

multiple logit regression. The most important factors were found to be depression or other mental health comorbidity and previous hospitalization. Compliance measures were not found to be important predictors. **CONCLUSIONS:** It is feasible to compute compliance measures based on Medicaid prescription claims records, but other factors were found to be more important risk factors for an event.

HEALTH UTILITY STUDIES I

36 INTO I DOESN'T GO

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OBJECTIVE: The SF-36 is a widely used generic measure of health status. Whilst SF-36 provides a rich source of descriptive data, it shares a major disadvantage with similar profile measures that do not support the computation of an aggregate summary index. Profile measures of this type may demonstrate changes in overall health status, but are inherently incapable of measuring the magnitude of such change. This defect has been recognised for some time and several remedial methods have been proposed. These include separate algorithms published by Fryback, Shmueli and Brazier. This paper reviews these algorithms and considers the implications of their use in economic evaluation. **METHODS:** Journal articles describing these three transformation models were used as the basis of a forensic examination of the empirical evidence offered in their support. The Brazier methodology, based on a more fundamental remodeling of the SF-36, was subjected to an extensive review that took account of the derivation of an abbreviated descriptive system referred to as the SF-6D. The implications of applying any of these algorithms to the estimation of QALY gains was tested using published results from a study that fielded the SF-36 alongside an asthma-specific measure. **RESULTS:** Significant defects in all three transformation models were identified; these included the failure of regression models used to estimate index values and the imposition of researcher value judgment. The documented failure of the SF-6D models was conspicuous in its original published account. Cost/QALY estimates varied according to transformation model with the SF-6D ratios being systematically lower than the others. **CONCLUSIONS:** There is demonstrable evidence that the SF-36 continues to be resistant to conversion into a single, summary index incorporating social preference values. Continued misapplication of such transformation methods is liable to degrade the status of cost-utility analysis based on more robust methods of measuring health outcomes.

UTI

THE TRANSFORMATION OF SOCIAL PREFERENCE WEIGHTS: IMPLICATIONS FOR COST-EFFECTIVENESS

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OBJECTIVES: Generic health status indexes conventionally require that full health and dead are valued as 1 and 0 respectively. When social preference weights for health states are obtained using a visual analogue scaling (VAS) technique their raw scores often lie on a scale with different endpoints (such as “best” and “worst” health). The transformation of such “raw” scores to a 0–1 scale leads to the exclusion of respondents who fail, for whatever reason, to record a value for dead or full health. This study reports on an alternative approach that does not impose such strict inclusion criteria. **METHODS:** Data from a postal valuation survey (n = 686) conducted in Belgium are used to compare 2 different approaches: (a) values for EQ-5D health states are transformed on a within-respondent basis and median values then computed; (b) median values for EQ-5D health states are computed from the observed data and then transformed to a 0–1 scale. Rankings, health state values and value differences between pairs of states resulting from both methods are compared. **RESULTS:** The exclusion rate approaches 29% in the conventional approach and 5% in the alternative approach. Transformed median valuations are not significantly different from median transformed valuations. Correlation is 0.994 (p < 0.0005). Health state rankings are identical in both approaches. Although the value differences between pairs of states differ between both methods, their correlation is very high (0.998). **CONCLUSIONS:** Using median original valuations in the analysis of EQ-5D valuation data are theoretically appealing. It builds on the “median voter” model and has the advantage of a lower respondent exclusion rate. Given the need for transparency and the inclusive nature of the mode of analysis, aggregation of observed VAS scores with subsequent transformation is considered an acceptable alternative to the conventional method with its associated data loss.

UT2

ESTIMATING HEALTH UTILITY FROM A PHYSICAL FUNCTION ASSESSMENT IN RHEUMATOID ARTHRITIS (RA) PATIENTS TREATED WITH ADALIMUMAB (D2E7)

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OBJECTIVES: Policymakers need cost utility estimates when evaluating new biologic therapies in RA. Most clinical trials of these therapies measure physical function, then estimate utility from physical function. Adalimumab (D2E7, Abbott) trials measured both physical function

UT3

and utility, providing an opportunity to evaluate estimates of utility from physical function. **METHODS:** A total of 2070 patients with active RA participated in 4 clinical trials (ARMADA, DE011, DE019 and STAR). The Health Assessment Questionnaire Disability Index (HAQ) measured physical function for all patients and the Health Utilities Index Mark-3 (HUI3) measured utility for 2000 patients at baseline and months 3 and 6. HAQ scores range from 0 (good physical function) to 3. HUI3 was regressed on HAQ using both repeated measure mixed models and cross-sectional models controlling for age, sex, disease duration, clinical trial and fatigue (measured by the Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F)). The cross-sectional models used end-of-study data with Last Observation Carried Forward (LOCF) imputation. These analyses include the 1990 patients with non-missing values for these variables. **RESULTS:** The mixed models and the cross-sectional models provided almost identical coefficient estimates. Disease duration and trial were not significant and were deleted from the model. Age (in years) was statistically significant but trivial ($\beta = 0.00087$). The basic estimated cross-sectional model was: $HUI3 = 0.76 - 0.28 * HAQ + 0.05 * FEMALE$ ($p < 0.0001$ for each regressor, Adj. $R^2 = 0.49$). However, the relationship between HUI3 and HAQ appears to be nonlinear: coefficients for HAQ-squared and HAQ-cubed were significant ($p = 0.013$ and $p = 0.003$, respectively) when added to the regression. Adding FACIT-F to the basic cross-sectional model substantially improved model fit (Adj. $R^2 = 0.63$). **CONCLUSIONS:** The basic algorithm developed in this study is consistent with published predictions of utility from HAQ (Kobelt et al., Arthritis and Rheumatism, 1999). However, these algorithms' predictions are limited and should only be used when direct utility scores are not available.

SESSION III

INFECTIOUS DISEASE STUDIES II

IN4

DISCOUNTING HEALTH BENEFITS: A NOVEL APPROACH TO ENSURE PROPER VALUING OF VACCINATION STRATEGIES

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OBJECTIVES: During the last ten years the influence of pharmacoeconomics has increased in decision-making. Due to budget constraints, decision makers often have to choose which intervention is given priority, for example, using league tables. The current practice of discounting both health and monetary benefits at the same rate places a higher priority on direct medical interventions, with health benefits occurring immediately. Due to this, pre-

ventive interventions such as vaccination strategies are possibly under-appreciated, leading to inconsistencies. Some researchers have suggested to not discount health benefits at all. We developed a novel approach combining the rationales underlying both theories of fully and not-at-all discounting of health benefits. We illustrate our novel approach with the conjugate meningococcal B/C vaccine for newborns in the Netherlands. **METHODS:** Firstly, we discard the relevance of the Keeler-Cretin paradox for day-to-day practice. Secondly, we note that by discounting the analyst implicitly corrects for a number of uncertainties and preferences, which are among others time preference and force of innovation. Our novel approach appreciates these factors, but also elaborates on the uncertainty that is already implicitly covered in the concept of life-years gained, which is part of the QALY assessment. **RESULTS:** Our illustration for vaccination with the conjugate meningococcal B/C vaccine renders estimates per QALY gained of €16,000 (monetary figures and QALYs discounted at 4%), €7000 (monetary figures discounted at 4%, QALYs non-discounted) and approximately €10,000 (monetary figures at 4% and QALYs according to the novel approach). **CONCLUSIONS:** We have developed a novel approach for discounting health benefits that may be considered a consensus approach between fully and not-at-all discounting of health benefits. The method can be applied to vaccines. Its application may ensure a more proper pharmacoeconomic valuing of vaccination strategies.

IN5

ECONOMIC EVALUATION OF A LARGE-SCALE MENINGOCOCCAL C VACCINATION PROGRAM IN THE NETHERLANDS

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OBJECTIVES: In the Netherlands, the incidence of meningococcal C infections has strongly increased during the last years. Should the Netherlands follow the UK and start a large-scale meningococcal C vaccination campaign? We calculated the health effects and costs of such a vaccination program. **METHODS:** The health effects, the costs and savings, as well as the cost-effectiveness of vaccinating all persons aged 14 months to 19 years in the Netherlands against meningococcal C infection was estimated, from a societal perspective using a decision analytic model. Data were derived from the Netherlands Reference Laboratory for Bacterial Meningitis, the Dutch costing guidelines, PRISMANT Healthcare, and national and international literature. Direct and indirect costs