

Converting Parkinson-Specific Scores into Health State Utilities to Assess Cost-Utility Analysis

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Objectives: The aim of this study was to compare the Parkinson's Disease Questionnaire-8 (PDQ-8) with three multi-attribute utility (MAU) instruments (EQ-5D-3L, EQ-5D-5L, and 15D) and to develop mapping algorithms that could be used to transform PDQ-8 scores into MAU scores.

Methods: A cross-sectional study was conducted. A final sample of 228 evaluable patients was included in the analyses. Sociodemographic and clinical data were also collected. Two EQ-5D questionnaires were scored using Spanish tariffs. Two models and three statistical techniques were used to estimate each model in the direct mapping framework for all three MAU instruments, including the most widely used ordinary least squares (OLS), the robust MM-estimator, and the generalized linear model (GLM). For both EQ-5D-3L and EQ-5D-5L, indirect response mapping based on an ordered logit model was also conducted. Three goodness-of-fit tests were employed to compare the models: the mean absolute error (MAE), the root-mean-square error (RMSE), and the intra-class correlation coefficient (ICC) between the predicted and observed utilities. **Results:** Health state utility scores ranged from 0.61 (EQ-5D-3L) to 0.74 (15D). The mean PDQ-8 score was 27.51. The correlation between overall PDQ-8 score and each MAU instrument ranged from $\rho = 0.729$ (EQ-5D-5L) to $\rho = 0.752$ (EQ-5D-3L). A mapping algorithm based on PDQ-8 items had better performance than using the overall score. For the two EQ-5D questionnaires, in general, the indirect

mapping approach had comparable or even better performance than direct mapping based on MAE. Conclusions: Mapping algorithms developed in this study enable the estimation of utility values from the PDQ-8. The indirect mapping equations reported for two EQ-5D questionnaires will further facilitate the calculation of EQ-5D utility scores using other country-specific tariffs. © 2018, Springer International Publishing AG, part of Springer Nature.