Management of pediatric blunt splenic injury: comparison of pediatric and adult trauma surgeons
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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
Management of pediatric blunt splenic injury by different surgeons (paediatric and adult trauma).

Type of intervention
Treatment (disease management).

Economic study type
Cost-effectiveness study.

Study population
Children aged under 19 years with blunt splenic injury.

Setting
Hospital. The study was conducted by the Department of Pediatric Surgery, University of Vermont, USA.

Dates to which data relate
Effectiveness data were collected between 1985-1991. Dates relating to resources and prices used were not stated.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
Costing was undertaken retrospectively on the same patient sample as that used in the effectiveness study.

Study sample
817 children were included in the study. Patients with a diagnosis of injury to the spleen with open wound into the abdominal cavity were excluded. Data on 675 children were from the national registry, and 142 from the State registry. Power calculations were not used to determine sample size.

Study design
Retrospective case series. The study was multi-centre, with data from 79 centres, although the length of stay and cost data were based on 17 hospitals.
Analysis of effectiveness
The analysis of the clinical study was based on intention to treat. The primary health outcomes used in the analysis were: frequency of operative intervention, splenectomy rate, acute mortality rate, transfusion requirements and length of hospital stay. Follow-up was until hospital discharge.

Effectiveness results
21% of the children managed by pediatric surgeons and 52% of those managed by adult trauma surgeons underwent operative intervention for splenic injury (P<.05). When matched for injury severity status, the results were still significant. The overall splenectomy rate was higher among cases treated by nonpediatric surgeons (24% v 13%; P<.05). This was still significant when adjusted for injury severity status (available on children over 10 years old). Transfusion frequency and actual volume of blood product were lower for patients managed nonoperatively. Length of hospital stay and acute mortality rates were similar for both groups. A comparison of the two types of surgeons at a hospital that had both managing these patients found that adult trauma surgeons were more likely to treat operatively (61% vs 17%), although this was not tested for significance.

Clinical conclusions
The management of children with splenic injury must take into consideration the long-term morbidity associated with splenectomy. Today, adult trauma surgeons appear to manage children with splenic injury with practice standards more appropriate for adult patients.

Measure of benefits used in the economic analysis
Frequency of operative intervention, splenectomy rate, transfusion requirements, acute mortality rate, length of hospital stay.

Direct costs
Only hospital costs were considered. With the exception of length of stay data, quantities were not analysed separately. Price date was not stated. A graph showing the hospital costs in the 17 state hospitals was presented, but no information was given on how these costs were derived.

Statistical analysis of costs
Statistical significance was determined by Fisher's exact test, x2 analysis with Yate's correction or analysis of variance. A P value of less than .05 was considered significant.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
21% of the children managed by pediatric surgeons (PS) and 52% of those managed by adult trauma surgeons (ATS) underwent operative intervention for splenic injury. The splenectomy rate was higher among cases treated by adult trauma surgeons (24% v. 13%). Transfusion frequency and volume of blood product were lower for patients managed nonoperatively. LOS and acute mortality rate were similar for both groups.

Cost results
Hospital costs varied between $4,000 and $6,000 for nonoperative intervention, depending on the severity of the case. Hospital costs varied between $6,000 and more than $10,000 for the operative approach. There was no significant difference in the length of stay. Side-effects of the treatment were not considered although the authors suggest that they might be important.

**Synthesis of costs and benefits**

No synthesis was performed. However, the incremental costs were negative and incremental benefits were positive for non-operative intervention.

**Authors' conclusions**

Clear differences exist in the management of pediatric patients with blunt splenic injury cared for by ATS and PS. ATS treating the injured child need to appreciate the child's unique anatomic, physiological and immunologic variations and incorporate them in appropriate treatment protocols, and avoid operative techniques more suited to adult patients.

**CRD Commentary**

Unfortunately no resource use data were provided in this study and no source was given for the cost data. More information is needed on how the economic evaluation was conducted. It is possible that there were changes in the management of patients over the 6 years during which the data were collected. The authors make the point that the data sets used were not fully comparable - one is hospital based and the other is rural based. Rural hospitals may function differently from urban hospitals for a variety of reasons.

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