A cost-benefit evaluation of using propofol and alfentanil for a short gynecological procedure

Enlund M, Kobosko P, Rhodin A

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
Use of propofol (4.6-9.8mg/kg) and alfentanil (mean 0.6mg) for the anaesthetising of patients undergoing vaginal termination of pregnancy (VTP).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population consisted of females, aged between 17 and 41, (mean age 26.9), who were accepted for VTP between 7 and 12 gestational weeks. All patients were in ASA-class I.

Setting
The practice setting was hospital. The economic study was carried out in Vasteras, Sweden.

Dates to which data relate
The dates to which data related were not given.

Source of effectiveness data
Effectiveness data were 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 study.

Study sample
41 patients were consecutively invited to participate in the study. One patient declined participation. Of the 40 patients recruited, 34 (85%) completed and returned the questionnaire. Another 5 patients (12.5%) were contacted by telephone. Thus, the total number of responses was 39 (97.5%), 20 from the PA group and 19 from the TN group.

Study design
The study design was a single centre randomised controlled study. Randomisation was carried out before the start of the study. An envelope with information about the anaesthetic procedure assigned was opened once the patient had arrived.
at the theatre and after final confirmation of the patient’s acceptance to participate. The patients completed a short questionnaire at home after regaining full fitness. The duration of follow-up for the treatment cohort was not reported. The patients were blinded.

Analysis of effectiveness
The analysis of the study was based on treatment completers. The primary health outcomes were days of sick leave, short late recovery time, delayed late recovery time (when complications arose) and total number of days to recovery. At analysis, groups were shown to be comparable in terms of demographic and clinical characteristics.

Effectiveness results
In the PA group, a total of 20 days of sick leave were taken by the 20 patients, median 1 day (range: 0 - 3), and in the TN group the corresponding figures for the 19 patients was 34 days, median 2 days (range: 0 - 5). In the PA group, 19/20 used 0-2 days for sick leave compared with 13/19 in the TN group (P<0.05). The mean difference in sick leave/patient between the groups was 0.8 days (P-value not reported). The number of patients with short late recovery differed significantly between the groups, 20/20 in the PA group and 15/19 in the TN group (P<0.05). Three patients (7.7%) (2 in the TN group and 1 in the PA group) developed gynaecological complications leading to prolonged sick leave of 7 days each. Correlation between time for late recovery and the length of sick leave was calculated and found to have a correlation coefficient of 0.73 (P<0.001). Mean total days to recovery were 17/20 (0.85) days for the PA group and 26/19 (1.37) days for the TN group (P-value not reported).

Clinical conclusions
The authors did not explicitly draw any clinical conclusions from the effectiveness results.

Measure of benefits used in the economic analysis
The effectiveness results were not converted into a measure of health benefit.

Direct costs
The perspective for direct costs was that of the government. The mean per patient costs of the intervention and comparator drugs were estimated. The financial compensation received by the patients from the social insurance was calculated using data on the mean incomes of females, taken from national statistics, and applied to the age distribution in the study. Resource quantities were reported separately from prices. The authors estimated an incremental cost for the TN group. The price dates were not given.

Statistical analysis of costs
Mean incomes of females in different age groups were obtained from national statistics and the economic impact of mean differences in sick-leave was calculated. A one-sided test of proportions was used to examine any difference in proportions of days of sick-leave between the study groups. A P-value of <0.05 was considered as significant.

Indirect Costs
These were not included in the analysis.

Currency
Swedish Kroner (SEK).

Sensitivity analysis
No sensitivity analysis was carried out.
Estimated benefits used in the economic analysis
The effectiveness results were not converted into a measure of health benefit.

Cost results
The incremental drug cost of the PA group was SEK57 per patient. The incremental cost of sick leave payments in the TN group was SEK168 per patient. The net saving resulting from the change from TN to PA was SEK111 per patient.

Synthesis of costs and benefits
A synthesis of costs and benefits was not carried out.

Authors' conclusions
Although the cost of drugs was higher, the costs for the social insurance system and for the individuals themselves were reduced by almost 50%, when using the propofol and alfentanil combination, resulting in an overall benefit corresponding to almost twice the increase in the cost of anaesthesia. It was found that an increase in cost for drugs was outweighed by the reduced cost of sick leave. If this were true for a "year-production", it would support the discussion of transferring monetary resources from the social insurance system to the health service.

CRD Commentary
Selection of comparators
The authors' justification for the comparator used (thiopental and nitrous oxide anaesthesia), was that it represented routine anaesthetic procedure. You, the user of the database, should decide if this is a widely-used technology in your own setting.

Validity of estimate of measure of benefit
Health benefit was not directly estimated. Effectiveness results, in terms of sick leave and recovery times, were based on a study population of 39. In addition, the study was single-centred, which may compromise the reliability of the results, despite the use of a control and of randomisation techniques.

Validity of estimate of costs
The only costs estimated were (anaesthetic) drug costs and social payments. The potential for cost savings within the health care setting was not explored. The inclusion of costs of social payments, which may not exist in other settings, affects the generalisability of the results.

Other issues
The cost-effectiveness ratio reported in the study is highly dependent upon the existence of social transfer payments, particular to the study setting. No sensitivity analysis was carried out to investigate the implications for the cost-effectiveness of changes in key variables. The authors' conclusion, that propofol and alfentanil anaesthesia is cost-saving, relative to thiopental and nitrous oxide anaesthesia is unlikely to be reproducible in other settings.

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Bibliographic details