Cost-Effectiveness Analysis on New Generation Heat and Moisture Exchangers for Laryngectomized Patients in Japan



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Context

Total laryngectomy (TL) surgery involves removal of the entire larynx and redirection of the trachea to a neck stoma (figure 1)¹. This procedure represents the last surgical treatment option for patients with laryngeal cancer. The use of heat and moisture exchangers (HMEs) and adhesives (ADH) by patients who undergo TLs reduces pulmonary problems². HMEs helps by providing stoma occlusion and compensates for temperature, humidification, and filtering deficit³. The new generation is an improved range of products offering a flexible and complete solution for people living with laryngectomy. It consists of six high performing, interchangeable HMEs that ensure the right balance between humidification and breathability with newly designed ADHs.



Figure 1: Anatomy after total laryngectomy. A heat and moisture exchanger is placed on the tracheostomy by means of an attachment.

Objectives

To investigate whether the new generation heat and moisture exchangers (HMEs) and adhesives (ADHs) are cost-effective compared to current HMEs and ADHs, or no HME use, for laryngectomized patients in Japan.

Methods

A Markov model with five health states was adapted to calculate the difference in health outcomes such as pulmonary infections, mucus plug events, skin irritation and quality adjusted life years (QALYs), over 10 years. This study used the Cough and Sputum Assessment Questionnaire (CASA-Q) to identify health states that distinguish in health-related Quality of Life. An existing Portuguese model was adapted for Japan based on a literature search for Japan specific parameters and validation by clinical and health economics experts. The analytical perspective was that of the Japanese healthcare payer.

Results

Based on the available evidence, the model-based analysis showed that the new generation improves the effect and increases the total healthcare spending per patient over 10 years compared to the current HMEs or no HME use for laryngectomized patients in Japan. As a result of the costeffectiveness analysis, the ICER for the new generation compared to the previous generation, or no HME use was less than 5 million yen, the threshold value typically used in Japan⁴. This



indicates that the new generation is more costeffective than the existing or no product use at all.

The analysis also showed that use of the new generation of HMEs and ADHs decreases the number of pulmonary infections, mucus plug events, and skin irritation compared with the use of existing.

Conclusions

This analysis indicated that the introduction of a new generation HMEs among TL patients in Japan is more cost-effective than the existing HMEs and more cost-effective than no HME use.

References:

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