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Subglottic secretion suction for preventing ventilator-associated pneumonia: an updated meta-analysis and trial sequential analysis

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Review question(s)

Does subglottic secretion suction make a difference with ventilation-associated pneumonia on patients with suction or not?

Searches

We have searched the following electronic bibliographic databases: MEDLINE, EMBASE, PubMed, The Cochrane Library (Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials (CENTRAL), Cochrane Methodology Register), and Web of Science (science and social science citation index).

The search strategy included only terms relating to or describing the intervention. Studies published between January 1990 and the date the searches are run are being sought. The searches will be re-run just before the final analyses and further studies retrieved for inclusion.

Types of study to be included

We will include only randomised control trials to assess the beneficial effects of the treatments.

Condition or domain being studied

ventilation-associated pneumonia

Participants/ population

Inclusion: adults who are considered to require mechanical ventilation for at least 48 h and the incidence of VAP as defined by the investigators.

Exclusion: Adolescents (under 18 years of age) or patient participating in another study.

Intervention(s), exposure(s)

Ventilator-associated pneumonia (VAP) is a subset of hospital acquired pneumonias.The Centers for Disease Control and Prevention’s National Healthcare Safety Network defines VAP as a pneumonia that develops in patients who are intubated and ventilated at the time of or who develop a pneumonia within 48 hours of discontinuation of mechanical ventilation (MV).VAP was suspected by the presence and persistence of a recent infiltrate on chest radiograph, by at least one of the following criteria: fever (> 38.3°C) or ypothermia (<36°C),leukocytosis, or leukopenia, and at least by one of the two last criteria: purulent tracheal secretions onfirmed by microscopic examination or worsening of oxygenation.

Subglottic secretion drainage comprised the intervention of interest. Studies were included that implemented either intermittent or continuous Subglottic secretion drainage.

Comparator(s)/ control

Adults who are considered to require mechanical ventilation for at least 48 h but not accepted subglottic secretion drainage during the ventilation period.

Outcome(s)

Primary outcomes

The incidence of VAP are followed-up, measured using the defines of The Centers for Disease Control and Prevention's National Healthcare Safety Network.

Secondary outcomes

Gram-positive, Gram-negtive ,early-onset VAP, late-onset VAP, Hospital mortality, Hospital length of stay, ICU mortality, ICU length of stay

Risk of bias (quality) assessment

Two review authors will evaluate the Randomized Controlled Trails using the ''Cochrane collaboration's tool for assessing the risk of bias'', which includes the following aspects:

(1) random sequence generation (selection bias);

(2) allocation concealment (selection bias);

(3) blinding of participants and personnel (performance bias);

(4) blinding of outcome assessment (detection bias);

(5) Incomplete outcome data (attrition bias);

(6) selective reporting (reporting bias);

(7) other bias.

Disagreements between the review authors over the risk of bias in particular studies will be resolved by discussion, with involvement of a third review author where necessary.

The methodological qualities of the non-RCT studies were assessed using the Methodological Index for Non-Randomized Studies (MINORS) by two authors independently. MINORS is a valid instrument used to assess the methodological qualities of non-randomised surgical studies, including observational studies.In this meta-analysis study having a MINORS score more than 12 would be considered the standard for inclusion.

We will also use the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system to evaluate the quality of evidence by main outcomes in the article.

Strategy for data synthesis

We will provide a narrative synthesis of the findings from the included studies, structured around the type of intervention, target population characteristics, type of outcome and intervention content. We will provide summaries of intervention effects for each study by calculating risk ratios (for dichotomous outcomes) or standardised mean differences (for continuous outcomes). We anticipate that there will be limited scope for meta-analysis because of the range of different outcomes measured across the small number of existing trials. However, where studies have used the same type of intervention and comparator, with the same outcome measure, we will pool the results using a random-effects meta-analysis, with standardised mean differences for continuous outcomes and risk ratios for binary outcomes, and calculate 95% confidence intervals and two sided P values for each outcome. Heterogeneity between the studies in effect measures will be assessed using both the Chi-squared test and the I-squared statistic. We will consider an I-squared value greater than 50% indicative of substantial heterogeneity. We will conduct sensitivity analyses based on study quality. We will use stratified meta-analyses to explore heterogeneity in effect estimates according to: study quality; study populations; the logistics of intervention provision; and intervention content. We will also assess evidence of publication bias.

Analysis of subgroups or subsets

If the necessary data are available, subgroup analyses will be done.

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Review team
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Conflicts of interest
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China

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Subject indexing assigned by CRD

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Stage of review
Ongoing

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Stage of review at time of this submission	Started	Completed
Preliminary searches	No	Yes
Piloting of the study selection process	No	Yes
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No

Risk of bias (quality) assessment	No	No
Data analysis	No	No