

THE IMPORTANCE OF PRE-OPERATIVE OUTCOME SCORES FOR PREDICTION AND CASE-MIX ADJUSTMENT MODELS IN SHOULDER ARTHROPLASTY

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Purpose:

To evaluate the importance of pre-operative PROMS in predicting outcomes and ensuring appropriate case-mix adjustment in analysis of primary shoulder arthroplasty outcomes.

Methods:

Data from 8871 elective shoulder replacement procedures recorded in the National Joint Registry between June 2012 and March 2015 were used to develop a linear model to predict post-operative Oxford Shoulder Scores (Q2 OSS). Missing data were handled with multiple imputation. The following candidate variables were specified *a priori*: age, indication, condition of rotator cuff, ASA grade, sex, previous surgery. This was compared to a model with the addition of the Q1 OSS. Model performance was compared using goodness of fit tests and calibration plots.

Results:

A large proportion of scores were missing Q1 OSS 48% complete, Q2 OSS 69% complete. Q1 OSS was an important predictor of Q2 OSS (coefficient=0.39, $p<0.0001$) and greatly improved the fit of the linear model: optimism corrected R^2 0.131 vs 0.061, AIC 67195 vs 67870, LR Test Chisq 669 on 1df). Visual inspection of calibration plots confirmed this improved fit.

Conclusion:

Pre-operative patient reported outcome measures (PROMs) scores are an important predictor of outcome and risk-adjustment models are significantly improved by their inclusion. Shoulder registries need to reliably collect pre-operative PROMs. These scores remain incomplete in the NJR but their collection is necessary if reliable models scrutinising both implants and providers are to be achieved. The collection of Q1 scores should be routine and nationally mandated in order to account for baseline imbalance as well as allowing change of score analysis.