VAP: A Preventable Killer
VAP FACTS

• VAP is 2\textsuperscript{nd} leading nosocomial infection in US, second only to UTIs
  - Now considered a MEDICAL ERROR
• Can lengthen ICU stay by up to 22 days and hospital stays up to 25 days
• Can increase hospital cost by more than $40,000- $50,000 per patient
• Occurs in 9-70\% of all ICU patients; 50\% of those on ventilator more than 5 days
Providing oral care using the tooth brush method in ventilated critical care patients reduces the risk for Ventilator Associated Pneumonia (VAP) as compared to solely using the foam swab method of oral care.

**P**-ventilated critical care patients  
**I**-tooth brushing method  
**C**-foam swab method  
**O**-reduction of VAP
Sources of Evidence

- RCTs
- CINAHL
- Medline
- Baptist East Protocols/ Visits
- Systemic Reviews
- Clinical Practice Guidelines
- Meta-Analysis
Foam Swabs

• In the past, foams swabs were once considered the gold standard of care, but now research points to ineffective prevention of bacterial growth in ventilated patients.
• Swabs do not effectively remove plaque or other debris from the oral cavity—especially in between the teeth
• Choking hazard
• Most nurses use this method of oral care because of its low cost expense and easy obtainment.
• Prevents dryness of oral mucosa by adding moisture.
Why Not Swabs??
Tooth Brushing

• A “baby” toothbrush allows more areas of the oral cavity to be reached.
• The addition of chlorhexidine allows for longer bacterial resistance because it is absorbed into the tissue and released over time.
• The facility would see a minimal increase in costs with the purchase of the chlorhexidine, but would quickly be offset by the savings from the VAP prevention.
• The workload of the nurse would increase slightly due to additional charting and checklists required with each oral care procedure.
SUMMARY

• Using an antibacterial and/or antiseptic agent along with standard oral care procedures directly correlates with the reduced rate of VAP seen in critical care settings.
• The implementation of the correct oral care procedures for ventilator patients results:
  • in increased patient safety due to a decrease in the number of nosocomial infections
  • decreased overall hospital expenses
  • decrease in nursing workload
Patho & Clinical Manifestations

http://youtu.be/R4RidTXkJKk

B Bleeding (gums, mucosa, coagulation status?)
R Redness (gum margins, tongue, antibiotic stomatitis?)
U Ulceration (size, shape, herpetic, infected?)
S Salvia (xerostoma, hypersalivation, characteristics?)
H Halitosis (character, acidotic, infected?)
E External Factors (angular chelitis, endotracheal tapes?)
D Debris (visible plaque, foreign particles?)
Translation

- Standing Orders created-Baptist East
  - Mechanical ventilation Orders
    - Oral care was included, per protocol
  - Ventilator Standing Orders
    - Oral care q2h and PRN
- Other facilities
  - Developed and implemented protocol
    - Teeth brushing q 8-12 hours
    - Oral care with swabs q 2-4 hours
    - Sub-glottic suctioning q 6-8 hours
  - Reinforced the ICU Standards of Practice
  - Additional products were purchased, such as: non-alcohol based antiseptic solution or toothpaste, oral suction swabs with mouth moisturizer, suction toothbrushes, sub-glottic suction catheters, covered Yankeurs
Integration

Upon our visits to Baptist East ICU on Feb. 2st from 1300-1452 and March 27th at 0650 – 0735, we noted the following integrations:

- AM and PM nurse perform oral care every 2h
- Oral care prepackaged kits are hung on IV poles
- Daily chest x-ray or long-term ventilator patients obtain routine x-ray every other day
- Initial sputum culture obtained and additional if needed (increased temperature)
- Prophylactic antibiotic use if suspect VAP via x-ray
- Passive and active ROM exercises done q2h
- Medications given to loosen mucous such as Mucomyst or Pulmocort q4-6h
Integration cont.

- RT does circuit change q72h and wipes q shift.
- VAP prevention goal is to wean off vent ASAP.
- Tube feeding STOPPED prior to move or lower HOB (prevents aspiration which leads to VAP).
- Chlorhexidine oral qshift with standard care qh.
- Closed circuit suction prevents contamination.

- Assess:
  - Lung sounds
  - Heart sounds
  - Routine ABG
  - Nasal flare
  - Q4h PRN
Evaluation

• Swabs, when combined with the use of an antiseptic and a toothbrush to remove plaque, are now considered the baseline oral care measures for the prophylactic treatment of VAP in ventilated patients.
• One method alone is not adequate; therefore each component must be included within all patients’ plans of care in order to obtain the ideal outcome.
• Even though current evidence suggests VAP can be reduced or even prevented with the implementation of this oral care protocol, further research is essential in optimizing the prevention of this nosocomial infection.
Evaluation cont.

Figure 1. 2005-2007 University of Michigan Hospitals and Health Centers surgical ICU ventilator-associated pneumonia rate.
References


