

USE OF MAPPING TO ESTIMATE HEALTH STATE UTILITY VALUES

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Longworth, L., Rowen, D.
NICE DSU Technical Support Document 10: The use of mapping methods to estimate health state utility values. 2011.

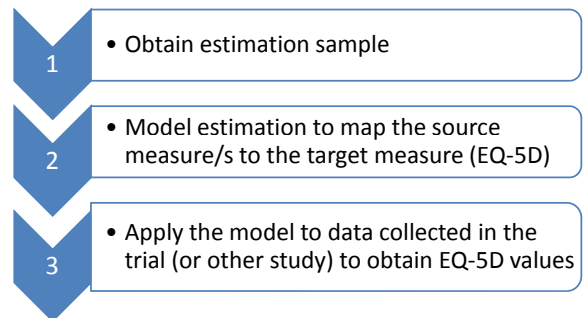
What is mapping?

- The development and use of an algorithm (or algorithms) to predict health-state utility values using data on other indicators or measures of health.
- The algorithm can be applied to data from clinical trials, other studies or economic models containing the source predictive measure(s) to predict utility values
- Potential solution where the target preference-based measure was not included in the original source study of effectiveness.
- More sophisticated than simply taking mean values
 - Enables variation between patients to be taken into account
 - Enable better reflection of clinical effectiveness results of trial (or other study)

Context: 2008 Methods Guide

- States preference for utility data collected using the EQ-5D
- Recognises that such data may not always be available
 - mapping to EQ-5D allowed as a second best solution.
- Mapping used in submissions to the NICE TA programme prior to formal recognition in 2008 guide
- An overview of utility estimation for NICE Technology Appraisals recently reported substantial use of mapping
 - Tosh, Longworth and George. (2011) Utility values in NICE Technology Appraisals. *Value in Health* 14: 102-9.

Mapping as a three-stepped approach



The estimation sample

- Need to carefully consider the generalisability of the estimation sample to the target sample
- Characteristics of estimation sample should be similar to the target sample
 - Differences between target and estimation samples should be expected to have no impact on the relationship to be estimated
 - There may be some cases where the estimation sample could be designed to oversample some groups, providing that the target sample is sufficiently represented

Model specification

- Choose the model that best suits the data
 - OLS has theoretical limitations for this type of data; but often performs better than other models
 - Other potential models include tobit, CLAD
- Can also consider mapping to response classification (e.g.11121)
 - Use of logistic regression methods
 - Then apply tariff to predicted health state classification
- Standard econometric/statistical techniques used to select explanatory variables informed by knowledge of clinical relationships between variables

Validation and uncertainty

- Validation
 - Using external dataset where available
 - Using a split-sample approach
- Uncertainty
 - Parameter uncertainty should be included in the analysis for mapped utility values as for all parameters (e.g. probabilistic sensitivity analysis)
 - If alternative models/model specifications are available then apply in a sensitivity analysis

What should be reported?

- The dataset used as the estimation sample
- How the model was specified
- Statistical properties of the model, including, but not limited to
 - Coefficients (size, statistical significance, etc)
 - Plots of observed and predicted values
 - Mean absolute error and root mean squared error
 - Errors should be reported across subsets of the EQ-5D range

Conclusions

- Mapping considered an option when EQ-5D data unavailable
- Second best solution
 - More uncertainty in results
 - Preferable to collect EQ-5D directly from patients of interest
- Mapping will not be helpful, and alternative solutions should be sought, if
 - there is little or no overlap in content between the EQ-5D and measures used to map
 - EQ-5D is considered inappropriate