Nausea and vomiting following thyroid and parathyroid 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
Using propofol versus isoflurane for maintenance of anaesthesia during thyroid or parathyroid surgery.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
ASA physical status I and II, nonpregnant patients aged 18 years and older, undergoing thyroid and parathyroid procedures.

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

Dates to which data relate
The dates of effectiveness, resource and price data were 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. It was not specified whether the costing was performed prospectively or retrospectively.

Study sample
A total of 118 (87 women and 31 men) patients was included in the study, based on power calculations. Each study group consisted of 59 randomly allocated patients.

Study design
The study was a randomized controlled trial. The PACU and ward nurses at the postanaesthesia care unit were blinded to the treatment to which the patients had been allocated. The study was carried out in a single centre. The duration of follow-up was 24 hour after the operation.
Analysis of effectiveness
The principle (intention to treat or treatment completers) used to analyse the effectiveness data was not explicitly specified. The primary health outcome measured was the percentage of patients (overall rate and in terms of gender) having the signs and symptoms of postoperative nausea and vomiting (PONV). The signs and symptoms were graded on a four-point scale by the post anaesthesia care unit (PACU) and ward nurses, the scale being as follows: 1= no nausea, 2= mild nausea, 3= severe nausea, and 4= retching and/or vomiting. PONV was defined as comprising grades 3 and 4. The groups were shown to be comparable in terms of demographic and prognostic features. The possible effects of confounding variables were discussed.

Effectiveness results
The incidence of PONV at hospital discharge was 64% for the isoflurane and 44% for the propofol group. The corresponding figures at PACU discharge were 47% and 24% (p<0.05 for both comparisons). When the comparisons were performed by gender, the results between groups showed no significant differences for men at either measurement time (at PACU and hospital discharge). For women, however the results at PACU discharge were 57% for isoflurane and 24% for propofol and, at hospital discharge, the corresponding figures were 71% and 42% (p<0.05).

Clinical conclusions
In this study the overall rate of incidence of PONV was high. The use of propofol was effective in terms of reducing the PONV incidence in women in comparison with the use of isoflurane, but the important clinical result was that "the incidence of PONV in men was the same regardless of anaesthetic regimen".

Measure of benefits used in the economic analysis
The percentage of patients experiencing PONV at hospital discharge was used as the benefit measure.

Direct costs
Although some quantities of resource use were analysed separately (PACU time and duration of hospitalization), the costing was performed only on the costs associated with the anaesthetics and materials used (fresh gas flow, analgesics, antiemetics, muscle relaxants, anticholinesterases, and anticholinergic drugs). It was not explicitly specified from whose point of view the cost analysis was performed. The price year was not clearly reported.

Indirect Costs
Not considered.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
The incidence of PONV at hospital discharge was 64% for the isoflurane and 44% for the propofol group. The corresponding figures at PACU discharge were 47% and 24% (p<0.05 for both comparisons). When the comparisons were performed by gender, the results between groups showed no significant differences for men at either measurement time (at PACU and hospital discharge). For women, however the results at PACU discharge were 57% for isoflurane and 24% for propofol and, at hospital discharge, the corresponding figures were 71% and 42% (p<0.05).
Cost results
The propofol group had a mean cost per case of $85.65, whilst the isoflurane group had a corresponding figure of $31.39. Thus, the incremental cost of propofol was $54.26 per patient.

Synthesis of costs and benefits
An incremental analysis was performed. The cost per case of PNOV prevented in women by using propofol rather than isoflurane was reported as the measure of cost-effectiveness and was $187 ($54.26/0.29). The cost-effectiveness ratio was not performed formally patients since isoflurane was a weakly dominant strategy (the same effectiveness but less costly).

Authors' conclusions
Patients undergoing thyroid and parathyroid surgery are at high risk for the development of PNOV. Women in particular, are very likely to experience PNOV. Propofol for maintenance anaesthesia, although more expensive than isoflurane, decreases the incidence of PONV in women but may not in men.

CRD COMMENTARY - Selection of comparators
The authors did not justify their choice of the comparator (isoflurane). You should consider whether this is a widely used health technology in your own setting.

Validity of estimate of measure of benefit
The results are likely to be internally valid given the design used, the blinding of the nurses, the number of subjects included in the study, and the analysis of patient characteristics at baseline.

Validity of estimate of costs
The cost analysis lacked adequate details with respect to the dates of collection of resources data. The length of hospital and PACU stay and rate of local wound complications were not costed since they were similar between groups. The price year was not clearly stated.

Other issues
The absence of sensitivity analysis and statistical analysis of the costs may hinder the generalisability of the results to other settings/countries.

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None stated.

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