Editorial

Using Utilities


Rheumatology has a long tradition in the development and application of patient-reported outcome measures (PROM), dating back to the Health Assessment Questionnaire (HAQ)[1] and the Arthritis Impact Measurement Scales[2]. More recently, generic instruments including the Medical Outcome Study Short-Form 36-item (SF-36) Health Survey Questionnaire[3] and the EuroQol EQ-5D[4] have been increasingly used alongside an array of disease-specific instruments available within rheumatology. The broader focus of generic instruments measuring aspects of health status and quality of life that are more generally relevant permits comparisons across diseases and with the general population[5]. In this issue of *The Journal* Linde and colleagues[6] compared EQ-5D scores for 3156 RA patients from 11 outpatient clinics in Denmark with scores for the Danish general population, and found that score differences were strongly associated with disease activity.

Generic instruments that incorporate societal preferences for health states, known as utility measures, comprise a single index, which can be used to form quality-adjusted life-years (QALY) for use in economic evaluation. This aims to compare the cost and benefits of healthcare to aid the efficient allocation of resources for health services. Utility values are derived by asking individuals for their preferences when given a choice between health states, ranging on a scale from zero for death to 1 for perfect health. The QALY combines utility with the time spent in the health state. There are 2 types of utility measures: those that are direct measures of preferences including the standard gamble and time tradeoff, and those that are indirect and include preference weights based on societal preferences, including the EuroQoL (EQ-5D)[4], Health Utilities Index (HUI)[7], and the Medical Outcome Study Short-Form Survey 6D (SF-6D)[3]. The latter are more widely used within healthcare evaluation and have greater acceptability among patients. Among these instruments, the EQ-5D is the most widely evaluated and applied[8,9] and comprises 5 questions with 3 levels, thus giving 243 health states. Each of these states has a utility value derived from surveys in the general population designed to elicit preferences for health states described by the EQ-5D. While some disease-specific instruments include utilities, among them the HAQ[10], their restricted focus limits their scope for use in economic evaluation.

There is evidence that different utility measures give different costs per QALY, due to differences in the health states they describe and their different approaches to deriving utility values[11-13]. Utility values for the SF-6D are based on the standard gamble while those for the EQ-5D are based on the time tradeoff and visual analog scale. The SF-6D is based on 11 questions with 3 to 6 levels, compared to 5 questions with 3 levels for the EQ-5D. The EQ-5D, now available with 5 levels[14], was the version used in the study by Linde, *et al*[6]. There is evidence that this version of the EQ-5D is a better descriptive system for deriving utilities and has lower ceiling effects and greater discriminatory power[15,16], and hence is potentially more responsiveness to changes in health.

Given that there is currently no preferred method of calculating QALY, it is recommended that different approaches be compared[9]. Utility measures such as the EQ-5D and SF-6D are relatively short; the latter is derived from the widely used SF-36, and therefore the 2 are suitable for use concurrently. Appropriate disease-specific PROM and clinical measures can also contribute to cost-effectiveness analysis. While narrower in scope than economic evaluation based on QALY, such disease-specific measures contribute to making treatment decisions and can also shed light on discrepancies between different approaches to QALY, providing an external form of validation. The appropriate selection of other forms of PROM, including disease-specific instruments and clinical measures, is not without its problems. There is an array of instruments for patients with rheumatic diseases[8] and those responsible for the application of PROM for use within clinical trials and other forms

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of evaluation must consider appropriate selection criteria alongside professional recommendations[8]. Moreover, many disease-specific instruments produce a number of scale scores relating to different aspects of health, which complicates cost-effectiveness calculations.

Remission of disease activity is the primary goal in current treatment of RA that includes expensive biologics. The Disease Activity Score 28 (DAS28), a composite measure of disease activity[11], is widely used in the evaluation of disease-modifying antirheumatic drugs. Achievement of disease remission or achievement of a low disease activity state can also be used in cost-effectiveness analysis to compare interventions. Clinical measures are important for the interpretation of PROM, including changes in instrument scores, and they provide external validity. Linde and colleagues found that EQ-5D scores had a strong association with 2 established measures of disease activity, the Clinical Disease Activity Score (CDAI)[12] and the DAS28[11], after controlling for comorbidity, lifestyle, and sociodemographic variables. This is evidence that the EQ-5D measures aspects of health associated with important clinical outcomes and supports the application of the EQ-5D within economic evaluation for RA.

Not surprisingly, RA patients had lower EQ-5D scores than the general population. One could speculate about whether RA patients in remission would have a quality of life very different from the general population. In fact, when one of the disease activity measures (CDAI) was used, people with RA in remission had EQ-5D scores almost identical to those of the general population, with mean differences of 0.02 for women and 0.01 for men[6]. When using DAS28 for defining remission, the differences in EQ-5D scores between the RA and general populations were small and in the range of 0.05. Similarly, in the Oslo RA registry in Norway, we found a cross-sectional unadjusted mean EQ-5D score of 0.6 compared to 0.8 for the general population, thus 0.2 lower and consistent through different age groups[13]. Patients with RA would trade 2 years of a 10-year life expectancy to be free of RA[17], indicating a gain of 15–20 QALY if 100 patients with RA are treated so well that their quality of life is similar to that of the general population over a 1-year period. In their study, Linde, *et al* show that this gain is actually seen in the proportion of patients at disease remission. Such costly treatments must show cost-effectiveness not only within rheumatology but also in relation to other areas of medicine. Hence, broadly applicable generic PROM in the form of utility measures that can be used in economic evaluation and QALY calculations are necessary alongside clinical measures and disease-specific instruments.

Utility measures were developed to include what are generally viewed as the most important aspects of health in a single index and through the inclusion of preferences or values for weighting life-years in QALY calculations. However, given the differences in the performance of available measures there is a need for further research before agreement can be reached on standardization for QALY calculation within rheumatology. The EQ-5D has come under criticism for the brevity of its health states, and the addition of 2 extra levels for each of the 5 questions in the version reported here goes some way to addressing this important limitation. Recent research findings including those reported[6] are encouraging, and this version of the instrument should be compared with other utility measures within rheumatology, including the SF-6D.

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REFERENCES

1. Fries JF, Spitz P, Kraines RG, Holman HR. Measurement of patient outcome in arthritis. Arthritis Rheum 1980;23:137-45.
2. Meenan RF, Mason JH, Anderson JJ, Guccione AA, Kazis LE. AIMS2. The content and properties of a revised and expanded Arthritis Impact Measurement Scales health status questionnaire. Arthritis Rheum 1992;35:1-10.
3. Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. Med Care 1992;30:473-83.
4. Hurst NP, Kind P, Ruta D, Hunter M, Stubbings A. Measuring health-related quality of life in rheumatoid arthritis: validity, responsiveness and reliability of EuroQol (EQ-5D). Br J Rheumatol 1997;36:551-9.
5. Garratt A. Patient reported outcome measures in trials. BMJ 2009;338:a2597.
6. Linde L, Sørensen J, Østergaard M, Hørslev-Petersen K, Hetland ML. Does clinical remission lead to normalization of EQ-5D in patients with RA and is the selection of remission criteria important? J Rheumatol 2010:37:285-90.
7. Horsman J, Furlong W, Feeny D, Torrance G. The Health Utilities Index (HUI): concepts, measurement properties and applications. Health Qual Life Outcomes 2003;1:54.
8. Garratt A, Schmidt L, Mackintosh A, Fitzpatrick R. Quality of life measurement: bibliographic study of patient assessed health outcome measures. BMJ 2002;324:1417.
9. Boonen A, Maetzel A, Drummond M, Suarez-Almazor M, Harrison M, Welch V, et al. The OMERACT initiative. Towards a reference approach to derive QALY for economic evaluations in rheumatology. J Rheumatol 2009;36:2045-9.
10. Bansback N, Marra C, Tsuchiya A, Anis A, Guh D, Hammond T, et al. Using the Health Assessment Questionnaire to estimate preference-based single indices in patients with rheumatoid arthritis. Arthritis Rheum 2007;57:963-71.
11. Prevoo ML, van 't Hof MA, Kuper HH, van Leeuwen MA, van de Putte LB, van Riel PL. Modified disease activity scores that include twenty-eight-joint counts. Development and validation in a prospective longitudinal study of patients with rheumatoid arthritis. Arthritis Rheum 1995;38:44-8.
12. Aletaha D, Smolen JS. The Simplified Disease Activity Index (SDAI) and Clinical Disease Activity Index (CDAI) to monitor patients in standard clinical care. Best Pract Res Clin Rheumatol 2007;21:663-75.

13. Uhlig T, Loge JH, Kristiansen IS, Kvien TK. Quantification of reduced health-related quality of life in patients with rheumatoid arthritis compared to the general population. J Rheumatol 2007;34:1241-7.
14. Kind P, Macran S. A five-level version of the EQ-5D. Value Health 2004;7:637-56.
15. Pickard AS, De Leon MC, Kohlmann T, Cella D, Rosenbloom S. Psychometric comparison of the standard EQ-5D to a 5 level version in cancer patients. Med Care 2007;45:259-63.
16. Janssen MF, Birnie E, Haagsma JA, Bonsel GJ. Comparing the standard EQ-5D three-level system with a five-level version. Value Health 2008;11:275-84.
17. Maetzel A, Strand V, Tugwell P, Wells G, Bombardier C. Cost effectiveness of adding leflunomide to a 5-year strategy of conventional disease-modifying antirheumatic drugs in patients with rheumatoid arthritis. Arthritis Rheum 2002;47:655-61.

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