A short stay or 23-hour ward in a general and academic children's hospital: are they effective

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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
The use of a short-stay or observation ward (23-hour) (SSW) in a paediatric unit of a large teaching hospital and an academic children's hospital was under evaluation. The SSW is physically a part of the emergency department (ED), with all children admitted to the SSW coming to the hospital via the ED. The emergency physician determines which children are candidates for the SSW. The acute care team in the SSW consists of the emergency physician, a senior nurse bed manager, a clinical nurse, a discharge nurse and an emergency registrar or resident.

Type of intervention
Other: Management care.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised children whose medical care or observation was expected to last longer than 4 hours but less than 23 hours, who had a condition which responded to rapid ED stabilisation or simple intervention, and who required a short period of extended observation before discharge.

Setting
The setting was secondary and tertiary care. The economic study was carried out in Australia.

Dates to which data relate
The effectiveness data were collected from April 1994 to April 1995 for the general hospital, and from November 1996 to November 1998 for the academic children's hospital. The price year was not reported. The resource data were collected retrospectively from 1993 and 1997.

Source of effectiveness data
The effectiveness data were derived from a prospective study.

Link between effectiveness and cost data
The costing was carried out retrospectively on the same sample of patients as that used in the effectiveness study.

Study sample
Power calculations were not reported. A total of 1,300 children from the general hospital and 4,948 children from the academic children's hospital were managed in a SSW. The SSW ward accounted for 10.3% (general hospital) and
14.7% (academic children's hospital) of all admissions. Of these admissions, 56% were medical in nature, 30% surgical, and the remainder procedural or psychological.

**Study design**
The study design was not well described. It would appear to be a comparative study with a historical control that was carried out in two centres. Patient follow-up was attempted at 72 hours after discharge in all cases.

**Analysis of effectiveness**
The analysis of the clinical study was conducted on an intention to treat basis. All the data were collected using a hospital-specific computer data system (CATS). The primary health outcomes used in the study were:

- the duration of admission or length of patient stay;
- the number of critical incidents, as defined by the Australasian College for Emergency Medicine;
- readmission within 72 hours of discharge for the same or related condition; and
- parental satisfaction, derived from qualitative surveys regularly conducted throughout the study periods in the SSW.

The admission patterns were similar, with asthma, gastroenteritis, convulsion, pneumonia and simple surgical conditions accounting for most SSW admissions. The two hospitals involved in the study reported modest seasonal variations in the total numbers presenting to the EDs. The chief differences between the two hospitals were in the total number of presentations to the ED, with many more patients needing tertiary care at the academic children's hospital.

**Effectiveness results**
There were no critical incidents or adverse discharge events in the two settings. No statistical results were reported.

There was an unscheduled visit within 72 hours of SSW discharge for 4 patients (0.4%) at the general hospital, compared with 86 patients (1.7%) at the academic children's hospital, (p<0.0001).

The SSW reported high parental satisfaction in the two settings. No statistical results were reported.

The SSW improved the follow up of children in the two settings. Eighty-five per cent of all discharges from the SSW at the general hospital and 96% of those at the academic children's hospital were reviewed within 3 days. Ninety-eight per cent of all discharges from the SSW at the general hospital and 97% of those at the academic children's hospital were reviewed within 1 week. No statistical results were reported.

The SSW reduced inpatient admission by 10.3% (5,315 in 1993 compared with 4,766 in 1994) at the general hospital and by 14.7% (8,065 in 1997 compared with 6,873 in 1998) at the academic children's hospital. No statistical results were reported.

**Clinical conclusions**
The SSW model achieved efficient bed management and patient care in both a general and an academic children's hospital. Compared with in-hospital care, it was associated with greater parent satisfaction and the early return of the child with their family to the community.

**Measure of benefits used in the economic analysis**
No summary benefit measure was used in the economic evaluation. The study was, in effect, a cost-consequences analysis.
Direct costs
The SSW was developed through reallocation of resources from within the hospital to the SSW. The category of costs included in the analysis was the potential cost-savings to each hospital after the introduction of the SSW, which were defined as the reduction in inpatient bed days. Any reductions (differences in admission numbers for the ED were converted into bed days based on an average length of stay of 3 days) were considered potential savings in cost to the hospital as a result of the SSW. The unit costs and the quantities of resources used were not presented separately. The cost/resource boundary of the study was reported. The resource use data were derived using actual data coming from the sample of patients involved in the effectiveness study. Discounting was not relevant as the costs were incurred in less than 2 years. The price year was not reported. The cost-savings were calculated over 12 months for the general hospital, and over 2 years for the academic children's hospital.

Statistical analysis of costs
A statistical analysis of the costs was not carried out.

Indirect Costs
The indirect costs were not included.

Currency
Australian dollars (Aus$).

Sensitivity analysis
Sensitivity analyses were not performed.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The SSW resulted in potential savings of Aus$288,288 over 12 months (a saving of $221 per SSW admission) at the general hospital, compared with potential savings of $2,383,139 over 2 years (a saving of $479 per SSW admission) at the academic children's hospital.

Synthesis of costs and benefits
A synthesis of costs and benefits was not relevant, as a cost-consequences analysis was carried out.

Authors' conclusions
The short-stay or observation ward (SSW) model achieved efficient bed management and patient care in a cost-neutral environment, with savings reported in both a general hospital and an academic children's hospital.

CRD COMMENTARY - Selection of comparators
The choice of in-hospital care as the comparator was explicitly justified, as it represented a routine practice in paediatric units. You should decide whether it represents a valid comparator in your own setting.

Validity of estimate of measure of effectiveness
The analysis of effectiveness was based on a comparative study with a historical control that was conducted in two centres. A prospective randomised controlled trial would have been a more appropriate design for the study question, as
selection bias might have occurred in the absence of random assignment. Further, few health outcome comparisons were supported by statistical analyses. In addition, the tool used to evaluate parent satisfaction was insufficiently described. Hence, there is uncertainty about the relevance of the questionnaire used.

**Validity of estimate of measure of benefit**
No summary benefit measure was used in the analysis because, in effect, a cost-consequences analysis was carried out.

**Validity of estimate of costs**
The perspective of the study was that of the hospital. The authors explained that no additional funding was made available for the development of a specific SSW. Therefore, cost-savings were based on the reduction in inpatient bed days. Details of the unit costs and quantities of resources used were not reported, which limits the transferability of the economic analysis to other settings. It is likely that the cost estimates were derived from a single centre and were specific to the study setting. The date to which the prices related was not reported, which will hamper any reflation exercises. Discounting was not relevant and was not carried out. The main drawback of the cost analysis was that statistical and sensitivity analyses were not performed on the costs. Consequently, the external validity of the study might be low.

**Other issues**
The authors compared their effectiveness results with those from other countries, then addressed the issue of the generalisability of the study results to other settings. The study enrolled children and this was reflected in the authors' conclusions. The results were not reported selectively and the effectiveness conclusions reflected the scope of the study. The authors did not report any further limitations of their study. Sensitivity analyses were not performed to account for variability in the cost or effectiveness data. Consequently, caution should be exercised when extrapolating the study results to different contexts.

**Implications of the study**
The authors did not report any specific implications, although they highlighted that the SSW is an important addition to any modern emergency service.

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