Cost-effective anesthesia: desflurane versus propofol in outpatient surgery
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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 desflurane versus propofol (anaesthetic agents) in outpatient surgery.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients, aged 18 years and older, scheduled for elective surgery in the outpatient surgery area.

Setting
Hospital. The economic study was conducted in Minneapolis, Minnesota, USA.

Dates to which data relate
The dates of the effectiveness and cost data were not stated by the authors.

Source of effectiveness data
Effectiveness data were derived from a single study.

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

Study sample
53 ASA physical status I and II patients were randomly assigned to receive a maintenance anaesthetic of either desflurane with 50% nitrous oxide (n=27) or propofol with 50% nitrous oxide (n=26). Patients enrolled in the study were 18 years and older, had a body mass index (BMI) of 28kg/m2 or less and were scheduled for surgery in the outpatient surgery area.

Study design
The study was a randomised controlled study.

Analysis of effectiveness
The analysis was based on intention to treat. The main health outcome considered was the recovery time. Patients were discharged from phase I (immediate post-anaesthesia care unit) to phase II (where patients were allowed to eat, drink and ambulate) when they were haemodynamically stable, alert and oriented. There were no significant differences between the groups in terms of age, gender, ASA status, BMI, duration of anaesthesia and frequency of intubation. Side effects, such as nausea and vomiting, were also considered.

**Effectiveness results**
There was no significant difference between the recovery times of the two groups:

phase I - 88 minutes for propofol and 91 for desflurane;
phase II - 88 minutes for propofol and 93 minutes for desflurane.

Of the desflurane patients, 41% experienced nausea compared to 12% of the propofol patients (p<.05).

**Clinical conclusions**
Propofol and desflurane satisfy the patient demand for rapid, clear-headed awakening.

**Measure of benefits used in the economic analysis**
No single measure of benefit was produced.

**Direct costs**
Direct health service costs such as cost of anaesthetic agents, ancillary drugs (narcotics, sedatives, muscle relaxants, reversal agents and antiemetics) and recovery costs were included in the analysis. The latter were considered to be equal between the two groups, as recovery times were similar. The costs of medications were obtained from the list of drug prices of the hospital pharmacy. Costs and quantities were not reported separately. Cost dates were not stated.

**Statistical analysis of costs**
The t-test was used in the statistical analysis. A one-way analysis of variance was used to analyse differences in the cost between desflurane and propofol and the cost of desflurane at 2, 3 and 4L/min flow rates.

**Indirect Costs**
Not considered.

**Currency**
US dollars ($).

**Sensitivity analysis**
No sensitivity analysis was performed.

**Estimated benefits used in the economic analysis**
Not applicable.

**Cost results**
The mean propofol cost was $31.77 (+/- 14.44), whereas the mean desflurane cost was $12.99 (+/- 7.61), (p<.05).
mean cost of all medications, anaesthetics and ancillary agents was $57.97 (+/- 20.22) for the propofol group and $34.86 (+/- 14.13) for the desflurane group (p<.05).

Synthesis of costs and benefits
Not applicable.

Authors' conclusions
Desflurane was more cost-effective than propofol. Although desflurane patients experienced more nausea, this did not affect their discharge time.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparators (desflurane versus propofol) is clear, as both anaesthetic agents are used in the authors' setting. You, as a database user, should consider if this applies to your own setting.

 Validity of estimate of measure of benefit
Data do not appear to have been used selectively to prove a particular point and the chosen measure of benefits (recovery time) is justified in this case.

Validity of estimate of costs
Extensive details of the methods of cost estimation were given and no important items were omitted. Extensive comparisons were made with studies dealing with similar topics.

Other issues
The authors acknowledged that, in terms of patient satisfaction, more effective emetic prophylaxis may be necessary when using desflurane as the maintenance anaesthetic. The price of administering an antiemetic would be offset by the savings from using desflurane.

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