A cost-utility analysis of pimecrolimus vs. topical corticosteroids and emollients for the treatment of mild and moderate atopic eczema

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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 use of topical corticosteroids (TCS) as a first-line treatment followed by pimecrolimus as a second-line treatment, and pimecrolimus as a first-line treatment followed by TCS, in the treatment of mild and moderate atopic eczema.

Type of intervention
Treatment.

Economic study type
Cost-utility analysis.

Study population
This study used four study populations. Specifically, children with mild to moderate facial eczema, children with mild to moderate body eczema, adults with mild to moderate facial eczema and adults with mild to moderate body eczema.

Setting
The setting was primary and secondary care. The economic study was carried out in the UK.

Dates to which data relate
The effectiveness evidence was taken from papers published between 2001 and 2002. The resource use data were either estimated by a clinical advisory panel or taken from a study published in 1997. The price year was 2003.

Source of effectiveness data
The effectiveness data were derived from a review or synthesis of published studies and estimates of effectiveness based on opinion.

Modelling
A Markov state transition model was used to estimate the effectiveness and utility of the treatment options in the four patient cohorts. The structure of the model was reported clearly. The models for the child cohorts ran for 14 years, whilst those for adults ran for 1 year. All models had a cycle length of 1 month.

Outcomes assessed in the review
There were too many probabilities in the model to report them all here. The data included probabilities of successful outcome and moderate improvement from different treatments and the probabilities of treatments following failed treatments.
Study designs and other criteria for inclusion in the review
Where possible, the authors took their model parameters from a systematic review of randomised controlled trials (RCTs). Where this was not possible they took data from an RCT.

Sources searched to identify primary studies
The authors did not report many details of the review as it had already been published (Ashcroft et al. 2005, see 'Other Publications of Related Interest' below for bibliographic details).

Criteria used to ensure the validity of primary studies
Not reported.

Methods used to judge relevance and validity, and for extracting data
Not reported.

Number of primary studies included
The model parameters were taken from three papers.

Methods of combining primary studies
Not reported.

Investigation of differences between primary studies
Not reported.

Results of the review
There were too many clinical parameters to report here.

Methods used to derive estimates of effectiveness
A clinical advisory panel was used to identify some model parameters that could not be obtained from the literature. These included the probabilities of successful outcome and moderate improvement from low-, mid- and high-potency TCS.

Estimates of effectiveness and key assumptions
There were too many parameters in the paper to report them here.

Measure of benefits used in the economic analysis
The measure of health benefit used was the quality-adjusted life-years (QALYs) gained. The valuation of health states for children were taken from a study based on the Parent’s Index of Quality of Life, while the valuations for adults were taken from a study that sought valuations from the public using standard gamble methods. The model involved transitions between treatment states rather than health states, thus weighted averages of utilities for health states were used to determine the utilities of the treatment states.

Direct costs
The direct costs of the NHS were identified in this study. The costs of general practitioner (GP) visits, consultant visits and drugs were included. The costs of adverse outcomes were not included as they usually result in the discontinuation
of treatment in the short term. The unit costs of drugs were taken from the British National Formulary. The sources of the unit costs of GP and consultant visits were not reported in the paper. The paper gave a breakdown of resource use and unit costs. Future costs were discounted at a rate of 3.5% per annum. The price year was 2003.

**Statistical analysis of costs**
No statistical analysis of the cost data was undertaken.

**Indirect Costs**
No indirect costs were included in the study.

**Currency**
UK pounds sterling (€).

**Sensitivity analysis**
One-way and probabilistic sensitivity analyses were undertaken to assess uncertainty in the data. Plausible maximum and minimum values were used for the one-way sensitivity analysis.

**Estimated benefits used in the economic analysis**
The following estimated benefits were reported.

For children with mild or moderate body eczema (14-year horizon):

TCS alone, 10.23 QALYs;
TCS followed by pimecrolimus, 10.21 QALYs;
pimecrolimus followed by TCS, 10.10 QALYs.

For children with mild or moderate face eczema (14-year horizon):

TCS alone, 10.25 QALYs;
TCS followed by pimecrolimus, 10.11 QALYs;
pimecrolimus followed by TCS, 10.13 QALYs.

For adults with mild or moderate body eczema (1-year horizon):

TCS alone, 0.950 QALYs;
TCS followed by pimecrolimus, 0.947 QALYs;
pimecrolimus followed by TCS, 0.948 QALYs.

For adults with mild or moderate face eczema (1-year horizon):

TCS alone, 0.949 QALYs;
TCS followed by pimecrolimus, 0.943 QALYs;
pimecrolimus followed by TCS, 0.949 QALYs.
Cost results
The following total costs were identified.

For children with mild or moderate body eczema (14-year horizon):
TCS alone, 387.31;
TCS followed by pimecrolimus, 474.82;
pimecrolimus followed by TCS, 1,958.57.

For children with mild or moderate face eczema (14-year horizon):
TCS alone, 270.71;
TCS followed by pimecrolimus, 461.45;
pimecrolimus followed by TCS, 788.64.

For adults with mild or moderate body eczema (1-year horizon):
TCS alone, 49.98;
TCS followed by pimecrolimus, 83.17;
pimecrolimus followed by TCS, 354.44.

For adults with mild or moderate face eczema (1-year horizon):
TCS alone, 38.65;
TCS followed by pimecrolimus, 69.17;
pimecrolimus followed by TCS, 132.87.

Synthesis of costs and benefits
In all cases, treatment with TCS alone was shown to be the dominant option. The one-way sensitivity analyses indicated that the results were particularly sensitive to changes in the cost data. The probabilistic analysis showed that there was a high degree of uncertainty around the results.

Authors' conclusions
There were few circumstances where the use of pimecrolimus for the treatment of atopic eczema could be justified on economic grounds.

CRD COMMENTARY - Selection of comparators
This study compared the use of pimecrolimus, either as first- or second-line treatment for atopic eczema, with treatment with TCS alone. No explicit rationale for this choice of the comparator was provided in the paper, but it appears to have been usual practice in the authors' setting. You should consider how these relate to usual practice in your own setting before applying the results of this study.

Validity of estimate of measure of effectiveness
The measure of effectiveness was modelled using data from published studies. Where possible, the authors obtained
parameters from a systematic review. Although the authors conducted the systematic review, it was reported elsewhere and no details of the methods used were included in this paper. The authors sought data not available from their systematic review from RCTs. No details of the methods used to identify the trials, or how data from the two trials were combined to provide a single estimate, were provided in this paper. Where the authors were not able to source data from the systematic review or an RCT they used a clinical advisory panel. No details of how the panel reached their decisions were given in this paper. This means it is not possible to assess the quality of the approach and the resultant data. No sensitivity analysis was undertaken to assess the impact of uncertainty in these data.

**Validity of estimate of measure of benefit**
The authors used QALYs to measure health benefit. This enables the results of this study to be compared with other studies of similar conditions and interventions for a range of conditions.

**Validity of estimate of costs**
The costs of the NHS were identified in this study. The authors noted that they did not include any costs for adverse events since they usually result in the discontinuation of treatment. As the paper did not provide details of adverse events for the interventions, it was unclear how this omission would impact on the cost results. Future costs were discounted appropriately. A breakdown of resource use and unit costs was provided. Comprehensive sensitivity analyses were undertaken to assess uncertainty in the data. These factors add to the generalisability of the study findings. A clear price year was reported, which will enable future reflation exercises to be performed.

**Other issues**
The authors do not appear to have presented their results selectively. Their conclusion reflected the analysis and acknowledged the uncertainty around their findings. They did not compare their study with other similar work. The study aimed to represent the position in the UK. The authors did not consider whether their findings might be applied to other countries.

**Implications of the study**
The authors stated the need for an RCT that directly compares the use of pimecrolimus and TCS.

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**Bibliographic details**

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**Other publications of related interest**

**Indexing Status**
Subject indexing assigned by NLM
MeSH
Adult; Child; Costs and Cost Analysis; Dermatitis, Atopic /drug therapy /economics; Drug Costs; Drug Therapy, Combination; Emollients /economics /therapeutic use; England; Glucocorticoids /economics /therapeutic use; Humans; Immunosuppressive Agents /economics /therapeutic use; Markov Chains; Quality of Life; Sensitivity and Specificity; Severity of Illness Index; Tacrolimus /analogs & derivatives /economics /therapeutic use; Treatment Failure; Treatment Outcome

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