Impacting cost and appropriateness of stress ulcer prophylaxis at a university medical center

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
Staff educational programme for an appropriate use of stress ulcer prophylaxis in trauma service in order to prevent stress-induced bleeding.

Type of intervention
Prevention.

Economic study type
Cost-effectiveness analysis.

Study population
Patients admitted to ICU, and all of those who were receiving histamine-2-antagonists or sucralfate for stress ulcer prophylaxis.

Setting
Hospital. The economic study was carried out in Arizona, USA.

Dates to which data relate
Not stated.

Source of effectiveness data
The evidence for the final outcomes was derived from a single study.

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

Study sample
A total of 543 patients were included in the study. Of these, 264 patients were observed during phase 1 (before the intervention) and 279 during phase 2 (after the intervention).

Study design
The study was a nonrandomised trial with historical controls, carried out in a single centre. The duration of the study was two months for each phase.
Analysis of effectiveness
The principle used in the analysis (intention to treat or treatment completers only) was not specified. The primary health outcome was the length of inappropriate stress ulcer prophylaxis. Complications were also documented. These were defined as ‘overt bleeding’ to correspond with gross blood or "coffee ground" material in the nasogastric aspirate, hematochezia, haematemesis, or melena. In turn, 'clinically important bleeding' was defined as overt bleeding complicated by one or more of the following within 24 hours after onset: a decrease in systolic blood pressure of more than 20 mm Hg; an increase in heart rate of >20 beats/min, or a decrease in systolic blood pressure of > 10 mm Hg with orthostatic change; or a decrease in haemoglobin of >2g/dL followed by transfusion. Patient groups (before and after intervention groups) were comparable in terms of patient demographics and the number of risk factors for stress-induced bleeding.

Effectiveness results
The mean length of inappropriate stress ulcer prophylaxis was 5.78 (+/- 4.36) days in phase 1 and 4.66 (+/- 3.10) days in phase 2 (p<0.05). Three patients in each group had clinically important bleeding.

Clinical conclusions
The study revealed that targeted educational intervention can have a positive influence on the prescription of medications for prophylaxis.

Measure of benefits used in the economic analysis
No summary benefit measure was introduced in the economic study.

Direct costs
Some quantities of resource utilisation (such as the mean length of hospital stay) were reported separately from the costs. The cost items were not reported separately. The hotel and operating costs were measured using a hospital boundary. It was not specified from whose perspective the cost analysis was performed. No dates associated with the data were reported. The source of medication costs was the drug acquisition prices in the institution. The cost of complications was reported.

Indirect Costs
Not considered.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
No summary measure was introduced.

Cost results
The mean total (fixed and variable) cost of hospitalization was $19,850 for phase 1 (before intervention) and $15,812 for phase 2 (after the intervention). The cost of complications was included.
Synthesis of costs and benefits
Costs and benefits were not combined since the intervention turned out to be the dominant strategy.

Authors' conclusions
Cost savings are associated with more appropriate stress ulcer prophylaxis. Clinically important bleeding is uncommon but results in prolonged hospital stays and increased costs.

CRD COMMENTARY - Selection of comparators
The reason for the choice of comparator is clear.

Validity of estimate of measure of benefit
The internal validity of the study results is questionable due to lack of randomisation.

Validity of estimate of costs
Although some quantities of resource use were reported separately from the costs, the analysis did not provide adequate details of methods of cost estimation. In particular, no dates reported.

Other issues
Given the lack of randomisation, sensitivity analysis, and statistical analysis of the costs, the results need to be treated with some caution. The authors recognised that the cost data might not be generalisable to other settings.

Implications of the study
Further studies are needed to validate the cost-effectiveness of an educational intervention on the appropriate use of stress ulcer prophylaxis.

Source of funding
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