United States cost-effectiveness study of two dry eye ophthalmic lubricants

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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 two ophthalmic lubricants commonly used in the treatment of dry eye. The authors concluded that Systane was cost-effective when compared with Refresh Tears. Given the uncertainty surrounding the selection of the clinical evidence, the authors' conclusions should be considered with caution.

Type of economic evaluation
Cost-effectiveness analysis, cost-utility analysis

Study objective
The objective was to assess the cost-effectiveness of two ophthalmic lubricants commonly used in the treatment of dry eye.

Interventions
The two ophthalmic lubricants for dry eye were Systane and Refresh Tears.

Location/setting
USA/primary care.

Methods
Analytical approach:
The authors linked the clinical results of a meta-analysis of data from published literature to the utility and cost data. The time horizon was one year and the authors reported that a societal perspective was taken.

Effectiveness data:
A systematic review was undertaken by searching for studies published before 30th April, 2007 and included in MEDLINE, EMBASE, and the Cochrane Library. Only clinical trials comparing the efficacy of Systane with that of Refresh Tears were included and the search strategy was reported. The manufacturer of Systane (Alcon Research, Ltd) was also approached for clinical evidence. This evidence was assessed by two reviewers and the results of two trials were combined, using meta-analysis. From this meta-analysis, the authors derived the main effectiveness measure, which was the improvement in the symptom of dryness.

Monetary benefit and utility valuations:
The utility estimates were from a published study (Schiffman, et al. 2003, see ‘Other Publications of Related Interest’ below for bibliographic details).

Measure of benefit:
Quality-adjusted life-years (QALYs) gained and the symptom response rate were the measures of benefit.

Cost data:
In the base case, only the costs of Systane and Refresh Tears were included and the authors assumed there was no difference in the number of visits to general eye practitioners and specialists between the two groups. The price year was 2006 and all costs were reported in US dollars ($).

Analysis of uncertainty:
A series of one- and two-way sensitivity analyses were performed by: including the costs associated with visits to
general eye practitioners and specialists; varying the utility rates; varying the drug costs; and varying the response rates.

Results
The average cost per patient was $228.93 with Systane and $171.15 with Refresh Tears. The average response rate was 75% with Systane and 41% with Refresh Tears. The average QALYs gained were 0.023 with Systane and 0.013 with Refresh Tears.

Compared with Refresh Tears, the additional cost per QALY gained with Systane was $5,837 and the additional cost per incremental responder was $175.

The results of the sensitivity analysis showed that if a poor response to Refresh Tears was associated with more out-patient visits, the additional cost of Systane would be outweighed by the savings in out-patient visit costs.

Authors' conclusions
The authors concluded that the incremental cost-effectiveness ratio of Systane versus Refresh Tears was well below the generally accepted $50,000 per QALY threshold.

CRD commentary
Interventions:
The interventions were adequately reported.

Effectiveness/benefits:
The methods used to identify the relevant trials that supplied data for the analysis were reported in full. The sources searched, the exclusion criteria, the search strategy, and the methods used to combine the data were all reported. It is not sufficiently clear why the two studies in the meta-analysis were included and why the others were not. The authors only approached one of the manufacturers for additional evidence and it is unclear whether there was selection bias in determining the clinical evidence for the analysis. There might also have been other clinically relevant outcomes, such as an adverse event related to the treatments.

Costs:
The authors reported that a societal perspective was adopted, but only the costs of the two treatments were included. There may have been no wider societal costs associated with this condition, but this should have been discussed. The costs of visits to general eye practitioners and specialists should have been included in the main analysis, but were analysed in a sensitivity analysis. The price year and the currency were reported. The costs were incurred over one year and discounting was not relevant and not performed.

Analysis and results:
The authors reported that all the identified cost and outcome evidence was synthesised in an economic model. A series of one- and two-way sensitivity analyses were performed to test the impact of uncertainty on the model's results, but probabilistic sensitivity analysis was not undertaken. This type of analysis is considered to be the gold standard in the UK for evaluating overall model uncertainty. The authors reported the limitations of their study and the main one was the short time horizon.

Concluding remarks:
Given the uncertainty surrounding the selection of the clinical evidence, the authors' conclusions should be considered with caution.

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