

PEER Professionals Evolving Through Education and Research

Ventilator Associated Pneumonia—Nursing Care Makes a Difference

The Problem of VAP

Ventilator Associated Pneumonia (VAP) is a common cause of infections in ICUs. In fact, the incidence of VAP can be as high as 10% to 65%. In addition to a high potential incidence of VAP, the consequences can be severe with mortality rates reaching 87%. Thus, the Institute for Healthcare Improvement has determined that VAP is the leading cause of death from hospital acquired infections. In addition, VAP leads to longer time spent on the ventilator, an increased length of stay in the ICU, and an increased length of stay in the hospital after transfer from ICU. Overall, VAP can increase the length of hospital stay by 6 to 10 days. It is therefore easy to see that VAP is a very costly patient problem in many ways.



What Patients Are at Risk?

Risk factors for VAP include:

- Mechanical ventilation with an endotracheal tube
- Diseases/conditions such as chronic obstructive pulmonary disease, burns, neurosurgical conditions, acute respiratory distress syndrome, and aspiration
- Reintubation
- Administration of paralytic agents or enteral nutrition.
- Bacterial colonization in the oropharynx and on the teeth
- Prone position

How Does Bacterial Colonization of the Mouth and Pharynx Lead to VAP?

In certain disease states and under conditions when the mouth is dry and inflamed, the oropharynx becomes susceptible to colonization by pathogenic bacteria. Secretions in the mouth can therefore become highly contaminated with these bacteria. Patients, especially those in prone positions, can then aspirate these secretions, leading to the development of pneumonia.

Can VAP be Prevented?

Fortunately, VAP can be prevented by following evidence-based practices. In fact, the incidence of VAP has been reduced to **ZERO** for the

last 25 months at Community Hospital East in Indianapolis. It is a goal at Methodist Hospitals to also prevent VAP from occurring.

VAP Prevention is Now a National Goal

Several agencies have made the reduction of VAP a priority. For example, the Institute for Healthcare Improvement has designated VAP prevention as one of the key elements in their 100,000 lives campaign. The Agency for Healthcare Improvement has determined that there is strong evidence to support interventions aimed at reducing VAP. The National Quality Forum has recognized the importance of safe practices to reduce VAP. Finally, JCAHO has been developing specific monitors related to VAP.

Evidence-based Prevention Strategies

The best way to prevent VAP is to follow some basic nursing care practices. These practices include keeping the head of the bed elevated 30 degrees, providing frequent oral care, using closed endotracheal suction systems, and early mobilization. In addition, the Institute for Healthcare Improvement recommends sedation vacations and assessment of readiness to extubate, along with DVT prophylaxis. New strategies may continue to emerge as research in the prevention of VAP continues.

VAP Prevention at Methodist

The Infection Control Team, has been working to reinforce some existing prevention protocols and has initiated some additional new prevention practices. Old and new practices have been blended and are being instituted in the ICU's during 3 phases. Following is a description of each phase.

Phase 1

- Standard precautions that include using appropriate Personal Protective Equipment (PPE). Gloves are a must when handling any ventilator related equipment and masks and gowns are worn depending on risk of exposure.
- Good hand washing.
- Goober alert- maintain system clear of mucus.
- Maintain intact separate systems for oral and tracheal suctioning.

- Use 0.9% normal saline to rinse secretions from lines.
- Keep the HOB elevated 30 degrees.
- Turn every 2 hours.
- Do aspiration checks every 4 hours.
- Perform standardized oral care every 4hrs and prn using new Sage oral care kits.

Phase 2 (End of June)

- Develop Sedation Vacation protocol.
- Begin using the Riker Scale to measure level of sedation
- Begin the practice of Sedation Vacations
- Develop Ventilator Order sets for use in July.

Phase 3 (End of August)

- Early Mobilization

Sage Q Care Oral Care System

A few words about the new Sage Q Care Oral Care System. This product, developed by a nurse, is sequenced to decrease plaque and bacterial growth in the oral cavity. The proper sequence is to brush the patient's teeth every 12 hours and perform oral care every 4 hours and prn. Teeth brushing is accomplished through a suction toothbrush that attaches to the wall suction. Oral care involves wiping the mouth using a suction swab that has been saturated with a mouth moisturizer. Other components of the system include a covered yankauer and an oropharyngeal catheter. The entire system has been designed to be easy to use and to maintain an intact ventilator and suction system. Research has demonstrated that this product is effective in reducing the number of VAPs by reducing the bacteria present in the oral cavity and subsequently aspirated into the lungs. This product will be available housewide, so watch for it to appear on your unit soon!