

# High Impact Practices

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## EMPcare@home

Technology achieves improved client self-management of chronic disease and enables pre-emptive care

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### 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...*

Comcare Health Services has been a Gold Sustaining Patron of the CHCA for over 15 years. As a national home health care provider, Comcare is a leading innovator for community health care solutions to those in need throughout Canada. Clinical excellence and commitment to improved client care at Comcare is supported by a dedicated contingent of highly skilled professionals having exceptional practice standards. Comcare is proud to contribute to the advancement of leading practice in home care in Canada by supporting CHCA's High Impact Practices. [www.comcarehealthnetwork.ca](http://www.comcarehealthnetwork.ca)



## SUMMARY

Presented by staff from the River Valley Health (Regional Health Authority 3) Extra Mural Program (EMP)<sup>1</sup> in New Brunswick (NB), this Project demonstrates broad collaboration<sup>2</sup> and broader, proactive support for clients with chronic disease in order to position them to self-manage their condition more effectively. EMPcare@home is the name of a telehomecare project that was implemented in order to determine if the combination of telehomecare, timely staff intervention, and an enhanced patient education program would produce improved results for clients with chronic disease.

The technology employed is a POTS (Plain Old Telephone Service) based, store and forward system. The system has a base unit to which a variety of peripheral equipment can attach so that the client can record requisite vital signs (such as weight, temperature, blood pressure, pulse, oxygen levels and other measures using additional diagnostic peripherals) at prescribed times. Vital sign data for clinical review can be stored and when retrieved, specialized software quickly alerts clinicians of parameter breaks (through automated colour coding and triaging of data) allowing for quick client prioritization for intervention. The system also provides graphical and tabular trend reports for review by the health clinician.

The regular monitoring through EMPcare@home directly empowers the client/caregiver to assume responsibility for his/her care and positions him/her to apply the chronic disease information acquired to his/her daily life. It provides the clinician with complete, objective, clinical data available upon request which positions the staff to provide pre-emptive care, supporting adjustments to the treatment plan or medications. The information is used to reinforce client education and compliance to the treatment plan. EMPcare@home helps to break the cycle of emergency care and hospital re-admissions.

### *New Brunswick Extra Mural Program*

Established in 1981, the Extra Mural Program (EMP) is New Brunswick's provincial home care program which is integrated with, and managed by, the eight Regional Health Authorities. The mission of EMP is to provide a comprehensive range of coordinated health care services for individuals of all ages for the purpose of promoting, maintaining or restoring health within the context of their daily lives.

The Extra-Mural professionals provide health care services that include: assessment, interventions (including treatment, education and consultation), service planning and coordination. Professional service providers may include: nurses, registered dietitians, respiratory therapists, occupational therapists, physiotherapists, speech language pathologists and social workers. Services offered include: acute care, palliative care, home oxygen program, long term care assessment, early language services and rehabilitation services.

For more information on EMP, visit  
[www.gnb.ca/0051/0384/index-e.asp](http://www.gnb.ca/0051/0384/index-e.asp)

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

Valerie Hagerman, Regional Director Telehealth, River Valley Health and Co-Chair, Project Implementation Committee  
Christine de Jong, Administrative Director, Extra-Mural Program, River Valley Health  
Andrea Seymour, Vice President, Health Information/CIO, River Valley Health  
Janice Wilson, Manager Woodstock Unit, N.B. Extra Mural Program and Co-Chair, Project Implementation Committee

## Project Background

In 2002, River Valley Health (RVH) approved a Telehealth Strategic Plan<sup>3</sup> providing corporate support to focusing telehealth on chronic disease management, telehomecare, and rural access to services. These priorities were reaffirmed in River Valley Health's Corporate Strategic Plan (2005) and align provincially with the Provincial Health Plan (2004) and the New Brunswick Strategic Plan for Telehealth (2005) that support a focus on primary health care, chronic disease management (particularly for congestive heart failure, diabetes, chronic obstructive pulmonary disease and hypertension) and expansion of telehealth.<sup>4</sup>

The EMPcare@home demonstration Project provided RVH with the opportunity to objectively assess the merits of their conviction that telehealth strategies applied to clients with chronic disease through the home care program would have notable results. The Project goal was to evaluate whether the combination of telehomecare, timely staff intervention and an enhanced client education program would produce a better quality of life for clients; would be accepted by clients and health professionals; and, would reduce the need for hospital care. The target population for evaluation was clients with congestive heart failure (CHF) and/or chronic obstructive pulmonary disease (COPD) who represented approximately 70% of the client population involved in the EMPcare@home initiative. The other clients participating in the Project and using the technology included those requiring wound care, palliative care services, and support for conditions such as diabetes and hypertension.

### ***The objectives of the EMPcare@home Project were to demonstrate:***

- reduced emergency room visits and hospital readmissions
- improved quality of health care and quality of life reported by clients
- positive outcomes from the health professionals' perspective
- that home care services are appropriately targeted to those who have had frequent readmissions to hospital.

While other jurisdictions had piloted similar initiatives, the EMPcare@home Project is one of the few to undergo a comprehensive third party objective evaluation with a meaningful sample size and use of comparison groups.

## Implementation

The Project was implemented in the Woodstock EMP Unit, one of four EMP units within RVH, with the participation of all nurses and respiratory therapists (RT). No additional clinical staff were hired or assigned to the Project so that a realistic implementation of telehomecare in everyday homecare practice could be experienced.

EMP clients from the town of Woodstock and surrounding areas, many of whom had frequent admissions to hospital in the previous year, were identified from the existing caseload and were approached to participate in the Project. As well, all new admissions to EMP with a diagnosis of COPD and/or CHF were assessed for inclusion. Once patient consent was obtained, the monitor was installed in the home by a nurse or RT. The first group of clients were connected and using the system by April 2005.

The monitor was left in the home for three months. Clients tended to receive regular visits for the first couple of months for client education and reinforcement. Visits were less frequent during the last month of monitoring. Some clients continued to be followed by EMP after the monitor was removed while others were discharged from EMP.

A key component to this Project was client education which differed from existing EMP client education by including standardized teaching materials for CHF and COPD, a standardized client teaching model (to maximize the existing goal setting, client-centered approach that is a trademark of the Extra-Mural Program), and reinforcement of client education using a cause and effect approach as a result of the daily home monitoring.

## Evaluation

An external evaluation was conducted to determine whether the Project achieved its objectives and to make recommendations as to the future expansion, revision, or cessation of this telehomecare approach. The evaluation methodology met program evaluation standards established by the National Treasury Board, Health Canada and the Canadian Evaluation Society.

The methods of primary data collection included a client questionnaire mailed to all clients following their monitoring period, a client/caregiver focus group, two manager/administrator focus groups, physician interviews, an

EMP staff questionnaire, an EMP staff focus group, and Project partner interviews. Secondary or existing data was obtained from administrative and utilization databases that provided information on emergency visits, inpatient hospital admissions, types of EMP services delivered, and EMP hours spent per client.

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“Before I used to go into a panic and off I would go to the hospital ....now I can manage on my own most times...”

••••

~ EMP Client

All RVH clients with CHF and/or COPD<sup>5</sup> from April 1, 2000 to March 31, 2005 were included in the anonymous administrative/utilization data analysis. The evaluation design for analysis of health service utilization consisted of – 1) those in the Project (Woodstock EMP); 2) those not in the Project (Woodstock EMP); and, 3) those with the same disease (CHF/COPD), not in the Project and not in the same community as the Project participants, and served by a different EMP Unit (Perth-Andover). The latter group was critical from the evaluation perspective in order to avoid any spin off effect by staff and potential tainting that might occur within the local comparison group. This approach provided the evaluators with the confidence to link the Project intervention and the findings for indicators such as hospitalization rates.

## Findings

### Clients

The average client was female, 77 years of age and heretofore experienced frequent admissions to hospital. Prior to the EMPcare@home, the target group of clients with CHF and/or COPD had a 42% higher hospital admission rate and a 6% higher rate of emergency room visits than the other groups studied. Their average hospital length of stay was 11.57 days/admission, compared to the general client population average hospital ‘length of stay’ of less than seven days.

Clients (90%) reported that the technology was easy to use and coupled with the information they had been provided about their chronic disease, provided them with a tool to improve their management of the disease. They

reported that they received better service from the health system, would definitely recommend this approach to others, and that this approach to care kept them out of hospital and emergency rooms. Staff was surprised by the clients who responded well to the technology and acknowledged the importance of not making assumptions about suitability.

### Staff

Staff found this telehomecare approach to be tightly integrated with their EMP client care processes; that it complemented their practice (as opposed to an “add on” service), and were eager to see it expanded to other conditions, especially diabetes, hypertension and wound care. They recognized the opportunity for improved clinical responsiveness through daily monitoring which surfaced clinical issues that could not, or would not, be identified through the intermittent home visits. The software ‘alerts’ resulted in earlier interventions and pre-emptive care resulting in hospital avoidance and fewer acute exacerbations. Furthermore, clients were able to capture symptoms on their monitor when they were not feeling well, providing additional information for clinicians. Staff was pleased to be able to do effective chronic disease management teaching as part of the Project.

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“The information from telehomecare is so helpful...I can really help my patients better because I have more data.”

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~ EMP Nurse

### System

Six months after the initiation of EMPcare@home for each client, the telehomecare study group had an 85% reduction in hospital admissions. The study demonstrated that this telehomecare approach was 25% more effective in keeping clients with CHF and/or COPD out of hospital than the approach used by standard EMP services in the two comparison groups. There was a 55% decrease in emergency visits (for any reason) in the telehomecare study group. The study demonstrated that this telehomecare approach was 12% more effective in reducing emergency room visits than the approach used by standard EMP service delivery.

A decrease in hospital admissions was identified three months after the technology was withdrawn. Project participants are interested in knowing the longer term effects as it is hypothesized that with a better awareness of how to manage their condition through self monitoring, clients would maintain improved outcomes.

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“Keeping patients out of hospital is important for the health system, but even more importantly, the telehomecare helps to improve the patients’ clinical outcomes!”

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~ *Manager EMP*

The final evaluation report supported expansion of this telehomecare approach region wide.

## Outcomes

EMPCare@home continues as a viable program within the Woodstock EMP in RVH and has expanded within this EMP Unit to include clients with other conditions. As clients are admitted to EMP according to the pre-existing criteria, they are routinely assessed for enrolment in telehomecare, according to a decision framework. Criteria impacting the decision to install the technology include ‘savings to the number of home care visits’; and ‘the opportunity for the client to achieve improved understanding of how to self-manage their chronic condition’. Currently clients using the telehomecare technology include those with diabetes, hypertension, toxemia, COPD, CHF, wound care. EMP staff also see the value of the technology for monitoring clients with acute and complicated conditions, as it provides the opportunity for closer monitoring.

Within the New Brunswick Extra Mural Program one of the key mandates is to prevent unnecessary hospital admission. EMPCare@home has proven that telehomecare monitoring works. Even with the challenges of Project start-up (including ensuring buy-in from the team, delays in medical device licensing of technology, securing fund-

ing, etc.), the Project exceeded its original targets for reduction in hospital care for the targeted client population. It is reasonable to expect better results as time passes and all staff become more comfortable with the tool.

Nineteen family physicians had an average of 1.9 clients per physician enrolled in the Project and accordingly had limited opportunity to become familiar with the initiative. In one case, where the monitor identified a bradycardia (which was resolved with a pacemaker) as the cause of the client’s health issues, there was great endorsement. However, physicians did not have the opportunity over the life of the Project to maximize the technology and begin working with EMP to establish clinical parameters for their clients, gaining comfort with the various reporting formats and being able to actively use the results. It is anticipated that as the number of patients accessing telehomecare increases, physicians will have a greater opportunity to become more familiar with this new approach to care.

This fall, RVH, with funding support from Health Canada, First Nations and Inuit Health Branch, is implementing the use of the clinic version of this telehomecare technology within a health center setting. The first site for this application, which will focus specifically on hypertension and diabetes, is the Kingsclear First Nation community. It is hoped that the technology will enhance the scope of the limited human resources available to provide comprehensive management for this client population.

Woodstock EMP will continue to use the 30 monitors acquired for the Project. In June 2006, the RVH Board of Directors approved expansion of this telehomecare approach within all EMP Units in Regional Health Authority pending funding availability. The Final Evaluation Report has also been submitted to the Department of Health with a recommendation for province wide expansion.

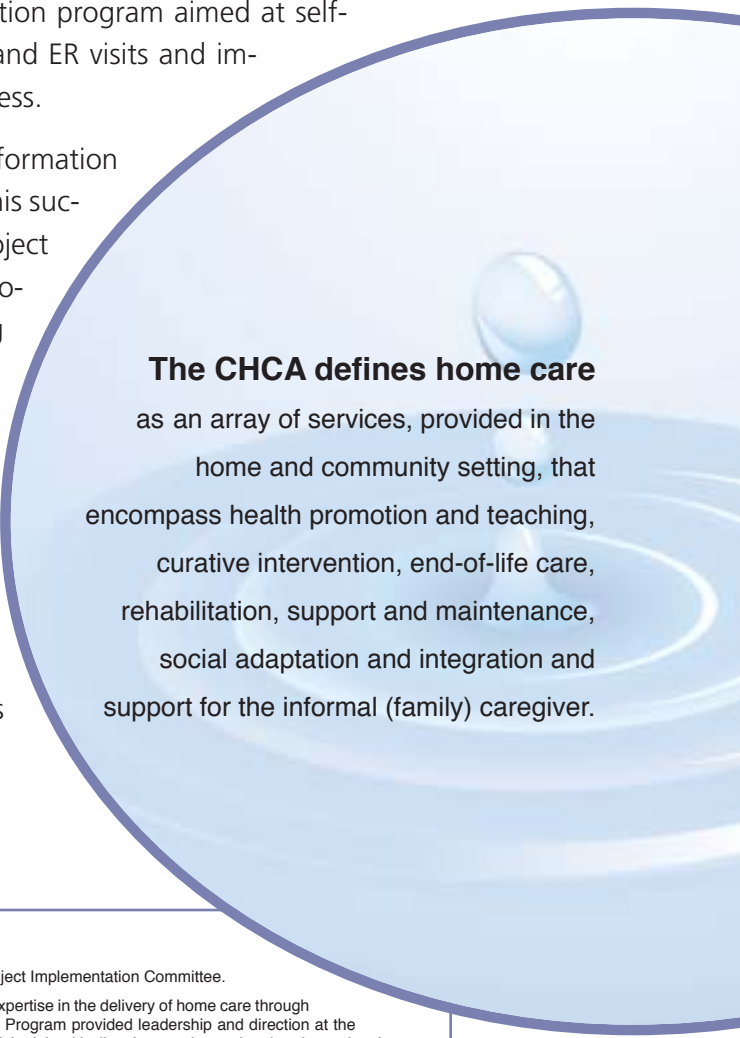
## CONCLUSION

As the number of Canadians with chronic disease increases, it is essential that the health system adopt a more proactive approach to care. EMPcare@home does that and effectively demonstrates the important role that home care plays within the health care system. The Project shows that daily monitoring combined with a consistent education program aimed at self-management can effectively reduce hospital admissions and ER visits and improve the client's ability to self-manage his/her chronic illness.

The Project team has created a comprehensive toolkit of information to provide other jurisdictions with the means to build on this successful practice. The resources include information on Project organization and governance, Telehomecare Policies and Procedures, Technology Architecture, Equipment Training Check Lists, Patient Education materials, Communication Strategy, and a detailed Project Evaluation methodology including copies of the evaluation tools developed for this Project.

The Formal Evaluation report and the Telehomecare Tool Kit are posted on the RVH Web site at [www.rivervalleyhealth.nb.ca](http://www.rivervalleyhealth.nb.ca).

For more information on the CHCA's High Impact Practices or other initiatives, contact [www.cdnhomecare.ca](http://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:

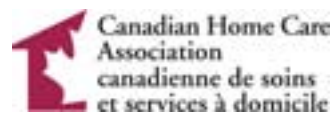
<sup>1</sup> Presented by Janice Wilson, Manager Woodstock Unit, N.B. Extra Mural Program and Co-Chair, Project Implementation Committee.

<sup>2</sup> RVH Project Partners included: River Valley Health - assumed the project lead and provided clinical expertise in the delivery of home care through its Extra-Mural Program; The Department of Health and Wellness - the New Brunswick Extra-Mural Program provided leadership and direction at the provincial level; the Office of eHealth - provided direction on aligning EMPcare@home with provincial telehealth directions and ensuring that the project is scalable at a provincial level, is bilingual in nature, and involved stakeholders from all health regions; Atlantic Canada Opportunities Agency (ACOA) - through its Strategic Community Investment Fund, provided the federal funding to leverage this initiative to promote economic activity in New Brunswick; Medavie Blue Cross - as a private sector partner, provided in-kind Project Management resources and private sector expertise in leveraging this initiative to create business opportunities; Pfizer Canada - through its Community Investment Program, is investing in innovation in health care with emphasis on healthy living, healthy aging, sustainable best practices, and chronic disease management. They provided additional private sector expertise in leveraging this initiative to create business opportunities; eNB.ca (Business New Brunswick) - worked to position EMPcare@home as a tangible example of providing public services directly into the homes of consumers; National Research Council, Fredericton, New Brunswick - provided their expertise and worked to identify new opportunities for further research and development.

<sup>3</sup> RVH. Telehealth Strategic Plan, Bridging the Distance, June 2002.

<sup>4</sup> Healthy Futures: Securing New Brunswick's Health Care System, The Provincial Health Plan 2004:2008

<sup>5</sup> Listed as the Most Responsible Diagnosis in the Discharge Abstract Database (DAD)



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