Pulmonary complications of 9931 narrow-bore nasoenteric tubes during blind placement: a critical review

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CRD summary
This review concluded that practitioners needed to be aware of the risks of pulmonary complications associated with blind nasoenteric tube placement. This conclusion reflects the evidence presented but the relevance of the quantitative findings to UK practice is uncertain.

Authors' objectives
To assess the risk of pulmonary complications associated with blind placement of narrow-bore nasoenteric tubes.

Searching
The authors searched MEDLINE, EMBASE and The Cochrane Library from July 1959 to July 2009. Search terms were reported. There were no language restrictions.

Study selection
Studies that involved patients who required narrow-bore nasoenteric tube placement in an acute care setting were eligible for the review. Narrow-bore tubes were defined as 12F diameter or less. Studies had to be prospective randomised controlled trials (RCTs) or have a retrospective design. Studies had to report on pulmonary complications directly related to tube placement and at least two of infectious complications, time complications, malpositioning in awake and intubated patients, rates of repeat tube malpositioning and in-hospital mortality.

Included studies were performed in acute care facilities in the USA. All were hospital-wide except one that was limited to medical and surgical intensive care units. No details of participants were reported.

The authors did not state how studies were selected for inclusion.

Assessment of study quality
The authors did not state that they formally assessed study quality, although they commented on the overall quality of the evidence.

Data extraction
Data were extracted on numbers of patients and events.

Data were extracted by two reviewers independently. Any disagreements were resolved by discussion among all the authors.

Methods of synthesis
A mainly narrative synthesis was presented. Numbers of events across all included studies combined were reported in tables.

Results of the review
Five studies involving 9,931 tube placements (range 740 to 4,190) were included. Four studies were described as retrospective RCTs and one had a case-control design. Studies were conducted between 1986-1987 and 2005. The authors described the quality of the evidence as relatively strong.

There were 187 tube misplacements in the pulmonary tree across all studies (1.9%). Of these, 35 were associated with pneumothorax, leading to at least five patient deaths. Overall, 60% of misplacements occurred in mechanically ventilated patients. Rates of repeat misplacement (based on three studies) ranged from 13% to 32%. Eight out of 35 patients with repeat misplacements died.

Two of the included studies reported interventions to reduce complications associated with tube placement. In one
study, the formation of a specialist team was associated with a reduction in procedure-related pneumothorax.

**Authors' conclusions**
Practitioners need to be aware of the risks of pulmonary complications associated with blind nasoenteric tube placement.

**CRD commentary**
The review question and inclusion criteria were clear. The search covered a range of relevant sources with no language restrictions. The search did not include sources of unpublished studies, so publication bias could not be ruled out. Methods used for study selection were not reported, so risks of errors and bias at this stage were unclear. The authors described the quality of the evidence as relatively strong but study quality was not formally assessed and so the reliability of the included studies was unclear. Four included studies were described as retrospective RCTs; the meaning of this term was unclear. Data extraction was performed in duplicate. The synthesis was mainly narrative, which seemed appropriate in view of the nature of the evidence presented.

The authors' conclusions reflect the evidence presented. However, all the included studies were in USA and the most recent study dated from 2005, so the relevance of the quantitative findings to UK practice is uncertain.

**Implications of the review for practice and research**
**Practice:** The authors stated that changes to institutional protocols should be considered to minimise unnecessary risks.

**Research:** The authors did not state any specific implications for further research.

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