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## **Deriving Utility Scores from SF-36 Data: An Examination of the Performance of Two Methods**

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## Deriving Utility Scores from SF-36 Data: An Examination of the Performance of Two Methods

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The Medical Outcomes Study Short Form 36-Item Survey (SF-36) is a widely accepted survey instrument for assessing a patient's health-related quality of life.<sup>1</sup> It has been validated in numerous diseases, translated into many languages, and used across the world as an indicator of a patient's perception of his or her current health status. Data from the SF-36 are used to produce a profile of scores in eight domains, as well as two summary scores.<sup>1</sup> One current limitation of the SF-36 is its inability to produce a single index score suitable for use in economic analyses.

Cost-utility analysis is a form of pharmacoeconomics analysis that associates cost with quantity and quality of life. This technique for assessing the value of medical technologies requires modifying life expectancy by an index value, referred to as a utility score, to adjust length of life based on the quality of the future years. The utility score, which is traditionally based on the relative preference people have for one health state over another, is difficult to obtain using traditional methods, but may be acceptably obtained using one of many currently available survey instruments.<sup>2</sup> The ability to translate SF-36 scores into a utility score would have tremendous applicability in pharmacoeconomic research.

A utility score derived from SF-36 data would allow researchers to perform cost-utility analyses on pre-existing databases containing SF-36 data and economic information. In addition, such a utility score would facilitate prospective data collection when researchers desire to gather both SF-36 data and utility scores from a patient population. Finally, such an index score would facilitate comparison of SF-36 scores that produce differing results across the domain or summary scores.

In a recent study, researchers within the Office of Health Policy and Clinical Outcomes and the Jefferson Headache Center compared two methods to translate SF-36 data into a single index score for use in cost-utility analysis. The EuroQol EQ-5D (EQ-5D), a standard survey for eliciting utility values, was used as a comparison.<sup>3</sup> For the study, 47 patients from the Jefferson Headache Center at Thomas Jefferson University Hospital were selected to complete both an SF-36 and EQ-5D questionnaire. Utility scores were obtained from the EQ-5D according to conventional methods.<sup>3</sup> Utility scores were derived from the SF-36 using methods developed by two separate teams of researchers, Brazier et al.<sup>4</sup>, and Fryback et al.<sup>5</sup> The convergence between the utility scores from the EQ-5D and utility scores derived from the SF-36 was assessed by examining the correlation between the EQ-5D utility scores and the utility scores derived using each of the SF-36 equations. Forty-seven patients were enrolled in the study; 45 completed the EQ-5D and SF-36. Mean scores produced by the Brazier and Fryback methods were 0.815 (Range: 0.497 to 0.971) and 0.655 (Range: 0.511 to 0.791), respectively. The mean EQ-5D score was 0.553 (Range: -0.239 to 1.000). The correlation coefficients between predicted scores from Brazier and Fryback's methods and the EQ-5D scores were 0.613 and 0.494, respectively.

Both of the methods were limited in their inability to produce a wide range of values. Upon further examination, the lowest possible score that can be obtained using the Fryback and Brazier methods is 0.449 and 0.463, respectively. This has potentially

important negative consequences on cost-effectiveness analyses incorporating either of these two methods as an indicator of effectiveness. Since cost-effectiveness is reported as a ratio between the difference in mean costs over the difference in mean effects of two medical interventions, restricting the potential range of the denominator could lead to inappropriately high cost-effectiveness ratios. High cost-effectiveness ratios indicate that an intervention is not cost-effective. Therefore, the application of these methods in economic analyses could potentially lead to an underestimation of the cost-effectiveness of medical technologies.

Results of this analysis were presented at the Academy for Health Services Research Annual Meeting in June, 2001, and the International Society for Pharmacoeconomics and Outcomes Research 6th Annual Meeting in May, 2001.

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