

#### **Supplement 4: Sensitivity analysis - complete case analysis**

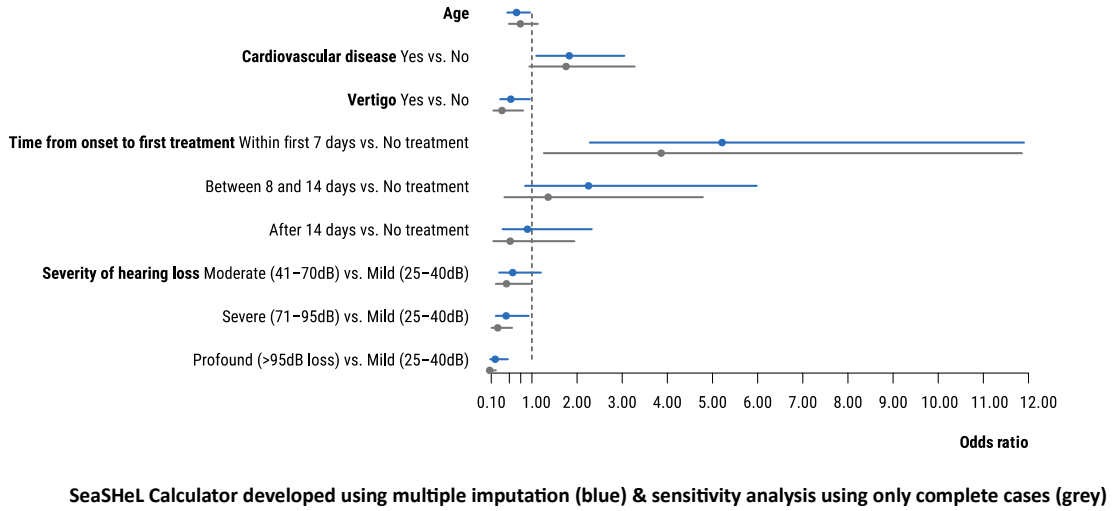
To assess the robustness of our prediction model, we conducted a sensitivity analysis by comparing a model developed using only complete cases to the model developed using multiple imputation. Sensitivity analysis was performed using only complete cases, that is 349 patients of whom 109 recovered. All modeling steps as described in the manuscript were repeated.

Multivariable logistic regression was performed to develop a prognostic model using the same nine predictors ((i.e. age, gender, presence of tinnitus, presence of vertigo, precipitating illness, pattern of hearing loss, severity of hearing loss, time between onset of symptoms and treatment with steroids (oral or intratympanic), and cardiovascular comorbidity (presence of any of the following: hypertension, hyperlipidaemia, coronary heart disease, heart failure, atrial fibrillation, stroke/TIA and diabetes mellitus)), and backward selection was used to achieve the most informative and parsimonious combination of predictors using the same selection criteria as in the model developed using multiple imputation. After backward selection, the same 5 variables (i.e. age, presence of vertigo, severity of hearing loss, time between onset of symptoms and treatment with steroids, and cardiovascular comorbidity) as in the model developed using multiple imputation were selected.

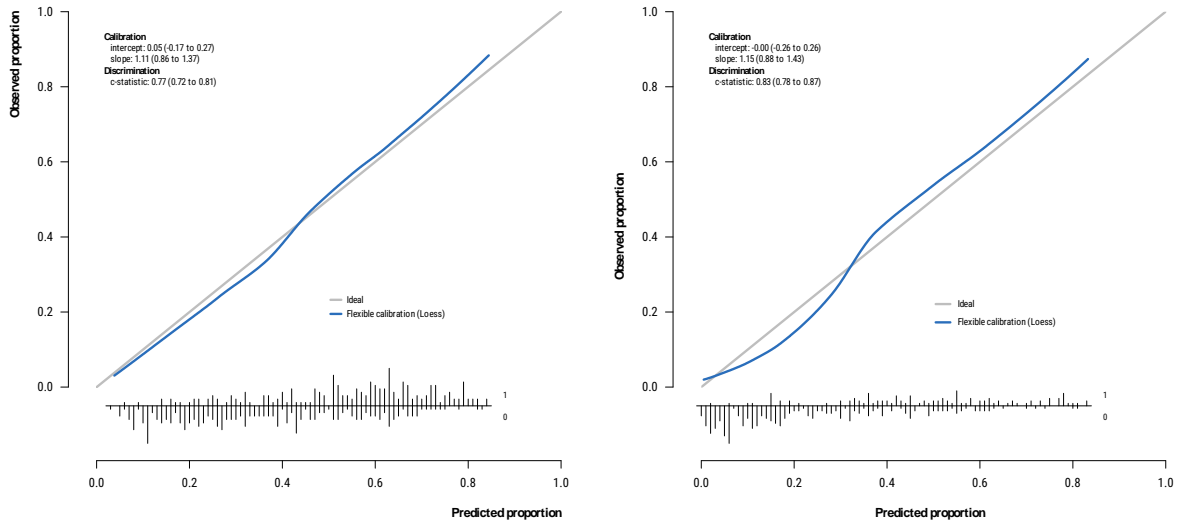
Severity and time to first treatment were selected in 100% and 99.2% of the models, age, cardiovascular disease and vertigo were selected in 17.2%, 33.2%, 50.8% of the bootstrap replicates, respectively.

In internal validation, using bootstrapping a shrinkage factor of .86 was obtained. After bootstrapping, model coefficients were adjusted for the degree of optimism in the model and the model intercept was reassessed after adjustment of model coefficients. Impact of individual predictors was evaluated by estimating odds ratios (ORs) with corresponding 95% confidence interval (CI)(Figure 1 below). Model performance was re-evaluated after internal validation and expressed by discrimination and calibration (Figure 2 below).

**Figure 1. Graphical representation of relative strength of each individual predictor**



**Figure 2. Model performance of internally validated models - calibration & discrimination**



**a) SeaSHEL Calculator developed using multiple imputation**

**b) Sensitivity analysis using only complete cases**