Cost comparison between three different general anaesthetic techniques for elective arthroscopy of the knee

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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
General anaesthetic techniques for elective arthroscopy of the knee.

Type of intervention

Economic study type
Cost-effectiveness analysis.

Study population
Patients undergoing elective arthroscopy of the knee.

Setting
Secondary care. The economic study was conducted in Stockholm, Sweden.

Dates to which data relate
Dates to which the data related were not stated. The study was published in 1999.

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

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

Study sample
75 ASA I and II patients were randomised using the envelope technique as follows: propofol/alfentanil (n=25), sevoflurane/N2O (n=25), and propofol/remifentanil (n=25). Randomisation was performed by a nurse not otherwise involved in the study. Power calculations relating to the sample size were not performed.

Study design
A randomised controlled study.

Analysis of effectiveness
The analysis of effectiveness was based on intention to treat. The main health outcomes used in the analysis were intraoperative events, emergence, postoperative course (pain, emesis) and time to discharge. Patient groups were comparable in their baseline demographic characteristics, age, weight and sex.

**Effectiveness results**  
All patients had an uncomplicated course. No differences were observed with regards to emergence, postoperative pain or emesis, or time to discharge for the groups compared.

**Clinical conclusions**  
All 3 anaesthetic procedures were found to be safe and of equal effectiveness

**Measure of benefits used in the economic analysis**  
Since the effectiveness analysis showed no differences between the anaesthetic techniques compared, the economic analysis was based on differences in costs only (cost minimisation).

**Direct costs**  
Only direct health service costs were considered, namely drug costs, including drug wastage costs. These were taken from the Swedish pharmacopoeia. Quantities and costs were presented separately. Costs were not discounted due to the short period of analysis (less than 1 year). The price year was not stated. The authors considered all other costs relating to surgery to be equal for each procedure.

**Statistical analysis of costs**  
A statistical analysis of costs was not performed.

**Indirect Costs**  
Indirect costs were not considered.

**Currency**  
Swedish kroner (Sek) Sek1.00 = US$0.12.

**Sensitivity analysis**  
A sensitivity analysis was not performed.

**Cost results**  
When the cost of wastage was taken into account, the mean anaesthetic drug cost was $0.58/minute for sevoflurane, $0.74/minute for propofol/alfentanil and $0.84/minute for propofol/remifentanil.

**Synthesis of costs and benefits**  
A synthesis of costs and benefits was not applicable.

**Authors' conclusions**  
From a cost-minimisation point of view, propofol induction, fentanyl for analgesia and maintenance with sevoflurane in oxygen nitrous oxide is the technique of choice.
CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparators is clear as all three anaesthetic techniques were 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
The authors did not provide a summary measure of benefits. As such, a cost-minimisation approach was used. The effectiveness results were based on a well conducted randomised study, with attention being paid to potential confounders such as depth of anaesthesia (maintained at 10-15% of normal heart rate and blood pressure). As such validity is likely to be high.

Validity of estimate of costs
The authors only considered drug costs in their analysis. Major costs associated with surgery such as salaries, equipment, rent were not considered as they regarded as being common to both procedures. Costs were not statistically analysed. A prospective approach to cost calculation would have consolidated the validity of cost estimates.

Other issues
The authors made good comparisons with other studies and discussed the factors that would influence their results. The costs may not be generalisable to other settings/countries.

Implications of the study
The results suggest that the effectiveness of the three strategies is equal and, based on a cost-minimisation approach, sevoflurane in oxygen-nitrous oxide is the preferred general anaesthesia in the procedure studied

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