

Defining health states to assess the cost-effectiveness of interventions in laryngectomized patients

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Introduction

Current cost-effectiveness models of heat and moisture exchangers (HMEs) for laryngectomized patients, do not consider the potential changes in health-related quality of life (HRQoL) due to reduced cough and sputum symptoms and impact (see [Figure 1](#)) [1]. The aim of this study is to investigate whether the Cough and Sputum Assessment Questionnaire (CASA-Q) [4] can be used to identify health states that distinguish in HRQoL, or utility, for cost-effectiveness models.

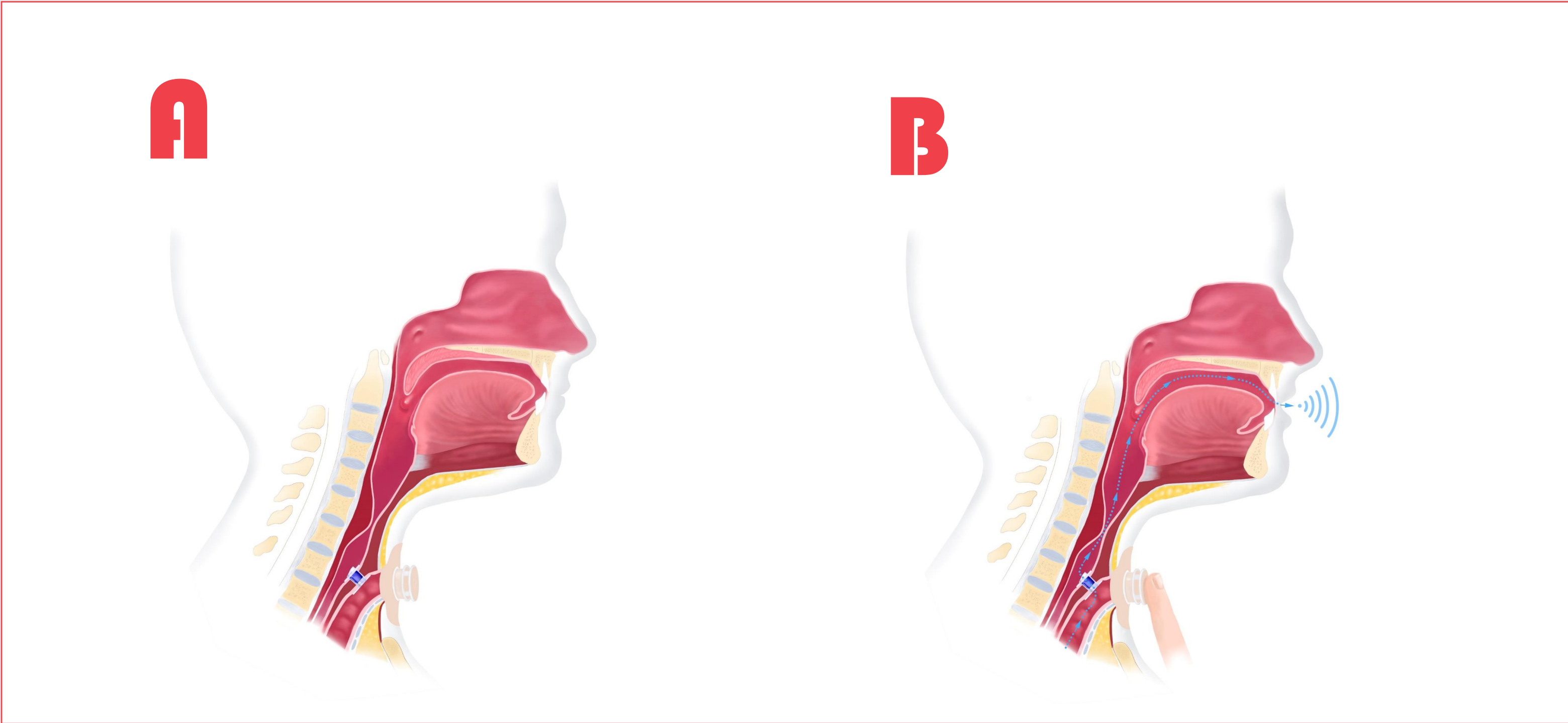


Figure 1: Anatomy after total laryngectomy. **A:** An HME provides pulmonary rehabilitation and is placed on the tracheostomy by means of an attachment. **B:** An HME can facilitate occlusion of the tracheostoma to redirect air through the voice prosthesis for tracheoesophageal speech.

Funding/support

This study was performed by Panaxea B.V. and funded by Coloplast and Atos Medical. Atos Medical develops and sells medical devices, driven by the desire to make life easier for people living with a neck stoma in over 90 countries. Coloplast is a globally operating company with business in Ostomy care, Continence Care, Wound & Skin Care and Urology Care.

Methods

Patient-level data from a clinical study was used to determine whether the CASA-Q can inform health states that distinguish in HRQoL [3]. The EuroQol-5-dimensions (EQ-5D) and CASA-Q were administered in 40 patients with three different measurement moments (i.e., 120 measurement moments). The cut-off scores were informed by literature [4]. Correlations between the CASA-Q domains and EQ-5D were calculated to assess the level of convergence. One-way ANOVA was used to assess the magnitude of differences in the utility scores across the health states.

Results

The correlation between the EQ-5D and CASA-Q indicate a moderate level of convergence for the cough impact ($r=0.32$; $p=0.0005$), sputum symptoms ($r=0.46$; $p<0.0001$), and sputum impact ($r=0.59$; $p<0.0001$) domains. The correlation between the cough symptoms domain is weak ($r=0.20$; $p=0.03$). Based on the sputum impact domain, three health states with their cut-offs were distinguished: no to mild sputum impact ($SPUI\geq 94$), moderate sputum impact ($64\leq SPUI<94$), and severe sputum impact ($SPUI<64$) (see [Figure 3](#)). The utilities of these health states were 0.9183, 0.8009, and 0.6228, respectively. There was a statistically significant difference in utilities between health states as demonstrated by one-way ANOVA ($F(1,118)=36.3$, $p<0.0001$).

Conclusion

The sputum impact domain of the CASA-Q may be suitable to differentiate health states for cost-effectiveness models and capture improvements in HRQoL in laryngectomized patients. These health states may provide a more sensitive choice and complement the current available models.

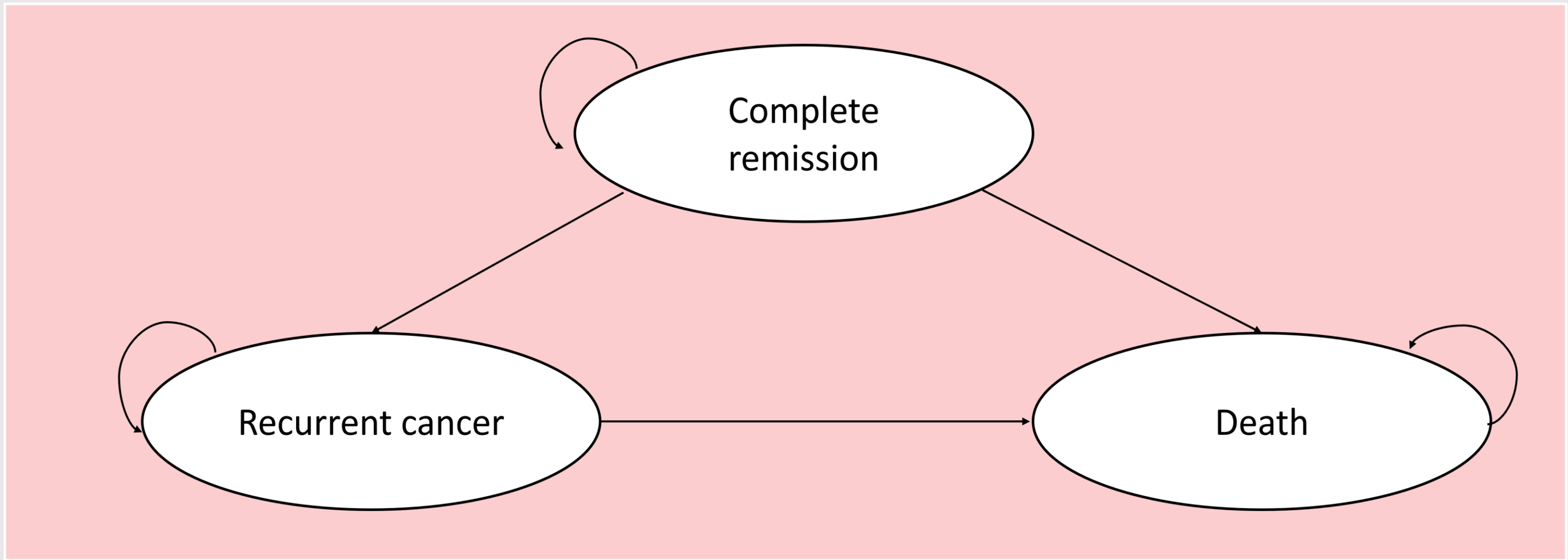


Figure 2: Cancer-based health states for cost-effectiveness studies for laryngectomized patients [1]

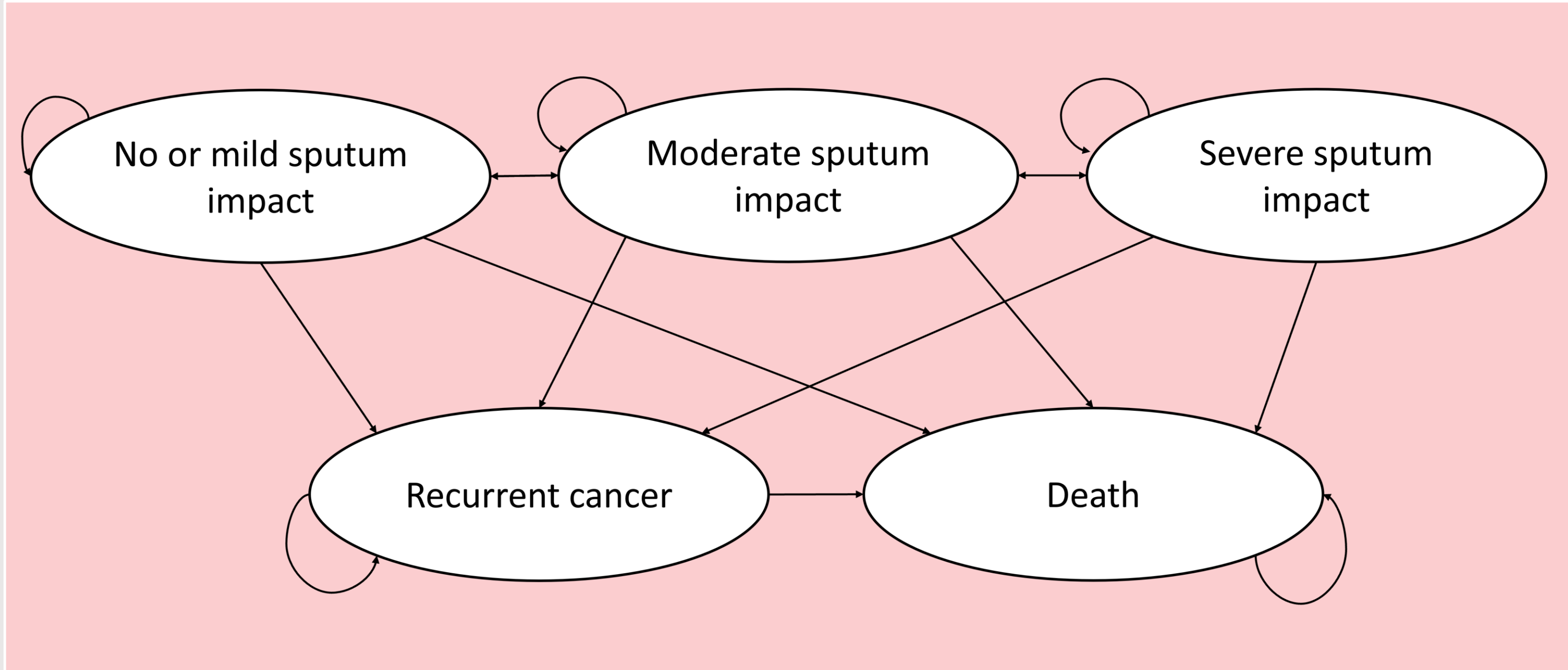


Figure 3: Health states that distinguish HRQoL for cost-effectiveness studies for laryngectomized patients

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