A review of recovery from sevoflurane anaesthesia: comparisons with isoflurane and propofol including meta-analysis

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Authors' objectives
To compare the times of specific recovery events in adult patients anaesthetised with an intravenous anaesthetic and receiving sevoflurane to similar patients receiving isoflurane or propofol for elective surgical procedures.

Searching
MEDLINE was searched from 1966 to July 1998 (keywords reported) to identify relevant trials published in English.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs).

Specific interventions included in the review
Intravenous anaesthesia using sevoflurane versus isoflurane or propofol.

Participants included in the review
Adult patients (>=18 yrs) who had undergone elective surgical procedures.

Outcomes assessed in the review
Recovery outcomes measured including: time from discontinuation of anaesthesia delivery to open eyes (emergence); to endotracheal extubation; to response to verbal commands (e.g., hand squeeze); to orientation (e.g., date of birth); to first post-operative analgesic; and to eligibility for discharge from recovery room.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
The authors do not state that they assessed validity.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the authors performed the data extraction.

Methods of synthesis
How were the studies combined?
Mean differences in the times (minutes) to recovery events between groups were quantitatively combined. A 95% confidence interval that did not include zero was equivalent to a statistical difference at the 0.05 level of significance.

How were differences between studies investigated?
The authors do not state how differences between the studies were investigated.

Results of the review
Twelve RCTs comparing sevoflurane vs isoflurane (total n=1761).
Seven RCTs comparing sevoflurane vs propofol (total n=922).

Mean differences between sevoflurane and isoflurane:

Emergence -2.9 min (95% CI: -3.1, -2.7).
Response to commands -3.0 min (95% CI: -3.3, -2.7).
Extubation -1.6 min (95% CI: -1.9, -1.3).
Orientation -4.5 min (95% CI: -4.8, -4.2).
First analgesic -8.9 min (95% CI: -10.8, -7.0).
Discharge from recovery room 0.7 min (95% CI: -2.7, 4.1).

Mean difference between sevoflurane and propofol:

Emergence -1.2 min (95% CI: -1.3, -1.1).
Response to commands -1.4 min (95% CI: -1.5, -1.3).
Extubation -1.5 min (95% CI: -2.0, -1.1).
Orientation -1.5 min (95% CI: -1.6, -1.4).
Discharge from recovery room -0.7 min (95% CI: -2.1, 0.8).

**Authors' conclusions**

The observed difference between sevoflurane and isoflurane or propofol anaesthesia support the postulate that the use of sevoflurane is associated with a more rapid recovery from anaesthesia than either isoflurane or propofol.

The clinical significance of the observed statistically significant differences is uncertain.

**CRD commentary**

The review questions and inclusion/exclusion of studies were clearly described.

The details of primary studies were presented. However, the literature search was limited to only one database and only English language trials were included. Authors did not describe the methods used to select studies and extract data from studies. The validity of the included studies and heterogeneity across studies was not assessed. Therefore, the results of this meta-analysis should be interpreted with caution.

**Implications of the review for practice and research**

The clinical significance of the observed statistically significant differences is uncertain.

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