

# Decision Analytic Model for reducing Acute Exacerbations of COPD

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## Background

- Swallowing impairment is further complicated by inadequate coordination with breathing in people with Chronic Obstructive pulmonary Disease (COPD).

- This swallowing impairment increases the risk of aspiration pneumonia, and acute exacerbations of COPD.

- We designed an economic model to assess the cost-effectiveness of the Swallowing and Respiratory Sensation Assessment (SwaRSA,) and a modelled rehabilitation intervention to reduce COPD exacerbations – Figure 1.

## Methods

- Relative to standard care arm of no testing, the SwaRSA model included 4 tests: a questionnaire based EAT-10 score, swallowing capacity of liquids, tongue strength assessment, and respiratory sensation assessment in people with moderate to severe COPD.

- The model input costs, sensitivities and specificities, utilities, exacerbation costs, and the efficacy of the rehabilitation were based on published sources.

- We used a 1-year time frame in the model in the Australian payor perspective.

Figure 1

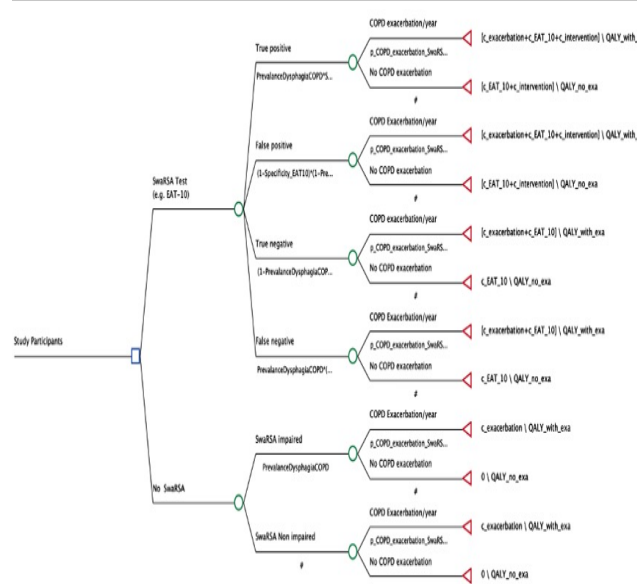


Figure 2

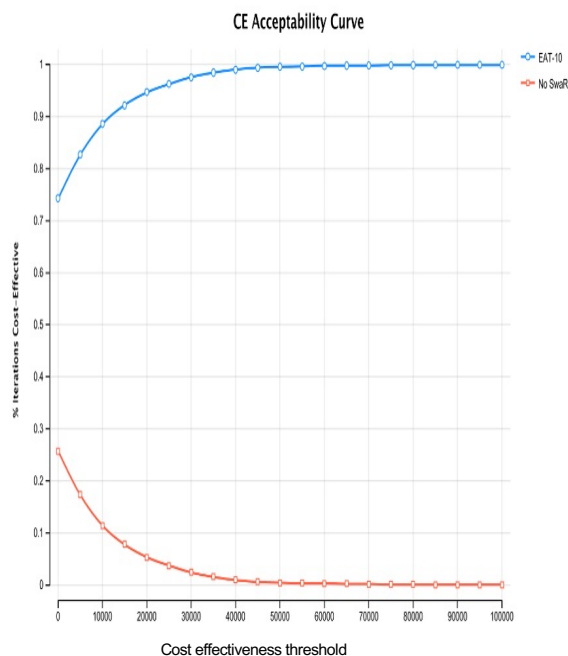
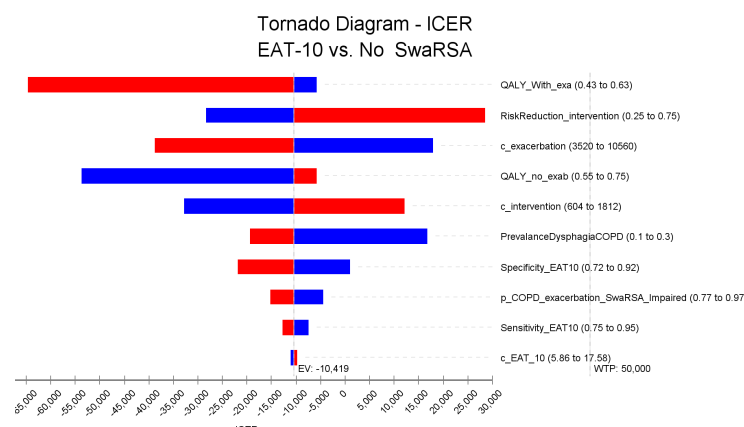


Figure 3



## Results

- Relative to no-SwaRSA, three individual strategies were found to be cost-effective at reducing COPD exacerbations.
- The estimated incremental cost effectiveness ratio (ICER) ranged from \$ 27,000 to 37,000 AUD at a willingness to pay of \$ 50,000 AUD.
- On the plotted cost-effectiveness frontier, only the EAT-10, and the tongue strength were on the frontier, but the latter is not expected to be cost-effective relative to the EAT-10 at an ICER of \$ 647,713 AUD.
- EAT-10 strategy was highly cost effective – Figure 2.
- Model results were robust to variations in one-way sensitivity probabilistic sensitivity analyses - Figure 3.

## Conclusion

- This novel approach to reduce acute exacerbations of COPD using SwaRSA strategy with a modeled intervention were more effective than no SwaRSA at all.
- EAT-10 scoring was the most cost-effective option in this decision analytic model.