A pharmacoeconomic analysis of severe psoriasis therapy: a review of treatment choices and cost efficiency
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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 the Food and Drug Administration (FDA) approved therapies for moderate-to-severe psoriasis. The authors concluded that phototherapies and methotrexate had high efficacy for their costs. There were some limitations to the study and the authors’ conclusions should be treated with caution.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to assess the cost-effectiveness of the Food and Drug Administration (FDA) approved therapies for moderate-to-severe psoriasis.

Interventions
The therapies were: phototherapy, using psoralen plus ultraviolet A (PUVA), narrowband ultraviolet B (UVB), or broadband UVB; systemic drugs (acitretin, cyclosporine, or methotrexate); and biologic drugs (adalimumab, alefacept, etanercept, infliximab, or ustekinumab).

Location/setting
USA/out-patient care.

Methods
Analytical approach:
A cost-effectiveness model was constructed based on a previous analysis (Nelson, et al. 2008; see ‘Other Publications of Related Interest’ below for bibliographic details). The time horizon was one year. The authors reported that the perspective was that of the third-party payer.

Effectiveness data:
The effectiveness data were from a review of the literature in the PubMed database. The keywords for the search were reported and randomised controlled trials and systematic reviews or meta-analyses, published in English in the last 10 years, were sought. Articles that assessed the efficacy of single therapy, using the Psoriasis Area and Severity Index (PASI-75) and the Dermatology Life Quality Index (DLQI) were included. These therapy outcomes were the main effectiveness inputs.

Monetary benefit and utility valuations:
None.

Measure of benefit:
The measures of benefit were the percentage of patients who achieved the PASI-75, which was a 75% improvement in their score compared with baseline, and a minimally important difference, which was a change of five points, in the DLQI.

Cost data:
The direct costs were those of medications, office visits, laboratory tests, and monitoring procedures. The resource use
was from clinical experience and published guidelines. Medication unit costs were their average wholesale prices. Other unit costs were from the Medicare reimbursement and fee schedules. The price year was 2010 and all costs were reported in US dollars ($).

Analysis of uncertainty:
None reported.

Results
The average annual cost per patient was $21,736 for acitretin, $28,793 for alefacept, $24,049 for adalimumab, $10,021 for cyclosporine, $24,503 for etanercept 50mg weekly, $48,731 for etanercept 50mg twice weekly, $19,114 for infliximab, $7,697 for PUVA, $1,330 for methotrexate, $6,676 for narrowband UVB, $2,768 for home narrowband UVB, and $22,657 for ustekinumab.

The average unit DLQI improvement was 4.9 for alefacept, 9.5 for adalimumab, 7 for etanercept 25mg twice weekly, 7.5 for etanercept 50mg twice weekly, 9.7 for infliximab, 8.5 for narrowband UVB, 8.5 for home narrowband UVB, and 8.0 for ustekinumab.

The percentage of patients achieving the PASI-75 was 30 for acitretin, 21 for alefacept, 53 to 80 for adalimumab, 70 for cyclosporine, 33 for etanercept 25mg twice weekly, 49 to 57 for etanercept 50mg twice weekly, 80 for infliximab, 80 to 86 for PUVA, 36 to 60 for methotrexate, 42 to 80 for narrowband UVB, 41 for home narrowband UVB, and 67 for ustekinumab.

The incremental cost-effectiveness ratio, compared with placebo for methotrexate was $657 to $1,094 per additional patient achieving the PASI-75. Narrowband UVB, PUVA, cyclosporine, infliximab, ustekinumab, and adalimumab all had ratios below $40,000 per PASI-75, compared with placebo. Alefacept had the highest ratio at $124,800 per PASI-75.

Authors’ conclusions
The authors concluded that phototherapy and methotrexate were very effective for their costs.

CRD commentary
Interventions:
The interventions were reported clearly and in detail. They appear to have been appropriate comparators and included the usual practices in the authors' setting.

Effectiveness/benefits:
The authors reported that a review was undertaken in PubMed. They gave the key search terms, inclusion criteria, and the dates searched. Only one database was searched and relevant articles might have been missed, but it seems that all the major relevant studies were included. It was unclear if a meta-analysis or a mixed-treatment comparison was used to standardise or combine the outcome measures (PASI-75 and DLQI), making it unclear if these estimates were reliable. These outcome measures were disease specific and will not allow comparisons with other disease areas or interventions. This limits the generalisability of the results and makes it difficult to assess the cost-effectiveness of the interventions.

Costs:
The perspective was explicitly reported and it appears that all the major costs relevant to the third-party payer perspective were analysed. The authors reported the sources for the unit costs and resource use. The price year, time horizon, and currency used were all reported.

Analysis and result:
The authors used a published model to assess the costs and efficacy of each of the interventions; no diagram was provided. No sensitivity analysis was carried out, making it impossible to assess the uncertainty around the estimates. The authors compared each intervention incrementally against placebo, but did not compare them incrementally with each other. It was unclear if the evidence was appropriately synthesised, which reduces the reliability of the results.

Concluding remarks:
There were some limitations to the study and the authors’ conclusions should be treated with caution.

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