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Australian and New Zealand Head and Neck Cancer Society (ANZHNCS) Position Statement on Use of Heat Moisture Exchangers in Total Laryngectomy Patients

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The Australian and New Zealand Head and Neck Cancer Society (ANZHNCS) is the peak multidisciplinary body representing clinicians involved in the care of patients with head and neck cancer. Our members include surgeons, radiation oncologists, medical oncologists, dental specialists, allied health professionals, specialist nurses and researchers dedicated to improving outcomes for patients with head and neck malignancies.

Background & Rationale

A total laryngectomy results in the complete removal of the larynx and separation of the airway from the upper respiratory tract, requiring patients to breathe through a permanent tracheostoma ("hole in the front of the patient's neck"). This anatomical change eliminates the upper airway's natural function of warming, humidifying, and filtering inhaled air, often leading to pulmonary complications, discomfort, and reduced quality of life for the patient (Hilgers & Schouwenburg, 1990).

Heat Moisture Exchangers (HMEs) act as passive humidifiers by conserving the moisture and heat from exhaled air and reapplying it during inhalation. HMEs are an essential component of postoperative care for individuals who have undergone a total laryngectomy. The consistent use of HMEs provides significant physiological, psychological, and quality-of-life benefits. Therefore, healthcare providers should strongly advocate for and facilitate access to HME use as standard care in the rehabilitation and long-term management of laryngectomy patients (Hilgers et al., 2003).

Use and Availability of HMEs Across Australia and New Zealand

The use of Heat Moisture Exchangers (HMEs) is recognised as best practice in post-laryngectomy rehabilitation across Australia and New Zealand; however, access remains inconsistent. In New Zealand, HMEs are generally included within public health funding pathways and are routinely supplied to laryngectomy patients as part of standard care. In Australia, access varies between states and territories. Some jurisdictions provide HMEs through funding schemes, while in others, patients must partially or fully self-fund these devices (Hilgers et al., 2003; Huber et al., 2023). The financial burden to patients self-funding the daily use of HMEs can be prohibitive.

Current Evidence & Benefits of HMEs:

1. Pulmonary Health

Randomised controlled trials (RCTs) have demonstrated that HME use significantly reduces coughing, sputum production, and crusting, with associated improvements in sleep quality and reduced need for suctioning or chest physiotherapy (Ackerstaff et al., 1995; van den Boer et al., 2014). Regular HME use also lowers the incidence of airway obstruction and mucus plugging, particularly in the early postoperative period (Hilgers et al., 2003).

A 2023 systematic review and meta-analysis confirmed that HME use is associated with significant improvements in pulmonary symptoms in both short- and long-term users (Huber et al., 2023).

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2. Quality of Life

Studies have shown significant improvement in subjective respiratory comfort and reduction of pulmonary symptoms (Klop et al., 2011). HME users subjectively experience improved sleep, less embarrassment in social settings due to coughing, better stoma hygiene, reduced fatigue and easier voice prosthesis management (Rinkel et al., 2008; De Bodt et al., 2023; van den Boer et al., 2014).

A prospective study reported that while initial adaptation to HME use can be challenging, over 96% of participants reported that breathing through the device felt “equal or easier” than without one by week six (De Bodt et al., 2023).

3. Hospital Complications and Healthcare Burden

Observational data suggest that patients using HMEs may experience fewer postoperative pulmonary complications and potentially reduced hospital admissions due to chest infections (Hutcheson et al., 2012; Canadian Agency for Drugs and Technologies in Health, 2021).

Regular HME use has been demonstrated to result in reduced hospital visits and fewer respiratory infections, resulting in long-term healthcare savings (Meulemans et al., 2016).

4. Device Innovation and Performance

New-generation HMEs show enhanced moisture retention and humidification capacity, better adherence, and improved comfort compared to earlier models (De Bodt et al., 2023; Hilgers et al., 2003). These advancements may further improve long-term adherence and patient satisfaction.

5. Voice and Communication

HME systems used in conjunction with voice prostheses can enhance hands-free speech and reduce effort during voicing (Hilgers et al., 2003). Improved pulmonary status leads to more stable voicing and communication outcomes (Kazi et al., 2002).

Recommendations

1. **HMEs should be considered standard of care** for all individuals undergoing total laryngectomy. The style and type of the humidification device should be tailored to the patient need and be recommended by a speech pathologist and/or ENT.

2. **Initiation of HME use in the early postoperative period** is recommended, where clinically indicated, to promote adaptation and optimise long-term compliance (Ackerstaff et al., 1995; van den Boer et al., 2014). Decision regarding the use of these devices in the early post-operative period should be conducted in consultation with ENT and Plastic Surgeons to ensure that there is no contraindication for its placement in the early post-operative period.

3. **Resolve inequity to access of publicly funded equipment.** Significant inequity exists across Australia in funding for specialised equipment to improve the health and well-being of patients following this life-altering surgery. Reimbursement systems and healthcare institutions should recognize the importance of HMEs and ensure patients have access regardless of socioeconomic status. There should be equal access to publicly funded devices, that are evidence-based and recommended as best practice care post total laryngectomy surgery, across Australia and New Zealand.

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4. **Ongoing patient and clinician education** by trained speech pathologists, nurse specialists and ENT specialists on HME fitting, use and management is essential to improve uptake and adherence.

5. **Continued Australian and New Zealand research and outcome tracking** is needed to understand the long-term impacts of HME use on healthcare utilisation, quality of life, and survivorship outcomes.

Conclusion

HMEs are a vital component of post-laryngectomy rehabilitation. Their consistent use significantly improves respiratory function, reduces symptom burden, and enhances quality of life. ANZHNCS strongly advocates that HMEs should be promoted and implemented as a routine part of post-laryngectomy care.

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