Home-Based Heated Humidified High-Flow Therapy for Respiratory Conditions

Recommendation

MONTH 20XX

Ontario Health

Draft Recommendation

Ontario Health, based on guidance from the Ontario Health Technology Advisory Committee, recommends publicly funding home-based heated humidified high-flow therapy for people with respiratory conditions who lack equivalent treatment options at home.

Rationale for the Recommendation

The Ontario Health Technology Advisory Committee considered the clinical, economic, and patient preferences and values evidence reported in the health technology assessment.[1]

The committee members acknowledged that there are adult and pediatric patients with chronic respiratory conditions who require home-based heated humidified high-flow therapy (HHHFT). Among adults, this includes those who currently use HHHFT in hospital settings but could transition to home care if HHHFT were available. Children who require HHHFT include those who cannot tolerate conventional respiratory therapies at home. This patient population also includes adults and children with a tracheostomy. They also acknowledged that hospital-based HHHFT is widely used in Ontario and is considered to be standard care for people who require this technology in hospital. The committee noted that there are studies demonstrating the clinical benefits of HHHFT in the hospital setting, but that comparative clinical evidence for home-based HHHFT is lacking. The committee acknowledged the potential transferability of clinical benefit from the hospital to the home setting, as well as the value of real-world quantitative evidence to support the expected benefits of home-based HHHFT. The committee noted that home-based HHHFT had the potential to introduce savings to the health care system as a result of fewer emergency department visits and hospitalizations.

Ontario Health Technology Advisory Committee members took into account the lived experience of caregivers of children using home-based HHHFT, who described the enhanced autonomy associated with transitioning care from hospital to home. The committee members also noted the disparity in access to home-based HHHFT because of the cost of the device, noting that some patients remain in hospital because they need HHHFT but are unable to afford the at-home costs. The committee also highlighted potential improvements in care for patients and families from rural or remote areas, who may currently have to relocate to access treatment in hospital. They noted the importance of providing equitable access to home-based HHHFT across the province and the need for continuing care for children when they age out of pediatric care.

The committee noted that there are various potential implementation pathways for home-based HHHFT if it were publicly funded; there is also the potential for savings through programs in which the device is owned by the province, loaned to a patient, and then refurbished and redistributed when the patient no longer needs it.

The committee acknowledged the importance of defining eligibility criteria for patients who lack equivalent treatment options. The committee also recognized the importance of engaging the many system partners that could be affected by the implementation of home-based HHHFT, such as the Provincial Long-Term Ventilation Strategy.

Decision Determinants for Home-Based Heated Humidified High-Flow Therapy for Respiratory Conditions

Overall Clinical Benefit

Effectiveness

How effective is the health technology/intervention likely to be (taking into account any variability)?

We did not identify any studies that specifically evaluated the evaluated the effectiveness of home-based HHHFT versus hospital-based HHHFT for the treatment of respiratory conditions in adults or children, or that compared home-based HHHFT with other home-based oxygen therapies or no treatment for the treatment of obstructive sleep apnea in children. However, we did identify studies conducted in hospital settings or in populations receiving alternative treatments at home that demonstrated clinical benefits of HHHFT, including improved oxygenation, reduced respiratory rates, decreased severity of obstructive sleep apnea, and fewer acute exacerbations of chronic obstructive pulmonary disease. As well, HHHFT is used widely in Ontario hospitals, is generally considered to be clinically effective, and is standard care in such settings.

Safety

How safe is the health technology/intervention likely to be?

We did not identify any studies that assessed the safety of home-based HHHFT, but it is generally regarded as safe. Health Canada has categorized HHHFT devices as class II devices, meaning that they have low to moderate risk of harm.

Burden of Illness

What is the likely size of the burden of illness pertaining to this health technology/intervention?

One in five Canadians has a serious respiratory condition.[2] However, we anticipate that the number of people with respiratory conditions who require home-based HHHFT and have no equivalent treatment options will be much smaller.

Need

How large is the need for this health technology/intervention?

In Ontario, approximately 50 to 100 children and 50 to 100 adults require home-based HHHFT, given a lack of equivalent treatment options at home.

Patient Preferences and Privacy

Patient Preferences and Values

Do patients have specific preferences, values, or needs related to the health condition, health technology/intervention, or life impact that are relevant to this assessment?

Participants in our direct patient engagement – who were all caregivers of children with a respiratory condition – reported a notable reduction in their child's respiratory symptoms. They highlighted the positive impact of HHHFT on their child's quality of life. They also described a decrease in caregiver burden and fewer emergency department and specialist visits. All participants expressed favourable views of HHHFT, particularly when other options were ineffective.

Autonomy, Privacy, Confidentiality, and/or Other Relevant Ethical Principles as Applicable

Are there concerns regarding accepted ethical or legal standards related to patient autonomy, privacy, confidentiality, or other ethical principles that are relevant to this assessment?

Participants in our direct patient engagement valued the ability to transition their child home from the hospital. The transition enhanced patient autonomy by allowing families to make decisions about their child's care in a familiar setting.

Equity and Patient Care

Equity of Access or Outcomes

Are there disadvantaged populations or populations in need whose access to care or health outcomes might be improved or worsened that are relevant to this assessment?

In Ontario, access to home-based HHHFT is limited to those who can afford the initial and ongoing costs, or those with supplementary insurance.

Patient Care

Are there challenges in the coordination of care for patients or other system-level aspects of patient care (e.g., timeliness of care, care setting) that might be improved or worsened that are relevant to this assessment?

Home-based HHHFT is a viable option when other interventions are unsuitable for managing respiratory symptoms. It also enables people to transition home from the hospital.

Cost-Effectiveness

Economic Evaluation

How efficient is the health technology/intervention likely to be?

Although we did not identify any economic evaluations of home-based HHHFT that were directly applicable to our research questions, we identified 5 studies evaluating home-based HHHFT for various chronic conditions in adults. Overall, most studies found that home-based HHHFT was associated with cost savings, largely due to fewer hospitalizations. Given the potential of home-based HHHFT to reduce the number of hospitalizations and outpatient visits, we assessed the difference in costs in a budget impact analysis.

Feasibility of Adoption Into Health System

Economic Feasibility

How economically feasible is the health technology/intervention?

We estimate that publicly funding home-based HHHFT in Ontario for children with obstructive sleep apnea would lead to cost savings of $185,981 over the next 5 years. Savings were due to an estimated 99 fewer inpatient visits and 127 fewer outpatient visits. We estimate that publicly funding home-based HHHFT in Ontario for adults and children with other respiratory conditions who lack an equivalent home-based treatment option would cost an additional $2.5 million over the next 5 years. Publicly funding home-based HHHFT would also result in fewer hospital and emergency department visits. For some people, access to home-based HHHFT would result in earlier discharge from hospital. We estimate that publicly funding home-based HHHFT would result in 653 inpatient days avoided. However, these budget impact estimates are uncertain due to a lack of clinical effectiveness studies for HHHFT in the home setting.

Organizational Feasibility

How organizationally feasible is it to implement the health technology/intervention?

In Ontario, home-based HHHFT systems are currently accessible via private insurance or out-of-pocket expenditures. If home-based HHHFT were to be publicly funded in Ontario, a number of system stakeholders and potential funding approaches could be considered. The funding model would be determined by the Ministry of Health and could encompass a variety of approaches, recognizing that there are multiple pathways for implementation.

References

1) TBD.
2) Despite “B” grade for lung health, too many Canadians dying from respiratory disease [Internet]. Ottawa (ON): Canadian Lung Association; [cited 2025 Jun 6]. Available from: https://www.lung.ca/despite-%E2%80%9Cb%E2%80%9D-grade-lung-health-too-many-canadians-dying-respiratory-disease

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