Cost-effectiveness of psoriasis therapy with etanercept in Germany
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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.

Health technology
The study examined intermittent therapy with etanercept (25 mg twice weekly) for patients with moderate-to-severe psoriasis. Treatment lasted 12 or 24 weeks on the basis of the patients' response. Etanercept was compared with conventional non-systemic therapy, which comprised purely topical treatment.

Type of intervention
Treatment.

Economic study type
Cost-utility analysis

Study population
The study population comprised a hypothetical cohort of patients with moderate-to-severe psoriasis. Three sub-groups of patients were considered on the basis of disease severity, as represented by two scores, the Psoriasis Area and Severity Index (PASI) and the Dermatology Life Quality Index (DLQI). The three sub-groups were PASI and DLQI greater than 10, PASI and DLQI greater than 15, and PASI and DLQI greater than 20.

Setting
The setting was secondary care. The economic study was carried out in Germany.

Dates to which data relate
The clinical data were derived from studies published between 2003 and 2005. The resource use data were derived from a study and national databases, the publication dates of which were not given (websites provided). The price year was not explicitly reported.

Modelling
A previous Markov model constructed for the UK setting was adapted to the German setting using national data on resource consumption. All other model inputs (probability rates and utility values) remained the same as in the original model. The Markov model used a 10-year time horizon and 4-week cycles. The key transition patterns and health states were described and illustrated using a graph. Patients moved across health states on the basis of response to treatment, which was determined by their improvement in the PASI score.

Study designs and other criteria for inclusion in the review
The clinical data used in the model were the rates of treatment effectiveness (response with etanercept and basal topical treatment), relapse rates, probabilities of treatment discontinuation, and drop-outs.

Sources searched to identify primary studies
All of the clinical data were derived from three randomised clinical trials (RCTs). No other details were provided, although the total number of patients for each PASI level was reported.

Methods used to derive estimates of effectiveness
The primary studies had already been identified in the published model. Search criteria were therefore not reported in the current study. Published estimates were pooled.
Measure of benefits used in the economic analysis
The summary benefit measure used was the expected number of quality-adjusted life-years (QALYs). These were derived using the decision model framework. No details about the calculation of QALYs were presented as they were derived directly from the original analysis. The authors stated that the EuroQol was used in this previous analysis. It was not explicitly stated whether the QALYs were discounted.

Direct costs
The analysis of the costs was carried out using the cost/resource boundary of a statutory health insurance. The key direct medical costs included were outpatient physicians' visits and medications. For patients in the etanercept arm, the costs of side effects were included. For unsuccessfully treated patients, one inpatient hospital stay in one year was also considered. The unit costs and the quantities of resources used were not reported separately for all items. The estimation of resource use was based on a cost of illness analysis recently carried out in the German setting. The costs of physician services were based on the Uniform Value Scale for patients with statutory health insurance (a small number of patients who had private insurance were also included). Drug costs were based on prices given in the Red or Yellow List. Prescription fees and insurers' rebates were not considered. The cost of hospital stay came from current statistics of the Institute for Reimbursement of Hospitals using diagnosis-related group estimates. As a long-term perspective was adopted, the costs were discounted at an annual rate of 5%. The price year was not explicitly reported.

Statistical analysis of costs
The costs and quantities were presumably treated deterministically.

Indirect Costs
Productivity costs were not considered.

Currency
Euros (EUR).

Sensitivity analysis
A deterministic sensitivity analysis was undertaken on some model inputs in order to evaluate the robustness of the model results. Alternative values appear to have been based on authors' assumptions. A sub-group analysis was also performed. This assessed the cost-effectiveness of etanercept in different age groups (20, 30, 40, 50 and 60 years).

Estimated benefits used in the economic analysis
0.96 and 0.82 in patients with PASI and DLQI scores >10;
1.34 and 1.13 in patients with PASI and DLQI scores >15; and
1.74 and 1.37 in patients with PASI and DLQI scores >20.

Cost results
The expected costs associated with etanercept and basal therapy were, respectively:
EUR 47,554 and EUR 41,045 in patients with PASI and DLQI scores >10;
EUR 47,945 and EUR 41,045 in patients with PASI and DLQI scores >15; and

Synthesis of costs and benefits
Since etanercept was more effective and more expensive, incremental cost-utility ratios were calculated in order to combine the costs and benefits of the alternative strategies. The incremental cost per QALY gained with etanercept over basal therapy was:
EUR 45,491 in patients with PASI and DLQI scores >10;

EUR 32,491 in patients with PASI and DLQI scores >15; and

EUR 18,154 in patients with PASI and DLQI scores >20.

The sensitivity analysis showed that the base-case results were relatively stable. Hospital costs were the main cost driver. In general, the cost-effectiveness of etanercept improved with decreasing patient age. For example, for patients with PASI and DLQI scores >20, the incremental cost per QALY was EUR 18,004 at age 20 and EUR 6,207 at age 60.

**Authors' conclusions**

The authors concluded that etanercept, used for the treatment of moderate-to-severe psoriasis, was a cost-effective strategy in comparison with conventional care from the perspective of German health insurance. Older patients and those with more severe disease derived the greatest benefits of etanercept treatment.

**CRD COMMENTARY - Selection of comparators**

The authors provided a justification for their choice of the interventions under examination. In particular, etanercept was chosen from amongst all available treatments as it was recommended by the National Institute for Health and Clinical Excellence for UK settings on the grounds of a cost-effectiveness analysis. The comparator reflected the traditional approach in the authors' context. However, it would have been interesting had etanercept also been compared with other biologics. You should decide whether they are valid comparators in your own setting.

**Validity of estimate of measure of effectiveness**

The clinical data were derived directly from the published decision model. Thus, limited information on the identification and selection of the primary studies was provided. Since RCTs were used as a source of clinical inputs, the validity of these estimates should be high. The authors stated that all the known clinical information on etanercept was considered and that few large studies had been conducted. However, more information on the clinical results of the RCTs would have been interesting. More details might be found in the original publication.

**Validity of estimate of measure of benefit**

The use of QALYs as the summary benefit measure was appropriate not only because QALYs capture the impact of the treatments on both quality of life and survival, but also because they can be compared with the benefits of other health care interventions. Details on the calculation of QALYs were not reported since they had been published in another paper, although the authors did state that the EuroQol was used to elicit preferences. It was not clear how the final QALY results were determined, as the highest QALYs obtained were 1.74 over a time horizon of 10 years.

**Validity of estimate of costs**

The analysis of the costs focused on the German setting. Thus, both the perspective and the sources of economic data were typical of the authors’ context. The approach used to evaluate the long-term costs of the two treatments was satisfactorily described. Specifically, the authors reported the main cost items and their sources. The assumptions made in the economic analysis were also explicitly stated. Some uncertain estimates were tested in the sensitivity analysis. The price year was not explicitly reported, which will limit the possibility of replicating the analysis in other time periods.

**Other issues**

The authors stated that this was the first cost-effectiveness analysis of treatment with biologics for psoriasis in Germany. No comparisons were made with the findings from other studies, and the issue of the generalisability of the study results to other settings was not explicitly addressed. However, it was noted that caution would be required when extrapolating the current results to other patient groups, as it was unclear whether the population of patients enrolled in the RCTs was representative of the general population of patients receiving etanercept. The authors also discussed some issues related to the calculation of some cost categories, such as those related to the management of side effects. It was assumed that etanercept would be discontinued at 12 weeks when remission was reached, but clinical guidelines recommend treatment for 24 weeks.

**Implications of the study**
The study results support the use of etanercept for the treatment of moderate-to-severe psoriasis. The authors recommended that prospective studies be undertaken to corroborate the findings of this study.

**Source of funding**
Supported by a grant from Wyeth Pharma.

**Bibliographic details**

**PubMedID**
17760896

**DOI**
10.1111/j.1610-0387.2007.06489.x

**Other publications of related interest**
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**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Adult; Cost-Benefit Analysis; Etanercept; Female; Germany /epidemiology; Health Care Costs /statistics & numerical data; Humans; Immunoglobulin G /economics /therapeutic use; Male; Models, Economic; Psoriasis /drug therapy /economics /epidemiology; Receptors, Tumor Necrosis Factor /therapeutic use

**AccessionNumber**
22007001934

**Date bibliographic record published**
24/09/2007

**Date abstract record published**
09/08/2008