

The Military Health System's

PARTNERSHIP FOR PATIENTS CAMPAIGN

SAFE CARE SAVES LIVES



Implementation Guide for Ventilator-Associated Pneumonia

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1. Introduction

This implementation guide was created to support the Partnership for Patients, a national initiative sponsored by the Department of Health and Human Services to reduce harm in health care facilities. Military Health System leadership has pledged its support to the PfP, and has made a commitment to specific, identified aims. Improving the quality and safety of health care in all Department of Defense facilities will only be possible with universal support at every level in the MHS.

This guide is one of 10 harm-specific guides designed to assist you as you implement identified evidence-based practices to improve patient care. Common to all guides are resources that support efforts to educate the health care team by providing MHS-selected EBPs and quality improvement strategies.

In addition, implementation strategies and tools relevant to all harm categories are included in a guide titled “Practical Applications for Process Improvement and Change Management.” This guide supports efforts to equip the health care team with rapid-cycle process improvement methods and engage the health care team through the use of change management strategies..

2. Ventilator-Associated Pneumonia Prevention Evidence-Based Practices

2.1 Background Information

According to the Centers for Disease Control and Prevention, VAP is a nosocomial lung infection that occurs in patients receiving mechanical ventilation. Pneumonia is considered ventilator-associated if the patient is intubated and ventilated at the time or within 48 hours before the onset of infection. The CDC notes there is no minimum period of time that the ventilator must be in place for pneumonia to be considered ventilator-associated ([National Healthcare Safety Network Manual: Patient Safety Component Protocol](#))



VAP Burden of Illness

VAP:

- Increases ventilator-support requirements and ICU stay by an average 4.3 days
- Increases hospital length of stay by 4 to 9 days
- Increases cost by more than \$40,000 per episode of hospitalization
- Is estimated to cost more than \$1.2 billion nationally each year
- Is the leading cause of death among hospital-acquired infections

Sources:

1. IHI. *How-to Guide: Prevent Ventilator-Associated Pneumonia*. Cambridge, MA: IHI; 2012.
2. Heyland et al, *American Journal of Respiratory and Critical Care Medicine* (1999)
3. Craven, *Epidemiology of Ventilator-Associated Pneumonia*, *CHEST Journal*;2000
4. Rello et al, *Epidemiology and Outcomes of Ventilator-Associated Pneumonia in a Large US Database*, *CHEST Journal*; 2002
5. Safdar et al, *Clinical and economic consequences of ventilator-associated pneumonia: a systematic review*, *Critical Care Medicine*; 2005.

2.2 Risk Factors

There are a number of factors that can put a patient at risk for a VAP. The CDC has identified important risk factors including:

- Mechanical ventilation
- Pre-existing pulmonary conditions
- Large number of previous intubations





2.3 Evidence-Based Practice Guidelines

To reduce the prevalence of VAP, best practices have been developed.

Evidence-Based Practice Guidelines for VAP

- Staff education
- Colonization reduction
 - Handwashing
 - Oral hygiene
 - Common suction protocol
 - Avoid saline lavage
 - Closed suction system
 - Stress ulcer prophylaxis (involve pharmacists)
- Aspiration reduction/prevention
 - Regular oral and subglottic suction
 - Elevation of head ≥ 30 degrees
 - Early extubation
 - Daily assessment of extubation readiness
 - Daily interruption of sedation

Source:

1. Theron Van Hooser, D. (2002) Ventilator-Associated Pneumonia (VAP) Best Practice Strategies for Caregivers. *Kimberly-Clark Health Care*.
2. National Guideline Clearinghouse. (2009) Strategies to prevent ventilator-associated pneumonia in acute care hospitals. *Agency for Healthcare Research and Quality*

In an effort to prevent infection, care management bundles have been created. **A care bundle is a set of evidence-based interventions** that, when used together, significantly improve patient outcomes.

The MHS has selected the Institute for Healthcare Improvement VAP bundle for implementation at Military Treatment Facilities:



MHS VAP Bundle (IHI)

- Elevate the head of the bed at least 30 degrees.
- Perform daily sedation interruption and daily assessment of readiness to extubate.
- Perform peptic ulcer disease prophylaxis.
- Perform deep venous thrombosis prophylaxis.
- Perform daily oral care with chlorhexidine.

Source:

IHI. *How-to Guide: Prevent Ventilator-Associated Pneumonia*. Cambridge, MA: IHI; 2012

2.4 MHS 30- Day Readmission Prevention Performance Measures

MTFs are expected and encouraged to report facility-wide VAP data with the understanding that this will be limited to ICUs unless there is a long-term ventilator unit. The MHS has selected the following process and outcome measures to track performance:

Descriptions	Data Source	Metric
<ul style="list-style-type: none"> • Observation / Check list for bundle compliance 	Essentris	Process Measure
<ul style="list-style-type: none"> • Ventilator-Associated Pneumonia Rate: [Incidence of VAP in each ICU] / [Number of ventilator days] x 1000 	CDC/NHSN	Outcome Measure





3. References

Centers for Disease Control and Prevention (2003). Guidelines for Preventing Health-Care-Associated Pneumonia. *Center for Disease Control*.

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5303a1.htm> Accessed 7/10/12.

Coffin, S. (2008). Strategies to Prevent Ventilator-Associated Pneumonia in Acute Care Hospitals. *SHEA/IDSA Practice Recommendation*.

Cook, J. (1994). Risk Factors for GI Bleeding in Critically Ill Patients. *New England Journal of Medicine*.

Institute for Healthcare Improvement. (2012, February). How-to Guide: Prevent Ventilator-Associated Pneumonia. *Institute for Healthcare Improvement*.

<http://www.ihl.org/knowledge/Pages/Tools/HowtoGuidePreventVAP.aspx> Accessed 7/10/12.

Kress, J. (2003). The Long-term Psychological Effects of Daily Sedation Interruption on Critically Ill Patients. *American Journal of Respiratory and Critical Care Medicine*.

Munro, C., Grap, M., Jones, D., McClish, D., & Sessler, C. (2011). Chlorhexidine, Toothbrushing, and Preventing Ventilator-Associated Pneumonia in Critically Ill adults. *American Journal of Critical Care*, 428-437.

Ventilator-Associated Pneumonia (VAP) Event. (2012, January).

www.cdc.gov/nhsn/PDFs/pscManual/6pscVAPcurrent.pdf Accessed 7/10/12.



4. Appendix

4.1 Attachment A: VAP Bundle Compliance Form

VAP Bundle – Compliance

Objective: To provide documentation of compliance with readmission prevention bundle

Instructions: Assess guideline compliance on patients receiving mechanical ventilation

Ventilator-Associated Pneumonia Prevention EBP Compliance Checklist	Yes	No	Identified Barriers/ Plans to Overcome Barriers
1. Elevation of the head of the bed at least 30 degrees.			
2. Perform daily sedation interruption and assessment of need to extubate patient.			
3. Perform peptic ulcer disease prophylaxis.			
4. Perform deep venous thrombosis prophylaxis.			
5. Perform daily oral care with chlorhexidine.			