Cost-effectiveness of real-world infliximab use in patients with rheumatoid arthritis in Sweden

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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
The objective was to assess the cost-effectiveness of infliximab for the treatment of rheumatoid arthritis. The authors concluded that infliximab treatment provided good value for money in Swedish clinical practice. There were some limitations to the analysis and reporting, which means that the conclusions reached by the authors should be considered with caution.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of infliximab for the treatment of rheumatoid arthritis.

Interventions
Infliximab was compared with no biological treatment, with both groups receiving an oral disease-modifying antirheumatic drug.

Location/setting
Sweden/the setting was not reported.

Methods
Analytical approach:
The analysis was based on a Markov cohort model, with a follow-up of 20 years. The authors reported that a societal perspective was adopted.

Effectiveness data:
The clinical data for the intervention were from the Stockholm tumour necrosis factor-alpha follow-up registry (STURE). This registry included 637 patients, with a mean age of 54.4 years, who received first-line infliximab treatment between 1999 and 2008, in Stockholm. The clinical data for the comparator were from published studies. Those patients who stopped therapy were assumed to revert to their baseline Health Assessment Questionnaire (HAQ) score. The key clinical outcome was disease progression.

Monetary benefit and utility valuations:
The utility estimates were from a published study, which used the visual analogue scale to elicit the values.

Measure of benefit:
The measure of benefit was the quality-adjusted life-year (QALY) and these were discounted at an annual rate of 3%.

Cost data:
The analysis included the direct medical costs (drug and administration costs), as well as the indirect costs associated with the intervention and the comparator. The resource use and cost data were from published studies. The costs of adverse events and additional life-years arising from the treatment were also analysed. The price year was 2007, and the costs were converted from Swedish kronor to Euros (EUR) at the average exchange rate for 2007. They were discounted at an annual rate of 3%.
Analysis of uncertainty:
A deterministic sensitivity analysis was performed on some of the model parameters and the best- and worst-case scenarios were investigated.

Results
Over a 20-year period, infliximab was associated with 5.798 QALYs, while no biological treatment resulted in 4.779 QALYs. The total cost was EUR 190,089 with infliximab and EUR 166,825 with no treatment. The incremental cost per QALY gained with infliximab, over no treatment, was EUR 22,830.

The age of the patient at the start of treatment and the rate of natural disease progression had the greatest impact on the cost-effectiveness results.

Authors' conclusions
The authors concluded that infliximab treatment for rheumatoid arthritis provided good value for money in Swedish clinical practice.

CRD commentary
Interventions:
Some details of the intervention were provided, but the dosage was unclear. The comparator was no biological treatment. There might be other relevant treatment options that could have been included and could have changed the cost-effectiveness results.

Effectiveness/benefits:
The clinical data for the intervention were mainly from a registry, while those for the comparator were from a UK study. The aggregate results from the UK study were used, which means that there could not have been any control for variation in patient characteristics between these cohorts and there was significant potential for bias in the clinical estimates. The authors tested a more conservative rate of change in the HAQ score for the comparator group in the sensitivity analysis, but it was unclear if this was adequate. They assumed that patients reverted to their baseline HAQ score after treatment finished and it was not clear that this was appropriate. They did not report the method used to identify the clinical studies and it was unclear if the best available evidence was used. There appears to have been some uncertainty surrounding the utility estimates, as a correlation between the visual analogue scale and the Disease Activity Score (DAS28) was assumed based on data from a publication.

Costs:
The authors reported the perspective and the relevant cost categories appear to have been included. Some of the costs associated with the intervention were reported, but other direct and indirect costs were poorly reported. For example, little detail was provided on how the lost productivity was calculated. Other adjustments to the cost data, such as discounting, were reported and appear to have been valid.

Analysis and results:
An appropriate incremental analysis was performed and the results were adequately reported and discussed. The uncertainty was investigated in a deterministic sensitivity analyses and best- and worst-case scenarios, but a more thorough investigation would have included a probabilistic sensitivity analysis to explore the uncertainty in all variables simultaneously. The authors discussed some limitations to their analysis.

Concluding remarks:
There were some limitations to the analysis and reporting, which means that the conclusions reached by the authors should be considered with caution.

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