Safety Action Bundle: Ventilator-Associated Pneumonia (VAP)

Background

- Ventilator-associated pneumonia (VAP) is a serious hospital-acquired condition that carries a substantial risk of death. Approximately 40,000 cases of VAP occur each year, and these cases are associated with about 6,000 deaths.¹
- VAP is the most common nosocomial infection in patients receiving mechanical ventilation, and it accounts for about half of all antibiotics given in the intensive care unit (ICU). It occurs in 9-27% of mechanically ventilated patients, with about 1 to 4 cases per 1,000 ventilator days. The condition is associated with increased ICU and hospital stay and has an estimated attributable mortality of 9%.²
- The Partnership for Patients estimates that 50% of VAP cases are preventable. Over 3 years this would prevent 17,500 cases of VAP. Evidence-based interventions called bundles have been shown to reduce VAP.¹

Aim

To reduce the incidence of VAP by 40% by December 31, 2013
*Hospitals in top quartile (zero) should focus on maintenance and hardwiring.*

Measures

Outcome: VAP per Centers for Disease Control and Prevention (CDC) and State Law

Process: VAP Survey on Action Bundle Implementation

Submit: National Healthcare Safety Network (NHSN) and WSHA Survey

Core Strategies

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| Leadership      | □ Set aims, goals and timelines for practice changes.  
                 □ Identify administrative and clinical leaders to champion.  
                 □ Educate care providers including information about: local epidemiology, risk factors, and patient outcomes. Assess knowledge each year and ensure a process is in place to educate new staff as they begin caring for patients.  
                 □ Educate clinicians about alternative, noninvasive strategies. |
| Surveillance    | □ Ensure each patient benefits from all elements of VAP bundle including hand hygiene, bed position, daily sedation interruption, assessment of readiness to wean, and oral care.  
                 □ Use structured observation tools at regularly scheduled intervals including all shifts to monitor compliance. Missing any one of the elements gives a score of zero for bundle compliance on behalf of that patient. |
| Prevent Aspiration | Conduct active surveillance for VAP occurrence and compliance with process measures.  
  a. Collect data that will support the identification of patients with VAP and calculation of VAP rates (i.e., the number of VAP cases and number of ventilator days for all patients who are undergoing ventilation and in the population being monitored). |
| Prevent Colonization of the Aero-digestive Tract | Avoid gastric overdistention.  
  □ Avoid unplanned extubation and reintubation.  
  □ HOB should be elevated 30-45 degrees unless medically contraindicated.  
  □ Use a cuffed endotracheal tube with in-line or subglottic suctioning.  
    a. ETT cuff inflation: Maintain pressure of at least 20 cmH2O. (The cuff needs to be adequately inflated if it is to prevent saliva from entering the trachea). |
| Minimize Duration | Provide easy access to noninvasive ventilation equipment and institute protocols to promote the use of noninvasive ventilation.  
  □ Adhere to hand hygiene guidelines.  
  □ Orotracheal intubation is preferred to nasotracheal intubation.  
  □ Perform regular oral care with an antiseptic solution, brush teeth, and perform oral and pharyngeal suctioning.  
  □ Keep Yankauer suction holster off floor and bed to prevent contamination.  
  □ Limit use of histamine receptor 2 (H2) blocking agents and proton pump inhibitors for patients who are not at high risk for developing a stress ulcer or stress gastritis.  
    a. Acid suppression may increase the colonization of potentially pathogenic organisms. |
| Minimize Contamination of Equipment | With planned intubations, schedule extubation in advance and use weaning protocol to prevent prolonged intubation overnight.  
  □ Perform daily assessment of readiness to wean and use weaning protocols.  
  □ Spontaneous Awakening Trials (SAT) and Spontaneous Breathing Trials (SBT).  
    a. Implement a protocol to lighten sedation daily to assess for readiness for extubation. Include precautions to prevent self-extubation such as increased monitoring during the trial. |
| Performance and Variation | Use sterile water to rinse reusable respiratory equipment.  
  □ Remove condensate from ventilator circuits. Keep the ventilator circuit closed during condensate removal.  
  □ Change the ventilator circuit only when visibly soiled or malfunctioning.  
  □ Present performance compared to others to the board and other key stakeholder groups. |
Moving Towards Zero

| Take the Above Measures to the Next Level | Identify populations where VAP is still occurring and employ additional interventions and education. |
| Get patients who are on ventilators up twice a day to a chair. |
| Incorporate visual or auditory cues that help staff immediately identify head of bed (HOB) 30-45 degrees. |
| Create a team approach where respiratory therapists and nursing work collaboratively to maintain HOB elevation, provide consistent oral care and complete sedation vacation. |

| Patient and Family Engagement | Encourage and support patient and family participation in care planning and decision making by using tools like the “Prevent Pneumonia” checklist offered by Campaign Zero. |
| Educate patient and family on bundle and how they can help remind staff. |
| When an infection occurs, interview all staff, patient, and family for ways in which this might have occurred. |

Hardwiring

| Culture | Promote a blame-free environment where individuals are able to report errors or near misses without fear of reprimand or punishment. |
| Encourage collaboration across ranks and disciplines to seek solutions to patient safety problems. |
| Promote transparency of results from display on units to the board and public. |

Key Resources