The successful implementation of pharmaceutical practice guidelines: analysis of associated outcomes and cost savings


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
Implementation of pharmaceutical practice guidelines to promote appropriate use of anaesthetics for intraoperative use. Guidelines were prepared for induction drugs, fluids, muscle relaxants, benzodiazepines, opioids, inhalational agents and fresh gas flow.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients attending a post-anaesthesia care unit (PACU).

Setting
One post-anaesthesia care unit in a hospital in the United States. The economic study was carried out in the United States.

Dates to which data relate
Effectiveness and resource use data were collected during the period February 1995 to June 1995. 1995 prices were used.

Source of effectiveness data
The evidence for final outcomes was 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 study.

Study sample
Before the development of practice guidelines, a control group of 863 consecutive elective surgery patients arriving in the PACU were evaluated. At the beginning of June 1995, 1 month after the introduction of practice guidelines, 871 consecutive PACU patients were evaluated. Power calculations were not used to determine the sample size. There were no statistically significant differences between the two groups.
Study design
A non-randomized study with historical controls.

Analysis of effectiveness
It was not stated whether the analysis of effectiveness was based on intention to treat or treatment completers only. Clinical outcomes and time analyses relevant to patient flow were evaluated for all PACU patients before and after practice guidelines. The primary health outcomes used in the analysis were: time from end of surgery to arrival in the PACU, time until the patient was judged ready for discharge and until the patient was actually discharged, unplanned postoperative mechanical ventilation, and incidence of nausea and vomiting.

Effectiveness results
Perioperative patient flow was minimally affected. Time (mean +/-SD) from end of surgery to arrival in the PACU increased from 11 (+/- 7) minutes before the authors instituted practice guidelines to 14 (+/- 8) minutes after the introduction of practice guidelines (p<0.0001). Otherwise, no differences were statistically significant before versus after practice guideline introduction. Admission of inpatients to the PACU receiving monitored anaesthesia care increased from 6.5% to 12.9% (p<0.02). The incidence of unplanned postoperative mechanical ventilation before practice guidelines, for those receiving general anaesthesia, was 0.6% (95% CI: 0.2 - 1.7%). The incidence of unplanned postoperative mechanical ventilation after practice guidelines, for those receiving general anaesthesia, was 0.3% (p = not significant). The incidence of nausea and vomiting requiring treatment was 10.2% before practice guidelines and 9.5% after (p = not significant).

Clinical conclusions
Perioperative patient flow and clinical outcomes were not otherwise adversely affected.

Measure of benefits used in the economic analysis
Since the effectiveness analysis showed no difference in benefits before and after the implementation of the guidelines, the economic analysis was based on differences in costs only.

Direct costs
Amounts of anaesthesia delivered were recorded automatically for each patient and costs were computed according to prices obtained from the hospital's pharmacy department. Only direct hospital costs were considered. Cost per case and cost per hour were reported. Costs were not discounted. 1995 prices were used. Quantities of resources were reported separately and were measured in 1995.

Currency
US dollars ($).

Estimated benefits used in the economic analysis
Not applicable.

Cost results
A baseline mean pharmaceutical cost of $66.08 (+/- 62.25) per case, ($24.52 per hour) in March 1994 was measured. A one-year general educational effort reduced costs 16% (p<0.0001) to $55.59 (+/- 50.04) and $20.07 per hour (February 1995). Immediately after the institution of practice guidelines, pharmaceutical costs per case declined an additional 38% to $34.53 (+/- 27.53) per case and $12.63 per hour (p<0.0001). This level of expenditure has been sustained. Drug costs per case decreased slightly (p<0.01) from $34.53 in June 1995 to $32.24 (+/- 26.69) and $11.46 per hour of anaesthesia in January 1996.
Synthesis of costs and benefits
Not applicable.

Authors' conclusions
The institution of practice guidelines (combined with a preceding educational effort) to promote the most appropriate use of anaesthetic drugs reduced hospital costs by approximately $1 million per year. The sustained success of this approach, especially its reliance on medical informatics, has great implications for those concerned with developing and instituting practice guidelines.

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

Validity of estimate of measure of benefit
The estimate of the measure of benefit is likely to be internally valid although the authors acknowledged the potential limitations of the study as well as the difficulties of implementing a randomised controlled trial for such an intervention.

Validity of estimate of costs
Adequate details of the methods of cost estimation were given. However, the actual costs of designing and implementing the guidelines (through the educational effort and ongoing dissemination) were not included.

Other issues
The authors' conclusions were justified and appropriate comparisons were made with other studies but the issue of generalisability to other countries/settings was not addressed.

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Bibliographic details

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Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Anesthesiology /economics; Anesthetics /economics; Cost Savings; Drug Costs; Humans; Outcome Assessment (Health Care); Postanesthesia Nursing /economics; Practice Guidelines as Topic