Cost-effectiveness of infliximab for the treatment of active and progressive psoriatic arthritis
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study examined the costs and health outcomes of infliximab for the treatment of adults with active and progressive psoriatic arthritis, weighing 60 to 80kg, for whom treatment with at least two disease-modifying anti-rheumatic drugs (DMARDs) had failed. The authors concluded that, infliximab was clinically effective and could be cost-effective compared with palliative care without biologic DMARDs. The methods, analyses, and results were clear and comprehensive. The conclusions reached by the authors appear to be appropriate.

Type of economic evaluation
Cost-utility analysis

Study objective
The aim was to examine the costs and health outcomes of infliximab for the treatment of psoriatic arthritis. The hypothetical cohort consisted of adult patients with active and progressive psoriatic arthritis, weighing 60 to 80kg, for whom treatment with at least two disease-modifying anti-rheumatic drugs (DMARDs) had failed.

Interventions
Infliximab, a tumour necrosis factor alpha (TNF-α) inhibitor, was administered twice weekly, as maintenance treatment, at the licensed dose of 5mg per kg. This was compared with palliative care, which included non-biologic DMARDs without TNF-α inhibitors.

Location/setting
UK/community care.

Methods
Analytical approach:
A decision-analytic model was used to synthesise epidemiological data, and evidence from published studies and two key infliximab clinical trials. The model structure was based on a developed model (Bravo Vergel, et al. 2007, see ‘Other Publications of Related Interest’ below for bibliographic details). The analysis covered 40 years and the authors stated that a NHS perspective for England and Wales was taken.

Effectiveness data:
No head-to-head trials were available and Bayesian indirect comparison was undertaken, using data from seven trials of infliximab, and the TNF-α inhibitors etanercept and adalimumab. The main clinical effectiveness estimate was the response to treatment at 12, 24, and 52 weeks, measured by the Psoriatic Arthritis Response Criteria (PsARC), the Health Assessment Questionnaire (HAQ), and the Psoriasis Area and Severity Index (PASI). Changes in the scores on the HAQ, the PsARC, and, for a subgroup of patients with severe psoriatic arthritis, the PASI were analysed. Treatment withdrawal and rebound effects were analysed.

Monetary benefit and utility valuations:
Utility estimates, using the European Quality of life (EQ-5D) questionnaire or the Short Form (SF)-6D Health Survey, were unavailable. The utility scores were estimated as a function of the HAQ and the PASI scores, using methods from published sources.

Measure of benefit:
The measure of benefit was quality-adjusted life-years (QALYs) and these were discounted annually at 3.5%.
Cost data:
The direct medical costs included those of the drugs, their administration and monitoring, consultant out-patient visits, nursing staff, infusion of infliximab, and annual laboratory tests. Ongoing costs were from a published study. The unit costs were from the British National Formulary and the Personal Social Services Research Unit. The costs were presented in 2008 UK pounds sterling (£) and discounted at 3.5% per annum.

Analysis of uncertainty:
The model parameters were examined with one-way and probabilistic sensitivity analyses. One-way sensitivity analyses were undertaken on most of the parameters, while 5,000 simulations were run for the probabilistic sensitivity analysis, with beta or normal distributions. The probabilistic analysis results were illustrated in cost-effectiveness acceptability curves.

Results
Compared with palliative care, the incremental cost per QALY ratios ranged from £16,942 to £23,022 for infliximab, depending on patient weight (60 to 80kg), and were £17,327 for etanercept, and £19,246 for adalimumab.

For the subgroup of patients with significant psoriasis at baseline, the ratios ranged from £15,788 to £21,736 for infliximab, and were £16,613 for etanercept, and £18,170 for adalimumab.

In the one-way sensitivity analyses, the results were sensitive to changes in the utility estimates, the HAQ score rebound after drug withdrawal, and halving the rate of natural HAQ score progression. Based on the probabilistic analysis, infliximab could be cost-effective at a willingness-to-pay as low as £12,000 per QALY in typical patients with psoriatic arthritis.

Authors’ conclusions
The authors concluded that, infliximab was clinically effective and could be cost-effective compared with palliative care without biologic DMARDs.

CRD commentary
Interventions:
The therapies were described and might be feasible in other settings.

Effectiveness/benefits:
It was unclear if a systematic review was undertaken to identify the effectiveness data, making it uncertain if all the best available evidence was used. The clinical trials included in the study should be consulted to assess their quality. The clinical effectiveness of the drugs and the utility values were based on indirect comparisons, which introduces uncertainty. These methods are likely to have been the best possible, but caution should be taken when interpreting the results.

Costs:
The costs appear to have been appropriate to the perspective. The resource quantities and unit costs were clearly presented. Assumptions were made in measuring these resources, but they appear to have been reasonable and comprehensive. The unit costs were from sources available to the general public, and they appear to have been of good quality.

Analysis and results:
The analytic approach was well described and appears to have been appropriate. The methods and results were well reported and the results were adequately assessed for uncertainty. The results of the one-way sensitivity analyses were fully reported, allowing the assessment of the impact of variations in key inputs. Some limitations were acknowledged, including the omission of adverse events, which it was considered would not significantly impact on the results.

Concluding remarks:
The methods, analyses, and results were clear and comprehensive. The conclusions reached by the authors appear to be appropriate.
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