

## **Prevention of Ventilator Associated Pneumonia**

**Christopher P. Baglio, CPT, RN, BSN**

**Brooke Army Medical Center**

**James E. Simmons**

**Darlene Deters (Presenter)**

**Problem:** VAP is an airway infection that develops within 48 hours of intubation. It is the leading cause of death among hospital-acquired infections and has a mortality rate of 46%. VAP is a costly complication, increasing cost/case by ~\$40,000. VAP prolongs ventilatory support requirements and ICU length of stay 4 to 9 days. Our facility had 66 incidences of VAP in 2006.

**Evidence:** Evidence used to address the problem was gathered from the CDC guidelines to determine the diagnosis of VAP. Data was gathered by infection control coordinators who were non-ICU members, via a 100%, retrospective chart review to determine VAP rates. Best practices to prevent VAP were reviewed for consideration in plan.

**Strategy:** Using a 3 point approach, a review of current evidence-based practice literature was used to gather information on how to decrease VAP rate, that lead to research of current products used on ventilated patients, and diagnostic reliability.

**Practice Change:** The Institute for Healthcare Improvement (IHI) VAP bundle was initiated. Interventions included: elevating the head of the bed to 30-45 degrees, daily sedation wake-up and assessment for extubation, peptic ulcer disease prophylaxis, deep vein thrombosis prophylaxis, oral hygiene and subglottic suctioning.

**Evaluation:** Active surveillance for VAP is based on criteria from the NNIS/National Healthcare Safety Network. Data on VAP bundle compliance was collected by infection control personnel.

**Results:** VAP rates at beginning of this project exceeded the NNIS median. One year after implementation of the VAP Bundle, rates decreased 92% within the MICCU and 38% in the SICU with a total of 35 cases in 2007 ( $P < 0.05$  between 2006 and 2007) with an estimated cost avoidance of \$1.2 million.

**Recommendations:** Implement the IHI VAP Bundle to decrease rates.

## Bibliography

- American Thoracic Society; Infectious Diseases Society of America (2005). Guidelines for the management of adults with hospital-acquired, ventilator-associated, and healthcare-associated pneumonia. *American Journal Respiratory Critical Care Medicine*, 171, 388-416.
- Chastre J, Fagon JY. Ventilator-associated pneumonia. (2002). *American Journal Respiratory Critical Care Medicine*, 165, 867.
- Ibrahim EH, Tracy L, Hill C, et al. (2002). The occurrence of ventilator-associated pneumonia in a community hospital: risk factors and clinical outcomes. *Chest*, 20(2), 555-561.
- Institute for Healthcare Improvement. 5 million Lives Campaign, How-to-Guide: Prevent Ventilator Associated Pneumonia. Retrieved March 9, 2008, from [www.ihc.org/NR/rdonlyres/D823E3FD-D10B-493E-A6A8-37C767825780/0/VAPHowtoGuide.doc](http://www.ihc.org/NR/rdonlyres/D823E3FD-D10B-493E-A6A8-37C767825780/0/VAPHowtoGuide.doc).
- Rello J, Ollendorf DA, Oster G, et al. (2002). VAP Outcomes Scientific Advisory Group. Epidemiology and outcomes of ventilator-associated pneumonia in a large US database. *Chest*, 22(6), 2115-2121.
- Salfar N, Dezfulian C, Collard HR, Saint S. (2005). Clinical and economic consequences of ventilator-associated pneumonia: a systematic review. *Critical Care Medicine*, 33, 2184-2193.
- Smulders K, Van der Hoeven H, Weers-Pothoff I, Vandernbrouckle-Grauls C. (2002). A randomized clinical trial of intermittent subglottic secretion drainage in patients receiving mechanical ventilation. *Chest*, 121, 858-862.