Probing for nasolacrimal duct obstruction with intravenous propofol sedation
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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
Probing for nasolacrimal duct obstruction in neonates with intravenous propofol sedation.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Children with nasolacrimal duct obstruction who have failed with conservative treatment.

Setting
Hospital. The economic study was set in the USA.

Dates to which data relate
Effectiveness, resource use, and cost data were collected between April 1996 and September 1997. The price year was 1997.

Source of effectiveness data
Effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample as that used in the effectiveness analysis.

Study sample
22 patients underwent initial nasolacrimal duct probing with propofol sedation, compared with 7 patients who had probing under general anesthesia. Exclusion criteria were significant cardiac, pulmonary, or craniofacial abnormalities. No power calculations were reported.

Study design
This was a retrospective cohort study carried out at a single centre. Patients were followed up until four weeks after the operation. No patients were lost to follow-up.
Analysis of effectiveness
The analysis of the clinical study was based on intention to treat. The primary health outcomes included resolution of symptoms, procedure time and recovery time. The authors did not compare groups in terms of baseline demographic characteristics.

Effectiveness results
100% of eyes in the group aged 6 to 13 months, and 83% of eyes in the group aged 13 to 18 months, had total resolution of symptoms after the initial probing with propofol sedation. Of the three eyes in the group aged 13 to 18 months that failed after initial probing, two had resolution of symptoms after repeat nasolacrimal duct probing under intravenous propofol sedation, and one had resolution of symptoms after repeat nasolacrimal duct probing under general anesthesia. 100% of the eyes in the group aged 18 to 24 months, and 67% of eyes in the group older than 24 months, had total resolution of symptoms after the initial probing. Of the two eyes that failed the initial probing in the group older than 24 months, both had resolution after placement of silicone tubes. Procedure and recovery time were 10.5 and 13.6 minutes for patients probed under propofol sedation; a total time of 24.1 minutes. Procedure and recovery time were 43.6 and 121.1 minutes for patients probed under general anesthesia; total time 164.7 minutes.

Clinical conclusions
Late probing of the nasolacrimal duct under intravenous propofol sedation is effective and is a shorter procedure.

Measure of benefits used in the economic analysis
The authors did not use a summary measure of benefit and only individual clinical outcomes were reported. The study was therefore of cost-consequences design.

Direct costs
Direct costs were not discounted due to the short time horizon of the study (less than 1 year). Quantities and costs were not reported separately. Direct costs related to the costs of the procedure. The quantity/cost boundary adopted was that of the hospital. The estimation of quantities and costs was based on actual data. Costs and quantities were collected from the hospital billing system. The price year was 1997.

Indirect Costs
Indirect costs were not included.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was reported.

Estimated benefits used in the economic analysis
Not applicable. See Effectiveness Results reported above.

Cost results
Charges amounted to $2,988 for probing under general anesthesia and $1,958 for probing under propofol sedation.

Synthesis of costs and benefits
Authors’ conclusions
Late probing for nasolacrimal duct obstruction under intravenous propofol sedation is comparable in efficacy to late probing under general inhalational anesthesia with a shorter time for the procedure and decreased expense.

CRD COMMENTARY - Selection of comparators
The choice of comparator was justified as a widely used method of anaesthesia. You, as a user of the database, should decide if this health technology is relevant to your setting.

Validity of estimate of measure of benefit
The analysis was based on a retrospective observational study, and is therefore prone to biases. The study sample was representative of the study population. However, the authors did not compare patient groups at analysis. The study sample was small, and thus may not have been powered to detect differences. The authors did not derive a summary measure of health benefit. The analysis was therefore a cost-consequences design.

Validity of estimate of costs
Very limited details of the methods of cost estimation were reported. Quantities and costs were not reported separately. No statistical or sensitivity analyses were reported on quantities or costs, and charges were used to proxy prices. The cost results apply to the authors’ setting, but they might not apply to other settings and countries.

Other issues
The authors did make appropriate comparisons of their findings with those from other studies, but did not address the issue of generalisability to other settings. The authors did not present their results selectively. The study considered patients with nasolacrimal duct obstruction and this was reflected in the authors’ conclusions. The authors did not consider the requirement for an anesthesiologist who feels comfortable placing an intravenous line in a conscious infant and administering propofol, or the fact that verification of patency of the nasolacrimal duct is not possible.

Implications of the study
The authors’ conclusion that late probing for nasolacrimal duct obstruction under intravenous propofol sedation is comparable in efficacy to late probing under general inhalational anesthesia with a shorter time for the procedure and decreased expense should be treated with a degree of caution bearing in mind the study limitations. Further research is needed to assess the cost-effectiveness of intravenous propofol sedation for probing nasolacrimal duct obstruction.

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Bibliographic details

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MeSH
Anesthesia, Intravenous /economics /methods; Anesthetics, Intravenous /administration & dosage; Child, Preschool; Comparative Study; Cost-Benefit Analysis; Hospital Costs; Humans; Infant; Lacrimal Duct Obstruction /surgery;