

Evidence Review

Telehomecare Executive Summary

Approximately half of all Canadians are living with at least one chronic health condition. More than one in four report having two or more chronic conditions.¹ In 2010, the total economic impact of chronic diseases was a staggering \$190 billion.² This increasing burden requires a new type of care to keep Canadians out of expensive, acute care settings and in their own homes living independent, quality lives. It has been estimated that more than 80% of the management of chronic conditions is self-care.³ A growing body of evidence suggests that Telehomecare (THC) may be a viable solution to help patients better manage their care at home.⁴⁻¹⁴

Potential Benefits

The Ontario Telemedicine Network (OTN) uses advanced information and communication technologies to support the delivery of clinical care, education and health related administrative services securely, over a distance. THC is a form of telemedicine based in the patient's home. It uses a communication and clinical information systems to enable the transmission of voice and health-related data using ordinary telephone lines.¹⁵

The benefits of THC (when compared with usual home care) for patients with chronic diseases such as heart failure (HF), chronic obstructive pulmonary disease (COPD) and diabetes mellitus (DM), are wide ranging including:

- equal health care for those living in underserved areas¹⁵
- improved access to care^{17,18}
- self-management^{4,6,11,19}
- quality of life^{6,8,11,20,21}
- and ability to adjust treatment plans¹⁸

THC interventions have also reduced:

- all cause readmission^{17,21}
- all-cause mortality^{8,21}
- mortality^{14,22,23}
- emergency department (ED) visits^{7,13, 25}
- and direct costs²⁵; resulting from a fewer hospitalizations^{4,6,7,9,10,13,14,20,24}, shorter length of stay^{4,10}, better use of healthcare resources¹¹ and pharmaceuticals²⁶ and reduced travel costs.⁴

A systematic review²⁷ of 23 articles found THC to be a cost effective intervention in 91% of the studies reviewed. In addition, patient satisfaction with the equipment^{6,28, 29} and program^{10,20, 21, 24} was generally high, even among elderly users.⁴

Potential Issues

However, several studies have found no improvement in the following outcomes: hospital admissions^{8, 28, 30-32}; ED visits^{28, 31}; number of days in hospital^{26,32}; self-management⁵; risk of death³²; or medication knowledge.³⁰ One randomized control trial noted higher mortality amongst the intervention (THC) group.³¹

Another prospective, randomized study found a decline in patient medication behaviour.³¹ Some additional disadvantages include: technical problems¹⁶; reluctance or refusal from patients¹⁷, caregivers, nurses and physicians³³; and usability issues.¹⁸

Yet, several authors have cautioned that several factors make it difficult to generalize the findings of several of these studies, including: inconsistent indicators²⁷; processes and technologies^{4, 12,33} used in the THC interventions being studied; small sample sizes^{4,13, 29}; and weak types of clinical trials.^{13,34}

Finally, an evidence synthesis³⁵ of 141 randomized controlled trials evaluated the effectiveness of telemedicine in the management of asthma, COPD, DM, HF and hypertension. Although the median effect was positive for COPD and weakly positive for the other four chronic conditions, the author concluded that the evidence base is “on the whole weak and contradictory”³⁵ due to: publication bias; short term studies; and lack of evidence for cost-effectiveness.

Factors Limiting Success

Authors made several inferences based on the results of their respective studies to explain the lack of success of their interventions. Some factors that may have hindered the success of the interventions include a lack of: patient-clinician interaction³²; formal education and a comprehensive disease management program combined with the remote monitoring of the intervention^{5, 32}; medication management³²; patient-centred models of care³⁶⁻³⁸; experienced nurses⁵; patient motivation to self-manage their disease¹⁸; and effective teaching strategies used by nurses.³⁰

Keys to Success

Conversely, authors provided several suggestions to explain the successes of the THC interventions. A systematic review⁴ concluded that THC works best for conditions that require close monitoring and quick interventions¹² such as HF, and may also apply to patients with asthma, COPD and other unstable conditions.

Another systematic review¹¹ concluded that these interventions are most appropriate for patients with multiple chronic diseases who are high users of healthcare resources. In addition, the use of skilled clinicians³⁹ capable of assisting patients with problem solving and utilizing motivational interviewing³⁸ and ‘teach back’⁴⁰ method, are essential to patients’ success with achieving self-management of their chronic disease. “Healthcare professionals are in an

excellent position to assist patients with chronic diseases who have experienced past failures with disease management by structuring experiences that bolster self-efficacy.”³⁸

Currently, these strategies are exemplified in a well-established, national, home telehealth program in the United States of America.

Successful Example

Care Coordination/Home Telehealth (CCHT) is a successful, home telehealth program implemented by the Veterans Health Administration to care for veteran patients with chronic conditions in their own home. From its inception in July 2003 to December 2007, CCHT enrolled a total of 43,430 patients.¹⁰ With specially trained clinicians and a focus on patient self-management, disease management and ‘virtual visits’, the CCHT model has proven itself to be a practical, flexible and cost-effective way of managing chronic care patients in both urban and rural settings.¹⁰ A program grounded in self-management is essential because: “Patients who can self-manage have reduced disease-related effects and may change their use of health services because they monitor their symptoms and know how to prevent and respond to certain health-related problems.”⁴¹ Finally, CCHT has standardized the program’s clinical, educational, technical and business elements to ensure patient safety, efficiency and ease of implementation.¹⁰ After having implemented a scalable, cost effective approach to home care, the CCHT model should be used as a guide for future telehomecare programs.

OTN has used what can be learned from the available literature, similar programs such as the CCHT, and past experiences in their own pilot program to create a comprehensive, holistic THC program grounded in best-evidence. Our THC nurses are trained to specifically promote chronic disease management, patient self-management and health coaching; using remote monitoring technology to track the patient’s health status. By targeting at-risk patients with HF and COPD as suggested by the literature, we are providing these patients with the best chance of achieving an independent, higher quality of life. In addition, THC nurses collaborating with the patient’s primary care team will allow for the development of effective, proactive care plans and will improve chronic disease management in Ontario. Finally, OTN was recently named as a Registered Nurses’ Association of Ontario Best Practice Spotlight Organization, ensuring all care plans are based on current, clinical best practices. Collectively, these factors will contribute to better health, at home for patients living with chronic conditions in Ontario.

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