

# Standardized Oral Care Decreases Ventilator-Associated Pneumonia!

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This study was funded in part by a grant from Sage Products Inc.  
The opinions set forth herein are those of the presenter, and do not necessarily represent the opinions of Sage Products Inc.



- 8 Hospital system
- 17 Adult ICUs with 212 beds (Neuro/Surgical/Medical/Cardiac)
- 3,500 beds
- >24,500 employees
- >4,600 affiliated physicians
- Almost 150,000 admissions in 2003



## Goal:

- Decrease Ventilator Associated Pneumonia (VAP) to equal or below the CDC's NNIS System's pooled means for each adult ICU

# VAP

## Patient

- 2nd most common Healthcare-Associated Infection (HAI)
- High patient mortality (54-71%)
- Increased LOS (16-17 days)

## Financial

- Hospital charges of \$30,000-\$40,000 / occurrence

## Quality

- JCAHO
- IOM (Institute of Medicine)

CDC 2004 <http://www.cdc.gov/ncidod/hip/pneumonia/>

Byers J AJCC 2000; 9:344-351

Rello J Chest 2002; 122:2115-2121

## Experience at one hospital

- Nurses in one community hospital instituted an evidence-based oral cleansing protocol
- VAP rates decreased and have remained low for 3 consecutive years

# Impact of Standardized Oral Care on Ventilator-Associated Pneumonia



Multi-site 8-ICU

1093 Patients  
Mechanically Ventilated  
>48 hours

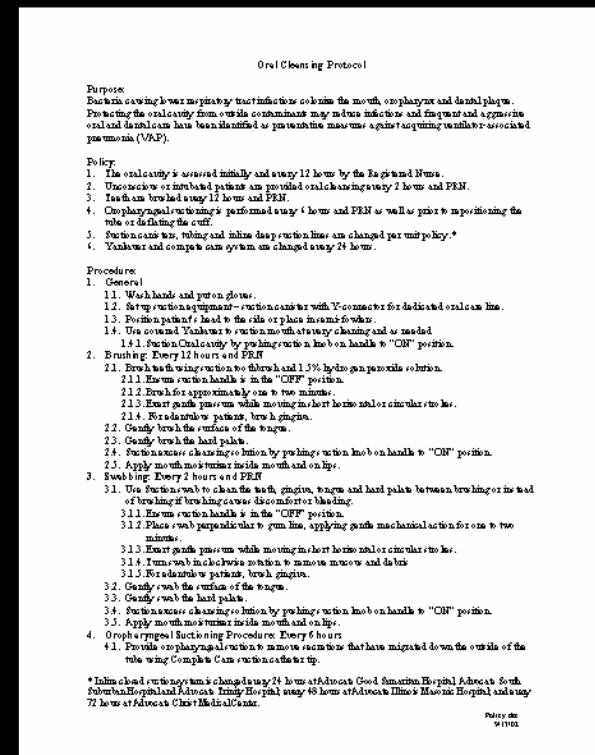


Prospective Interventional Study  
Baseline – Education -Intervention



# Planning

- Leadership Team:
  - ICU Directors
  - ICU Managers
  - Clinical Educators
  - Respiratory Therapists
- Selected 3 VAP risk factors:
  - Oropharyngeal Colonization
  - Dental Plaque Colonization
  - Management of Oral Secretions



# Standardized Oral Care Protocol

- Brushing teeth 2 times/day to remove dental plaque
- Swabbing every 2 hours to cleanse and maintain mucosal integrity
- Oropharyngeal suctioning at least every 6 hours

# Educational Module

## Goals:

- Increase knowledge & awareness of VAP
- Change attitudes to increase importance of oral care's role in etiology of VAP
- Change practice

# Pre & Post Testing

## Ventilator Associated Pneumonia VAP Pre-Test

- In the ICU, how quickly can a patient's mouth be colonized with pathogenic bacteria?
  - 8 hours
  - 12 hours
  - 24 hours
  - 48 hours
  - 72 hours
- What is the second most common hospital-associated infection?
  - urinary tract infections
  - respirations
  - catheter related blood stream infections
  - surgical wounds
- According to the CDC, what percentage of patients may die due to VAP?
  - 20%
  - 30%
  - 40%
  - 50%
  - 60%
- Circle all the risk factors that the CDC recognizes for VAP.
  - Incontinence
  - Severe underlying diseases
  - Use of antibiotics
  - Admission to ICU
  - Bacterial colonization of the mouth
  - Presence of endotracheal tube
  - The presence of an indwelling catheter
- What are the two leading factors that lead to VAP?
  - Colonization of the oropharynx
  - Lack of proper handwashing
  - Aspiration of bacterially contaminated oral secretions
  - Contamination of Respiratory Therapy equipment
  - Patients that have more than 3 visitors per day
- JCAHO recognizes nosocomial infections as a patient safety issue.
  - True
  - False
- Nurses can not play a major role in preventing VAP, only doctors can.
  - True
  - False
- My ICU is participating in a research study for VAP.
  - True
  - False
- My ICU has a new Oral Care Protocol for oral cleansing and oral suctioning of unconscious or intubated patients.
  - True
  - False
- List 5 things you do to prevent VAP.
 

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## Ventilator Associated Pneumonia VAP Fact Sheet

A patient's mouth can be colonized with pathogenic bacteria within 24 hours of admission to the ICU. Pseudomonas, Acinetobacter and MRSA are among the organisms that thrive in dental plaque. The environment of oral cavity and pharynx enables these bacteria to colonize and accumulate in secretions that migrate to the endotracheal tube (ET) cuff. Due to manipulation of the ET tube these secretions can leak around the cuff and may aspirated into the lungs where they can cause Ventilator Associated Pneumonia (VAP).

- Two Leading Risk Factors
  - Colonization of the oropharynx
  - Aspiration of contaminated secretions
- Pneumonia & VAP
  - 2<sup>nd</sup> most common hospital-associated infection (HAI)
  - Leading cause of death due to HAI
  - VAP adds 6.1 days to ICU / 10.5 days to hospital LOS
  - Antibiotics to treat = higher cost & ARO (Antibiotic Resistant Organisms)
- CDC's Guidelines
  - Leading cause of death among HAI = accounts for 60% of deaths
  - Mortality rates for VAP range between 54% and 71%
  - Highest mortality for Pseudomonas or Acinetobacter
- Nosocomial infections
  - Patient safety issue by JCAHO
- Preventive nonpharmacological measures
  - Reducing oropharyngeal colonization = oral cleansing
  - Dental plaque = brush teeth
  - Oral secretions = oropharyngeal suctioning

### Standardized Oral Care Study

Advocate's Quality Improvement Initiative to reduce VAP, incorporates a partnership with Sage Products Inc., a manufacturer of oral cleansing and suctioning products, to study the impact of a new oral cleansing protocol on the incidence of VAP.

Five Advocate sites, encompassing the intensive care units are participating in this study.

Based on available information, a new **Oral Care Protocol** was developed by a team of your Directors, Managers, Clinical Nurse Specialists and Respiratory Therapists to reduce the number of cases of VAP.

## Ventilator Associated Pneumonia Oral Care Review

Test your knowledge related to the topic of ventilator associated pneumonia by completing the following. Review with your resource person or refer to the other side for the correct answer.

Answer true or false for the following:

- \_\_\_\_\_ Oropharyngeal suctioning can be done effectively with a regular hard-tipped yankauer.
- \_\_\_\_\_ A patient needs to be on a ventilator > 48 hours before the pneumonia is considered a ventilator associated pneumonia (VAP).
- \_\_\_\_\_ Swabbing the mouth every 2 hours will prevent VAP.
- \_\_\_\_\_ JCAHO recognizes VAP as a patient safety issue.
- \_\_\_\_\_ Colonization of the oropharynx by normal flora is a risk factor for VAP.
- \_\_\_\_\_ Patients without teeth do not require brushing.
- \_\_\_\_\_ Mouth moisturizer is applied inside the mouth and on the lips.
- \_\_\_\_\_ An intact ETT cuff will prevent VAP.
- Place an X in front of the following that are risk factors for acquiring VAP:
  - \_\_\_\_\_ Immobility
  - \_\_\_\_\_ Head of bed = 30°
  - \_\_\_\_\_ Middle age
  - \_\_\_\_\_ Antibiotic administration
  - \_\_\_\_\_ Presence of NG tube and/or ETT.
- Match the task with the correct frequency according to the oral cleansing policy and procedure.
 

a) q 2 hours   b) q 6 hours   c) q 12 hours   d) q 24 hours

  - \_\_\_\_\_ Brush teeth
  - \_\_\_\_\_ Swab/suction mouth and apply mouth moisturizer
  - \_\_\_\_\_ Change yankauer and complete care system
  - \_\_\_\_\_ Oropharyngeal suctioning

# Bedside Inservicing



**DOCUMENTATION OF ORAL CARE PROTOCOL\***

See Oral Care Study Protocol for Procedure Instructions

**PATIENT STICKER**

Please initial the boxes reflecting the approximate time the intervention was provided.

Date put in use: \_\_\_\_/\_\_\_\_/\_\_\_\_

INTERVENTION	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	0000	0100	0200	0300	0400	0500	
<b>EVERY 24 HOURS</b> Tubing, T = connector and Yankauer Changed																									
<b>EVERY 12 HOURS</b> Oral Assessment																									
<b>Brush</b> • Teeth • Tongue • Hard Palate																									
<b>EVERY 6 HOURS</b> Suction Catheter Tip • Oropharyngeal Suctioning																									
<b>EVERY 2 HOURS</b> Swab • Teeth • Tongue • Hard Palate Moisturizer applied in Mouth and on Lips																									
<b>AS NEEDED</b> Mouth and Pharynx Suctioned																									
<b>Other Care (e.g.)</b> • ET=ET Manipulation • TC=Trach Care • ET=ET Tube Suctioned																									

\* We recognize that in critical care units, it is not always possible to provide oral care every 2 hours. Please use this form to document ONLY the care actually provided.  
This will not become part of the patient's permanent record.

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# Evaluation: Practice Change

## BASELINE

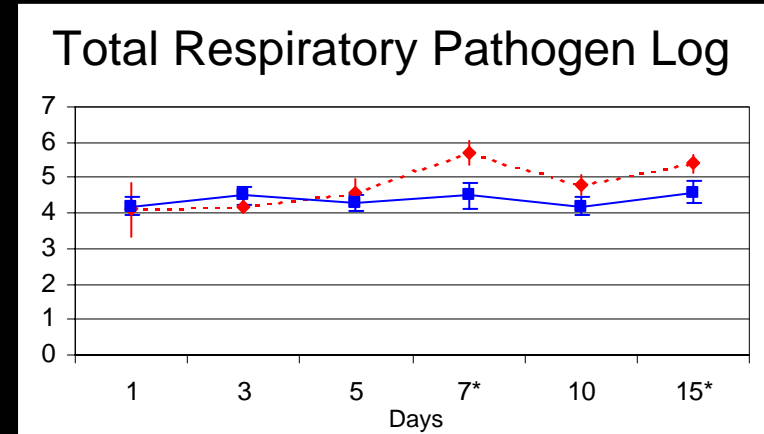
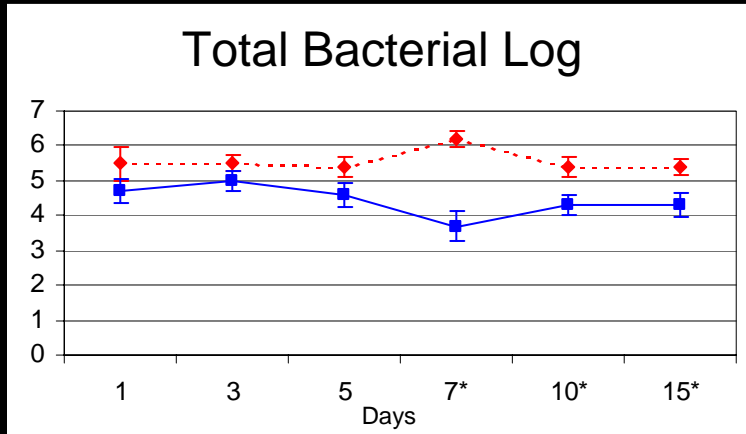
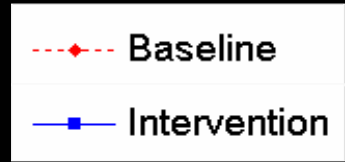
- 31% received  $\leq$ q4 hr cleansing
- 42% oral cleansing tools available bedside
- No patient had a toothbrush available bedside
- No patient had moisturizer applied to preserve mucosal integrity

## INTERVENTION

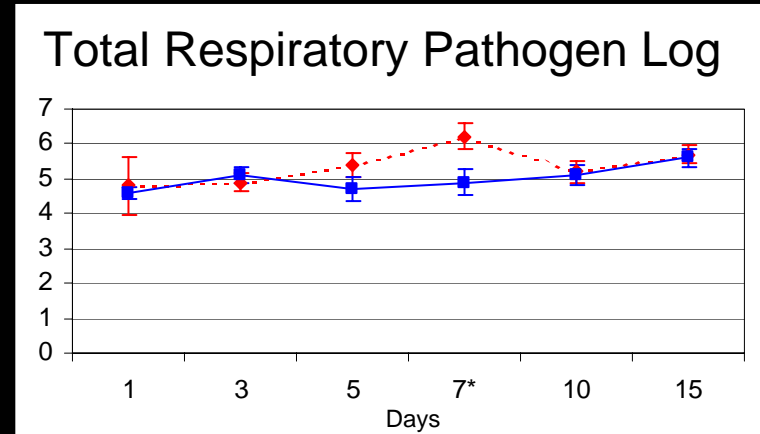
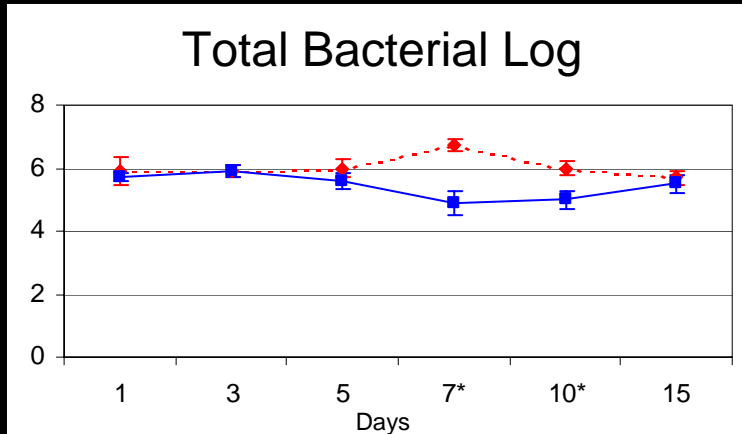
- 69% received  $\leq$ q4 hr cleansing
- 81% oral cleansing tools available bedside
- 33% of observed cleansing was performed by a toothbrush
- 63% had moisturizer applied  $\leq$ q4 hr

# Evaluation: Colonization

## Dental Plaque



## Oropharyngeal



- Log 10 BI = mean of logarithms of colony counts, i.e., mean bacterial index (BI). Data are presented as mean  $\pm$  SEM.
- Number of cultures for baseline group days 1-15 is 7, 23, 30, 18, 37, 31 and for the intervention group, 43, 45, 30, 23, 35, and 36.
- Asterisks represent statistically significant differences between groups,  $P < 0.05$ ; Student t-test.


# Evaluation: VAP Rates

## BASELINE

- 36 VAP
- 631 Patients
- 5,921 ventilator days
- 6.08 VAP Rate

## INTERVENTION

- 19 VAP
- 462 patients
- 4,542 ventilator days
- 4.18 VAP Rate



31%  
Reduction

# Outcome

A standardized oral care protocol is effective and is being adopted systemwide!

# End of Poster Presentation

To learn more about the important role that oral care plays in the immuno-compromised and aspiration risk patient, click the link below:

<http://www.sageproducts.com/education/>

Or

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