Early office-based vs late hospital-based nasolacrimal duct probing: a clinical decision analysis

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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
Nasolacrimal duct probing in infants.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Infants between the ages of 6 months and 1 year.

Setting
Hospital setting. The study was carried out in the USA.

Dates to which data relate
Effectiveness and outcome data related to studies conducted between 1979 and 1987. Prices were determined from 1992 data.

Source of effectiveness data
Effectiveness data was derived from a review of previously completed studies and opinions.

Modelling
A decision tree was used to determine final costs.

Outcomes assessed in the review
1. Success rates of office-based and hospital-based treatment for nasolacrimal duct obstruction in infants and children between 3 months and 7 years.

2. Success rates for repeated early office-based treatment and repeated hospital-based probing.

3. The probability of spontaneous resolution of the condition in infants aged 6-12 months.

4. The anaesthesia-related mortality rate for infants aged 6-12 months.
Study designs and other criteria for inclusion in the review
The authors did not specify the criteria for inclusion of studies. The studies assessed examined the outcomes of treatment strategies based either in an office or hospital setting at various ages of infants and young children. Anaesthesia-related mortality rates were derived from statistics reported in medical literature.

Sources searched to identify primary studies
Not stated.

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

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

Number of primary studies included
A total of 8 studies were included in the review.

Methods of combining primary studies
Not combined.

Investigation of differences between primary studies
Not stated.

Results of the review
The success rates for office-based probing was found to be 94%. Hospital-based success rates were 93.5%, 97% and 96.3%. The authors assumed the success rate for both office and hospital-based treatment to be 95%. Repeat probing success rates were found to be 92% and 79% for office and hospital-based probing respectively. However, these results were not incorporated into the decision tree/clinical decision analysis. The anaesthesia-based mortality rate was estimated to be 0.01%.

Methods used to derive estimates of effectiveness
Authors’ assumptions.

Estimates of effectiveness and key assumptions
In the model, the effectiveness of early office-based probing was calculated to be 99.6%. The late hospital probing strategy yielded an effectiveness figure 99.9%. The authors assumed that anaesthesia-related mortality rates and repeat probing incidences were low enough to be ignored in the decision tree construction.

Measure of benefits used in the economic analysis
As the effectiveness of both office-based and hospital-based treatments gave benefits greater than 99%, the economic analysis was based on the difference in costs only.

Direct costs
Direct costs included physician costs for office and hospital-based treatment, anaesthesia fee and operating room
charges (including ancillary studies and recovery room). Some costs and quantities were reported separately. 1992 prices were used.

Currency
US dollars ($)

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
The average cost per patient undergoing early office probing was calculated to be $116. The average cost per patient receiving late hospital-based probing was $347. The late hospital treatment strategy would therefore cost $2,310,000 more than the early office strategy per 10,000 patients.

Synthesis of costs and benefits
Not applicable.

Authors' conclusions
As both strategies yield similar effectiveness results (>99%), early office-based probing is more cost-effective (dominant strategy).

CRD Commentary
The decision analysis technique used was described quite accurately. However, both the clinical and cost data analyses appear poor, and no sensitivity analysis was carried out.

The following points are acknowledged by the authors as being limitations of the study:

1. Mortality rates exist for hospital-based treatment but these were not taken into account in the construction of the decision tree as the authors claimed their values were too low to affect the results.

2. Estimates of repeat treatment success rates were arbitrarily assigned due to a lack of comprehensiveness in relation to available literature with suitable data.

3. The limitations of clinical decision analysis using decision trees cannot fully address the philosophical arguments relating to treatment choices, and a randomised controlled trial (RCT) would be required to provide more scientific evidence in relation to these two strategies.

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Bibliographic details