



## Home Telehealth for Chronic Disease Management

*This document highlights key findings from a CADTH health technology assessment report on home telehealth for chronic disease management.*

Chronic diseases are, as their name implies, diseases that usually do not improve with time. They can cause premature death, decrease the quality of life of those who have them, and have a negative economic impact on their families and on society as a whole. In Canada, the total cost of illness, disability, and death due to chronic diseases exceeds \$80 billion annually.

As Canada's population ages, rates of chronic diseases will increase, and the need for effective disease management will grow. Home care is an integral part of chronic disease management, including care using information and communication technology, known as "home telehealth."

Home telehealth is most commonly used in Canada to manage diabetes, heart failure, and chronic obstructive pulmonary disease (COPD). Although it could also be used to manage other chronic diseases, there is a need to assess the criteria and tools that are used to identify eligible patients; the strategies for integrating home telehealth into the Canadian health care

system; the technologies that are available in Canada; the implications for health care resource management; the risk management frameworks; and the ethical, legal, and psychosocial issues presented by home telehealth.

### KEY FINDINGS

- Despite limited evidence, overall, home telehealth can reduce disease burden in some patients.
- Higher-quality economic studies of home telehealth are needed to give greater insights into the potential cost-effectiveness of home telehealth.

**Home telehealth** includes home telemonitoring and telephone support:

- **Home telemonitoring** involves data transmission and audio or video monitoring.
- **Telephone support** is patient or caregiver support, including advice, education, and follow-up, by a health-care provider, usually through telephone contact. It does not involve electronic transmission of patient outcome data.



- Home telehealth is a useful addition to Canadian health care delivery. Although ethical, legal, and psychosocial issues that arise can be solved using existing models, some issues such as criteria for identifying suitable patients, liability, reimbursement, and unique patient identifiers that are crucial to home telehealth implementation require further discussion.

## FOR HEALTH CARE PROVIDERS

- **Clinical impact:** The study examined home telehealth for diabetes, heart disease, and COPD.
  - Home telehealth was found to be clinically effective for patients with diabetes (demonstrating better glycemic control) and heart failure (lower mortality).
  - Studies of COPD reported higher mortality among patients using home telehealth;

## OTHER CHRONIC DISEASES MANAGED THROUGH HOME TELEHEALTH

Chronic Diseases	Country
Cardiovascular disease	Canada, US, Italy, Turkey
Hypertension	US, Canada, France, Denmark, Germany, Poland, Japan, Estonia, Hungary, Italy
Asthma	UK, US, The Netherlands, Taiwan, Greece, Croatia
Renal failure (hemodialysis, peritoneal dialysis)	Japan, Spain, The Netherlands, Australia
Chronic wound care	Switzerland, US, Poland, Denmark, Austria
HIV/AIDS	Spain, US
Mental health	
• Bulimia nervosa	Sweden
• Dementia	Korea, Japan, US, Sweden, Taiwan, UK
• Alzheimer	US
• Depression	US
• Schizophrenia	UK
Inflammatory bowel disease	US
Pediatric oncology	Australia
Sleep disorders	US
Cancer	US
Cystic fibrosis	Australia
Chronic brain injury	Italy
Chronic migraine	The Netherlands
Chronic pain	Canada
Arthritis	US, UK
Obesity	US

however, due to the small number of studies, these results should be interpreted with caution.

- **Patient impact:**
  - Home telehealth interventions had similar or favourable results compared with usual care in terms of quality of life, patient satisfaction, and adherence to treatment (i.e., compliance).
  - Home telehealth can fill unmet needs for patients in remote areas where access to appropriate care is compromised.
- **Ethical, legal, and psychosocial issues:**
  - Issues include:
    - Patient-centred issues (privacy and confidentiality, informed consent, patient selection and the psychosocial implications of medicalizing the home environment);
    - Professional issues (liability and malpractice, training); and
    - Technology issues (reliability, privacy, and safety).
  - Evidence suggests that these issues present no insurmountable ethical or legal problems and that, when appropriately implemented, home telehealth follows the five principles of the *Canada Health Act*.

## FOR POLICY MAKERS AND ADMINISTRATORS

- **Health services utilization:** Available information varied and must be interpreted with caution. However:
  - patients receiving home telehealth used fewer services; for example, they had less hospitalization, fewer emergency department visits, and fewer bed days of care; and
  - these patients had a greater number of primary care, specialist, office, and home-care visits.
- **Patient identification:** Criteria and tools to identify patients for whom home telehealth would be suitable could not be found; this remains an essential area for future research if home telehealth is to become an integral part of health care services delivery.
- **Economic impact:** Home telehealth could reduce costs from a health care system perspective across disease areas and type of home telehealth intervention, but further studies are needed to confirm this.
- **Training:** Targeted professional education and training is needed before home telehealth can be widely applied; the qualifications of personnel responding in call-in centres or monitoring patient data should be comparable to those of the professionals from whom patients would otherwise receive care (e.g., physicians).

## NURSES' PERCEPTION OF DIFFERENCES BETWEEN TRADITIONAL NURSING AND TELENURSING

Traditional Nursing	Telenursing
Hands-on treatment and assessment of patients	Lack of hands-on treatment and assessment of patients
Fewer patient education opportunities	More patient education opportunities
Little reliance on patient co-operation	Increased reliance on patient co-operation
Little patient responsibility for care	More patient responsibility for care
Wide range of patient types and diagnoses	Decreased patient types and diagnoses
Wide range of patient observation	Decreased range of patient observation

- **Electronic health records:** Electronic health records are integral to home telehealth. If home telehealth is to be implemented, it may be necessary to develop a national identifier format that is consistent with applicable privacy legislation.
- **Existing industry:** A pan-Canadian survey of home telehealth programs shows that a viable industry exists that can support implementation of home telehealth.

## PROJECT INFORMATION

Because multiple chronic diseases often occur in the aging Canadian population, there are challenges to the health care system in providing care and services at the patient's residence in both urban and rural areas. The issues involve the maintenance and improvement of the patient's quality of life and health status, the avoidance of unnecessary trips to emergency departments, a reduction in hospital readmissions, and a reduction of costs. To address these issues, CADTH commissioned a systematic evaluation of the clinical benefit and cost-effectiveness of home telehealth versus conventional home care for chronic disease management.

The research lead for the project was Khai Tran, MSc, PhD, a Research Officer with CADTH. Doug Coyle, MA, MSc, PhD, with the Department of Epidemiology and Community Medicine at the University of Ottawa, and Kathryn Coyle, BScPhm, MSc, with Coyle Consultancy, were responsible for the economics sections.

CADTH's full-length Technology Report, *Home Telehealth for Chronic Disease Management*, as well as a Technology Overview and this Research Highlights tool, are available at [www.cadth.ca](http://www.cadth.ca).

## ABOUT CADTH

The Canadian Agency for Drugs and Technologies in Health (CADTH) is a national body that provides Canada's federal, provincial, and territorial health care decision makers with credible, impartial advice and evidence-based information about the effectiveness and efficiency of drugs and other health technologies.

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