Economic comparison of a tissue adhesive and suturing in the repair of pediatric facial lacerations

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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
Repair of pediatric facial lacerations using: non-dissolving sutures, dissolving sutures, or a tissue adhesive (Histoacryl blue).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population was pediatric patients with facial lacerations. Based on a previously healthy child, less than 18 years old and based in a tertiary-care paediatric hospital.

Setting
The setting was a hospital and the economic study was conducted in Ottawa, Ontario, Canada.

Dates to which data relate
Dates for the effectiveness data were not clearly stated. 1993 prices were used in measuring costs.

Source of effectiveness data
The effectiveness data is derived from a review/synthesis of previously completed studies.

Modelling
A parental willingness to pay model was applied to the three methods of treating simple pediatric facial lacerations.

Outcomes assessed in the review
The outcomes assessed were the cosmetic outcome for the three methods and the rate of dehiscence and infection.

Study designs and other criteria for inclusion in the review
Not stated.

Sources searched to identify primary studies
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
Three studies seem to have been used.

Methods of combining primary studies
Narrative method.

Investigation of differences between primary studies
Not performed.

Results of the review
Efficacy, complication rate and cosmetic outcome were found to be approximately equal between the three methods.

Measure of benefits used in the economic analysis
Cosmetic outcome, rate of dehiscence and infection (complication rate). A willingness to pay study was undertaken, valued by the parents of children in the emergency paediatric department. Parents' willingness to pay for the three methods of wound closure was surveyed by using a convenience sample of 30 parents in the Emergency Department.

Direct costs
Costs and quantities were reported separately. Data from the literature and clinicians' opinions were used to make cost estimates. Direct health service costs were considered such as physicians’ time, pharmaceuticals and materials. Material costs were valued by using the purchase price charged to the pharmacy, stores and purchasing departments of the Children's Hospital of Eastern Ontario. 1993 prices were used.

Statistical analysis of costs
The Pearson correlation coefficient was used to measure the association between the parents' willingness to pay and their family income. 95% confidence intervals were calculated using the Gardner and Altman method.

Indirect Costs
The costs incurred by society due to time taken off work by parents was included.

Currency
Canadian dollars (Can$). (CAN$1=US$0.75).

Sensitivity analysis
Sensitivity analysis was performed for the costs of physician, assistant, tissue adhesive and parental hours of lost wages.
Estimated benefits used in the economic analysis
Cosmetic outcome, rate of dehiscence and infection (complication rate) were assumed to be equal across the options. Parents were willing to pay a median of Can$40 (Can$ 25 to 100) for tissue adhesive and Can$25 (Can$ 10 to 56) for dissolving sutures if only non-dissolving sutures were provided by the health care system (p=0.1).

Cost results
The reduction in costs per patient of switching from the standard non-dissolving sutures was Can$ 49.60 for switching to tissue adhesive and Can$ 37.90 for dissolving sutures. The cost of parent follow-up was a major reason for the difference. Parental costs per patient were $26.28 for the non-dissolving sutures and no parental costs were incurred for the other 2 methods. Dissolving sutures are more costly to use than tissue adhesives. On the basis of 620 simple facial lacerations per year seen at the Children's Hospital, dissolving sutures and tissue glue would save $23,498 and $30,752 respectively, over the conventional non-dissolving sutures. Some common costs were excluded from the analysis.

Synthesis of costs and benefits
At equal cosmetic outcomes, incremental costs of switching from non-dissolving sutures to tissue adhesive or dissolving sutures were shown to be negative. When the costs and parents' work time costs were varied in the sensitivity analysis the results did not change.

Authors' conclusions
Tissue adhesive is the preferred method of closure of paediatric facial lacerations because it results in the most efficient use of resources and is preferred by the majority of parents.

CRD Commentary
This is a good study which assumes from external sources that the health outcomes are equivalent between the methods (although it is suggested that pain is a factor that does vary between the treatments). It included the costs to society incurred by parents taking time off work for follow-up appointments which biased the costs against non-dissolving sutures. It was also an interesting willingness-to-pay (WTP) study which, however, suggested that outcomes are not similar with respect to pain. The resources used appear to be assumed from hospital protocols. However, a minor point is that the exclusion of common cost components can bias the use of the study results.

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