressure and oxygen levels. The results are transmitted over a phone line to a CHF program nurse's laptop. She looks for any indication of a decline in the patient's condition, and then consults with the patient over the phone and, if required, makes a home visit. The nurse and patients also work on self-management, medication and lifestyle plans to bring their CHF under control and to understand the steps to take in the event of an exacerbation.

The CHF program has been successful both for improved quality of life for clients and for the decreased use of Interior Health's acute care resources by this patient population. There has been reduction in emergency department visits, hospital admissions and average length of hospital stays. The impressive results are only partly related to the technology. The other key ingredients are the people involved: the nurse contacting and building relationships with the patients and other members of the health team, the involvement of family physicians who are willing to work with the technology and direct patient care remotely, and the clients themselves.

Interior Health Authority

Interior Health was established as one of five geographically-based health authorities in 2001 by the Government of British Columbia. It is responsible for ensuring publicly funded health services are provided to the people of the Southern Interior.

Interior Health serves a large geographic area covering almost 215-thousand square kilometres and includes larger cities such as Kelowna, Kamloops, Cranbrook, Penticton and Vernon, and a multitude of rural and remote communities. Interior Health is organized into four geographical health service areas: East Kootenay; Kootenay Boundary; Okanagan; Thompson Cariboo Shuswap.

Within and between each health service area, services are delivered through a complex regional "network of care" that includes hospitals, community health centres, residential assisted living facilities, mental health housing, primary health clinics, homes, schools, and other community settings.

For more information on the Interior Health Region,visit: ***http://www.interiorhealth.ca/information.aspx?id=566***

* Throughout this report the terms 'client' and 'patient' are used interchangeably

Special thanks to the following individuals who provided advice, answered our questions and reviewed this paper:

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Project Background

Research shows that the health care delivery system in rural and remote areas is significantly less than that which is offered in urban settings. According to a 2006 scan of rural and remote home care programs, undertaken by the Canadian Home Care Association (CHCA), the main challenges all programs face are a lack of health human resources, lack of support systems and local resources, limited transportation, and the requirements to travel long distances and hours to see very few clients.

As a result of these challenges, patients are often required to remain in hospital longer or, if discharged, remain in close proximity to an urban centre and access to acute care services. This is often the case for individuals with congestive heart failure (CHF).

The home monitoring system reduces the need for patients to travel and gives individuals in rural and remote areas better access to care because health care providers can monitor them from a distance as frequently as needed.

Defining Rural and Remote:

The notion of rural and remote is not only an issue of quantification (distance and population). Remoteness can be defined by the individual's connectedness to a social support network of any kind, and to the health care system, both in terms of access and contact. Time and effort to access or provide care are key elements of the rural and remote context.

(CHCA, 2008)

Telehomecare is defined as the application of information and communication technologies to enable effective delivery and management of health services such as medical diagnosis, treatment, consultation and or health maintenance between a patient`s residence and a health care facility or professional.[1] It is also described as a subset of telehealth focusing on the use of information and communications technology to bring health care directly to a patient`s home. In combination with a care team and an evidence-based model of care, telehomecare provides for remote monitoring of the patient's condition; targeted and rapid response from the care team to an emerging health crisis; and coordination of care amongst multiple providers.

It was believed that the electronic monitors would help clients with CHF to increase their knowledge, skills and confidence in managing their own care. An important part of that care is early detection of the early signs and symptoms of heart failure, and knowing what to do when this happens. The goal is to prevent severe exacerbations of illness, improve quality of life for the patient, and avoid hospitalization.

The *TeleHomeCare CHF Program* was envisioned as a means of empowering clients to identify risks, complications, and problems early thereby reducing hospital admissions, frequent visits to emergency departments, physician office visits, and to improve self-management.

Implementation

It has been estimated that 20 per cent of hospitalizations for coronary heart failure could be prevented through improvements in medical management and patient self-management.[2] Accordingly, a strategy was required to enhance the existing CHF program and address the need for close monitoring of patients with CHF; and the Electronic Home Monitor[3] pilot was initiated in July 2006 with the support of Health Canada's Primary Health Care Transition Fund. Funding for expansion of this program in the East Kootenays was provided in part by Canada Health Infoway and Interior Health.

Heart failure (HF) is a clinical syndrome defined by symptoms suggestive of impaired cardiac output and/or volume overload in the setting of objective evidence of cardiac dysfunction. The one-year mortality rate for all ages for men and women is about 33% and increases to about 50% in patients with three or more comorbid conditions. The one-year mortality rate can be as high as 61% in more elderly patients with comorbid conditions.[4]

Heart failure is most often caused by coronary artery disease and/or hypertension and it is a major cause of hospitalization of the elderly in Canada. Improvements in team-based coordination and case management with early intervention, improved pharmaceutical management, close follow-up, and caregiver and patient education about self-management have resulted in reduced hospital admissions.[5]

The program is based on a partnership between the patient, family physician and nurse. The patients are given the opportunity to learn how to manage their disease with the help of the care team. The knowledge gives the patients more confidence and freedom.

Process

The family physician refers a patient with congestive heart failure (CHF) to the CHF program. The patient receives an in-home clinical and environmental as-

sessment by the CHF program nurse to ensure that they meet the criteria for home monitoring. The essential criteria include:

- Availability of a telephone land line – a cellular phone is not adequate
- Ability of the patient to stand on the scale and handle the various monitor attachments (peripherals), either on their own or with caregiver help
- A home environment that is safe and conducive to monitoring
- New York Health Association (NYHA) Classification of II, III, or IV

At the initial visit the equipment is installed and the patient and caregivers are provided with instruction on the operation of the equipment. Return demonstrations are conducted and the nurse provides reference materials and contact information. Patients are also provided with education regarding their medical condition and the rationale for the monitoring of signs and symptoms.

New York Heart Association Classification

A functional classification of cardiac failure, used to stratify Pts according to severity of disease and the need for–and type of–therapeutic intervention
I - Asymptomatic heart disease
II - Comfortable at rest; symptomatic with normal activity
III - Comfortable at rest; symptomatic with < normal activity
IV - Symptomatic at rest

Criteria Committee, NYHA, Inc: Diseases of Heart & Blood Vessels, 6th ed, Little Brown, Boston 1964[6]

By being in the home to provide the equipment set-up and initial education, the nurse can provide practical learning relevant to the patient's unique circumstance. For example the nurse will review the contents of the patient's kitchen cupboards to instruct on label reading and dietary guidelines. A review of all medications that the patient has in the home can be made and a system for ensuring that the prescribed medications are taken regularly is established.

The patient begins transmitting vital signs immediately. Text and voice prompts guide the patient through the collection of vital signs (weight, blood pressure, and heart rate and oxygen saturation levels). The patient's vital signs are encrypted and automatically transmitted to the Health Authority. Health staff can then examine the patient data, and see if immediate intervention, a visit to a physician or a home visit is needed.

The monitor is programmed to alert the patient to take their vital signs at set times, typically once per day but it can be set to as much as four times per day. The nurse can request the patient take vital signs more frequently if required. If the patient ignores the monitor and neglects to take their signs, a "no data" report is received at the central station alerting the program nurse to a potential problem.

"I have been able to pick up early on signs of pneumonia and heart failure in my dad and I have been able to prevent it from getting worse."

~ Family member of CHF patient, Kimberley

The central station is essentially a software program on a laptop computer. The program must operate through the Interior Health network, but with the laptop the nurse is able to access the readings from any of the Interior Health facilities.

"The home monitoring program has been very helpful to me in monitoring my salt intake and managing my weight."

~ Client with CHF

The CHF program nurse calls patients if the results are abnormal and can request repeat results be sent at the time of the call. In addition, the nurse carefully reviews the data submissions for all patients on the monitors daily to pick up on subtle cues of increasing failure. Clinical judgement is vital to complement the monitoring as there may be some patients who are experiencing clinical changes just shy of the monitor alert parameters but will experience potential problems as a result of a cumulative effect. Conversely there may be those who are experiencing readings slightly over the alert thresholds who do not require intervention. If concerned the program nurse may make a home visit or a home care nurse may be dispatched, particularly if the patient resides in a remote community.

The CHF program nurse sends the family physician regular updates on their patients and forwards trend reports at their request. The nurse is a useful resource as their area of focus is in the management of CHF and accordingly they are well versed in the best practice guidelines for CHF as established by the BC Clinical Practice Guidelines and Protocols committee. The nurse will often make recommendations for referrals to

other members of the health care team including home and community care, respiratory care, and the kidney team.

The monitors are typically removed after three months when patients have stabilized on treatment and have established confidence in their ability to manage their condition. Patients are kept on the CHF program for a few weeks after the monitor is withdrawn so they continue to feel a connection with the CHF program and expertise of the nurses. The criteria for discharge back to primary care include:

- Stabilized clinical condition
- Good understanding of their CHF
- Confidence in self-care.

Patients are encouraged to have their own BP cuff and scale in order to continue with their self-management.

Evaluation

The *TeleHomeCare CHF Program* gives patients and their loved ones confidence that there is a knowledgeable health provider monitoring their condition daily. The monitor is tremendous for self-management as patients can see the numbers for themselves and relate them to their activities at home. It is also helpful in providing concrete information to the physician.

Clients and caregivers found the monitor easy to use and have increased confidence and skills in managing their illness and an increased quality of life.

At the program level, the *TeleHomeCare CHF Program* has increased the capacity and efficiency of the health care team. The CHF program nurse was able to support an increased number of clients. The caseload increased from 28 in March 2006 to 61 in August 2007 with 29 – 34 clients on monitors at one time.

90% of clients agreed or strongly agreed to the question -
If my heart failure gets worse, I know what I need to do to make myself feel better.

From a systems perspective, a reduction in acute care utilization after being on the *TeleHomeCare CHF Program* was observed. A chart review of 35 patients determined that 13 clients activated their medication action plan thereby preventing 86 exacerbations that would have triggered health system intervention. A 12 month pre/post analysis of a single cohort of 36 clients found:

- 49% reduction in CHF related emergency department visits
- 56% reduction in clients with CHF related hospital admissions
- 47% reduction in the number of CHF related hospital admissions
- A reduction in hospital average length of stay of 15% for CHF related problems

Key Success Factors

- Information immediately available to the patient and the clinical care team
- Case management and navigation for the patient
- Self-management orientation of the CHF program results in sustained ability to maintain health and well-being and an increase in quality of life for patients and families
- Partnership with family physician results in better care through early and timely intervention
- Openness to work in a team environment for the betterment of patient care

Outcomes

The CHF program is currently managing 60 monitors in total. There are now two nurses on staff, each managing approximately 70-80 patients and about 30 active monitors. The program serves the full East Kootenays Health Service Area. The program operates Monday to Friday only as it is designed as non-emergent - for early intervention and as a teaching tool.

"The TeleHomeCare CHF Program means that I no longer need to bring my patients in weekly for check-ups and I don't need to worry about what I am missing between appointments."

~ Family physician, East Kootenay

The program has been steadily growing as family physicians experience the benefits of working collaboratively with team members whose knowledge base is grounded in the management of congestive heart failure. While some doctors prefer to manage their patients on their own, many are referring to the *TeleHomeCare CHF Program* immediately upon diagnosis of their patient.

With the increasing complexity of the typical family physician practice, the *TeleHomeCare CHF Program* is proving to be useful and an integral component of the East Kootenay`s health care program.

Conclusion

The *TeleHomeCare CHF Program* is an effective means of monitoring CHF clients in their home. CHF nurses are able to provide case management support to an increased number of individuals with CHF through the monitoring and telephone support. Changes in health status are identified quickly enabling early intervention.

> "The consults on CHF patients were fabulous and life-saving from my perspective."
>
> ~ *Family Physician*

Interior Health has a number of telehealth initiatives that are linking individuals in rural and remote communities to tertiary care.

As B.C. Health Services Minister George Abbott said, telehealth is one way of breaking down barriers to quality health care regardless of where people live. Telehealth homecare enables faster detection of problems, lets patients self-manage their care and saves travel time for patients and caregivers.

For more information on the CHCA's High Impact Practices or other initiatives, contact **www.cdnhomecare.ca**

The CHCA defines home care as an array of services, provided in the home and community setting, that encompass health promotion and teaching, curative intervention, end-of-life care, rehabilitation, support and maintenance, social adaptation and integration and support for the informal (family) caregiver.

End Notes:

[1] Health Canada (1998) Advisory Council on Health Info-structure, Connecting for Better Health: Strategic Issues – Interim Report

[2] Alvarez, R. (2008) Patients manage health at home with telehealth, press release, retrieved February 2009: http://www.infoway-inforoute.ca/lang-en/about-infoway/news/news-releases/374-patients-manage-health-at-home-with-telehealth

[3] Now known as the TeleHomeCare CHF Program

[4] BC Medical Association, BC Ministry of Health (2008) Heart Failure Care, Guidelines & Protocols Advisory Committee, p 12 boplastin reagent and instrument combination utilized to perform the test (Websters Medical Dictionary)

[5] Ibid

[6] The McGraw-Hill Companies, Inc.(2002) McGraw-Hill Concise Dictionary of Modern Medicine

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