**Supplemental Digital content 2- Appendix B AdViSHE**

**Part A: Validation of the conceptual model**

Part A discusses techniques for validating the conceptual model. A conceptual model describes the underlying system (e.g., progression of disease) using a mathematical, logical, verbal, or graphic representation.

**A1/** Face validity testing (conceptual model):

- Have experts been asked to judge the appropriateness of the conceptual model?
  Discussed with de expert panel. The panel consisted of the following experts:
  - professor J.H.M. Frijns, ORL consultant Leiden University Medical Center (LUMC) and head of Cochlear Implant Rehabilitation Centre Leiden
  - J.J. Briaire, PhD, senior audiologist LUMC
  - C. Boer-Dexel, head Leiden Audiology Center

  The expert panel fully agreed

**A2/** Cross validity testing (conceptual model):

- Has this model been compared to other conceptual models found in the literature or clinical textbooks?
  Yes, the model has been compared to the Markov models of Bond et al. (2009) and Ontario HTA (2018)

**Part B: Input data validation**

**B1/** Face validity testing (input data):

- Have experts been asked to judge the appropriateness of the input data?
  The expert team judged the appropriateness of the input data

**B2/** Model fit testing:

- When input parameters are based on regression models, have statistical tests been performed?
  No parameters were based on regression models, therefore statistical test were not applicable

**Part C: Validation of the computerized model**

Part C discusses various techniques for validating the model as it is implemented in a software program. If there are any differences between the conceptual model (Part A) and the final computerized model.

**C1/** External review:

- Has the computerized model been examined by modelling experts?
  W.B. van der Hout, health economist, has examined the model

**C2/** Extreme value testing:

- Has the model been run for specific, extreme sets of parameter values in order to detect any coding errors?
  One-way sensitivity analyses were performed as described in the paper

**C3/** Testing of traces:

- Have patients been tracked through the model to determine whether its logic is correct?
  No patients have not been tracked trough the model. This is not possible in a Markov model.

**C4/** Unit testing:

- Have individual sub-modules of the computerized model been tested?
  Yes, for all scenarios probabilistic sensitivity analyses (PSA) and one-way sensitivity analyses were performed

**Part D: Operational validation**

Part D discusses techniques used to validate the model outcomes.

**D1/** Face validity testing (model outcomes):

- Have experts been asked to judge the appropriateness of the model outcomes?
  The expert panel has judged the appropriateness of the model outcomes

**D2/** Cross validation testing (model outcomes):

- Have the model outcomes been compared to the outcomes of other models that address similar problems?
  Yes, the model outcomes have been compared to the Markov model outcomes of Bond et al. (2009) and Ontario HTA (2018)

**D3/** Validation against outcomes using alternative input data:

- Have the model outcomes been compared to the outcomes obtained when using alternative input data?
  PSA and one-way sensitivity analysis were performed

**D4/** Validation against empirical data:

- Have the model outcomes been compared to empirical data?
  No, model outcomes have not been compared with empirical data. This data was not available.

**Part E: Other validation techniques**

**E1/** Other validation techniques:

- Have any other validation techniques been performed?
  No, no other validation techniques have been performed