TITLE: The Use of Endotracheal Tubes with Subglottic Secretion Drainage to Prevent Ventilator-Associated Pneumonia: Clinical Effectiveness and Safety

DATE: 15 July 2014

RESEARCH QUESTIONS

1. What is the clinical effectiveness of endotracheal tubes with subglottic secretion drainage for the prevention of ventilator-associated pneumonia?

2. What is the clinical evidence on the safety and harms of endotracheal tubes with subglottic secretion drainage for the prevention of ventilator-associated pneumonia?

KEY FINDINGS

One health technology assessment, three systematic reviews, one randomized controlled trial, and three non-randomized studies were identified regarding endotracheal tubes with subglottic secretion drainage for the prevention of ventilator-associated pneumonia.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 7), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and July 3, 2014. Internet links were provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.
RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, and non-randomized studies.

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Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One health technology assessment\(^1\) and three systematic reviews\(^2-4\) evaluated the effectiveness of endotracheal tubes with subglottic secretion drainage (Evac) for the prevention of ventilator-associated pneumonia (VAP). All four reports\(^1-4\) found that the frequency of VAP was significantly reduced by using Evac tubes in the majority of the studies included in the assessments. The use of Evac tubes was also associated with a reduction in the length of stay in the intensive care unit\(^4\) and a reduction in the duration of mechanical ventilation.\(^2-4\)

One randomized controlled trial\(^5\) compared a traditional endotracheal tube with two Evac tubes (Sealguard and Taperguard). The frequency of VAP was reduced for patients in the Evac groups compared with the traditional endotracheal tube group. The incidence of VAC was lower in the Taperguard tube group than in the Sealguard group. One non-randomized study\(^6\) examined the incidence of VAP in patients treated with continuous or intermittent control of endotracheal cuff pressure and found the use of continuous pressure and the use of Evac tubes were protective factors against VAP for patients requiring more than 48 hours of mechanical ventilation. One non-randomized study\(^7\) evaluated the effects of implementation of a ventilator bundle including Evac tubes and care protocols on VAP rates. After implementation of the protocol and bundle, VAP rates were reduced from 10.2 to 3.4 cases per 1000 ventilator days.

One non-randomized study\(^8\) examined bacterial cultures of endotracheal aspirate to determine the effect of subglottic secretion drainage on bacterial colonization. Bacterial airway colonization was lower in the Evac group but the difference was not statistically significant and no significant differences in VAP rates were observed between the two groups.

Safety outcomes were reported in four of the studies included in the health technology assessment.\(^1\) Two studies reported no adverse events in the Evac group and laryngeal edema and laryngeal dyspnea following extubation were reported in a small number of patients in two studies.
REFERENCES SUMMARIZED

Health Technology Assessments


Systematic Reviews and Meta-analyses


Randomized Controlled Trials


Non-Randomized Studies


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APPENDIX – FURTHER INFORMATION:

Review Articles


See: Drainage of Subglottic Secretions, page 191


**Additional References**

