

Impact of Spontaneous Breathing Trials on Reducing Ventilator-Associated Pneumonia in Adult Intubated Patients: A Scoping Review

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Purpose

To determine the impact of spontaneous breathing trials (SBT) on reducing the incidence of ventilator-associated pneumonia (VAP) in adult intensive care unit (ICU) patients.

Background

- Ventilator-Associate Pneumonia (VAP) is a major source of morbidity in ventilated patients in the intensive care unit (ICU)
 - It is difficult to diagnose VAP accurately because diagnostic criteria are subjective and include non-specific measures such as chest x-rays.
 - Each facility has its own benchmarks for diagnosing VAP.
 - Due to varying diagnostic measures and human error, accurately diagnosing VAP in a timely manner has been difficult to achieve.
- Many hospitals in the world consider VAP as a healthcare-associated infection (HIA) and have developed ventilator bundles to prevent the incidence of VAP.
 - Many of these bundles include raising the head of the bed to 30-45 degrees, peptic ulcer disease prophylaxis, routine oral care, weaning trials, and deep vein thrombosis prophylaxis.
 - Spontaneous weaning and SBTs have been included in many of these bundles throughout the world; however, it is difficult to determine their impact on reducing the incidence of VAP.
 - We performed a scoping review to determine whether SBTs have a positive impact on reducing VAP.



Methods

Study Design

- A scoping review was performed on VAP articles.

Eligibility Criteria

- Articles must be peer-reviewed, written in English, and published after 2017.

Information sources

- MEDLINE, ScienceDirect, and Scopus were used to gather information sources.

MeSH search terms

- "spontaneous weaning trials," "spontaneous breathing trials," "spontaneous awakening trials," "SBTs," "SATs," "ventilator-associated pneumonia," and "decreasing VAP."

Selection of sources of evidence

- 30 sources on VAP were placed into an Excel file following an extensive Medical Subject Heading (MeSH) search. The relevance was decided by date, strength of study, and credibility.

Data charting process

- Author, publication year, bundle components, study setting, study design, sample characteristics, cost outcome measures, and study findings were retrieved into a spreadsheet from the included studies.

Results

Characteristics of sources of evidence

- Ten publications were chosen by relevance and reviewed with various analytical methods.

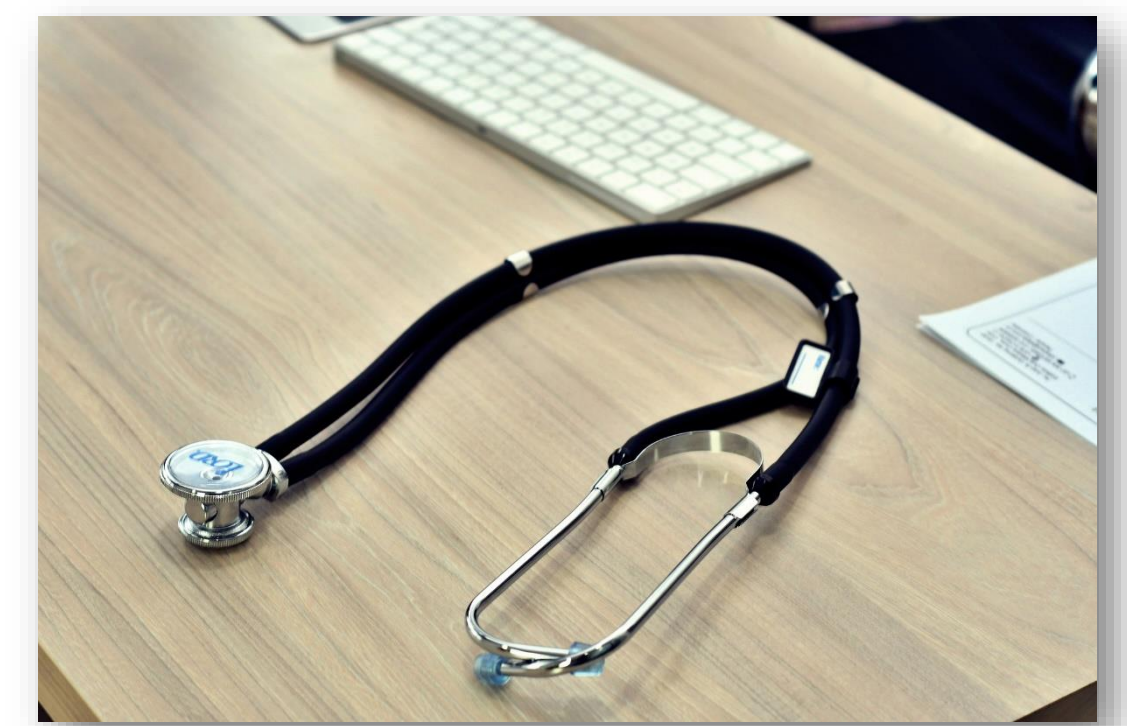
Synthesis of results

- Evidence mapping, evidence gap analysis, narrative descriptive synthesis conduction, and systematic reviews were performed.

Scoping review outcomes

- Results were inconclusive due to variations in the definition, clinical criteria, and diagnosis for VAP.
- 70% of the research articles conducted stated that SBTs likely reduce VAP incidence.
- 30% of the research articles state that SBTs do not reduce the incidence of VAP.
- A consensus on diagnosing VAP is much needed.

Implications for Practice



• Interventional Education Programs

- Staff training on prevention
- Hygiene awareness
- Use of the ventilator bundle approach
- Surveillance Programs

• Proactive Measures

- Addressing potential risk factors, requiring active participation from physicians, health workers, hospital administration, and policymakers to allow for well-rounded policy formation and improved patient care.

• Clinical Testing

- Accurate and extensive antimicrobial susceptibility testing and ongoing monitoring, and antibiotic stewardship may help lower the risk of VAP in the future.

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