

Non-Ventilator Hospital-Acquired Pneumonia (NV-HAP) in the ICU: Incidence and Prevention

*Barbara Quinn, RN, ACNS-BC; Dian Baker, RN, PhD; Carol Parise, PhD

Sutter Medical Center, Sacramento; California State University, Sacramento; Sutter Institute for Medical Research



PURPOSE

- To determine incidence and significance of non-ventilator hospital-acquired pneumonia (NV-HAP) in the ICU setting.
- Ventilator-associated pneumonia (VAP) has been well-studied.
- Ventilator prevention bundles have dramatically reduced the incidence of VAP across the nation and in our institute.
- However, little is known about the incidence of NV-HAP in the ICU

BACKGROUND/SIGNIFICANCE

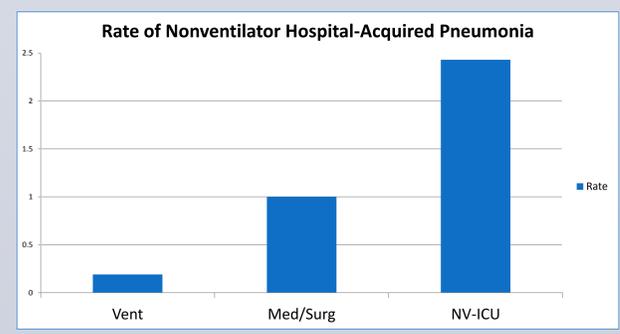
- Currently, there are no requirements to monitor NV-HAP.
- Limited studies available indicate that NV-HAP is an emerging factor in prolonged hospital stays of 7-9 days, patient mortality of 19.8%, and increased cost of \$40,000.
- New studies by Esperatti (2010) and Davis (2012) indicate that VAP and NV-HAP share similar pathogens and mortality rates, and NV-HAP occurs more frequently than VAP.
- Hospital-acquired pneumonia is generally considered a preventable condition, and may be subject to loss of reimbursement in the future.

METHOD

- This was a descriptive, quasi-experimental study using retrospective data to determine the incidence, demographics, and clinical factors of NV-HAP.
- NV-HAP data were obtained from a large, urban hospital's electronic integrated medical management system.
- Inclusion criteria: all adult discharges between January 1, 2010 and December 31, 2010, with ICD-9 codes of pneumonia-not present on admission, AND meeting the Centers for Disease Control and Prevention's (CDC's) definition for HAP.
- NV-HAP were then attributed to either medical/surgical or ICU, based on date of clinical onset.

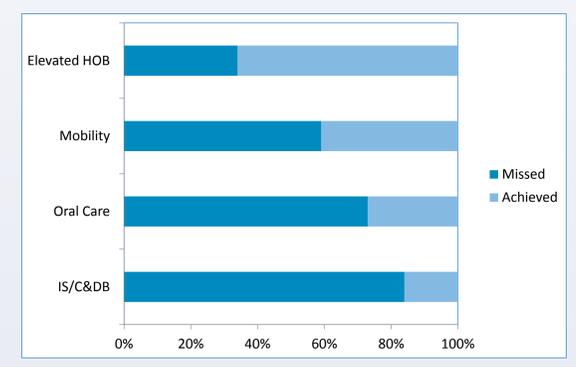
RESULTS

- A total of 24,482 patients and 94,247 patient days were eligible for study inclusion.
- There were 14,396 adult ICU days: 35 NV-HAP cases, with an infection rate of 2.43 per 1000 non-ventilated days.
- There were 79,851 adult medical/surgical days: 80 NV-HAP cases, with an infection rate of 1.0 per 1000 patient days.
- The rate of VAP was 0.19 per ventilation day.
- Demographics and risk factors for NV-HAP were similar between groups.
- Estimated cost of NV-HAP in ICU over the one year period:
 - \$1.4 million, 280 extra days, 7 deaths.



MISSED NURSING CARE

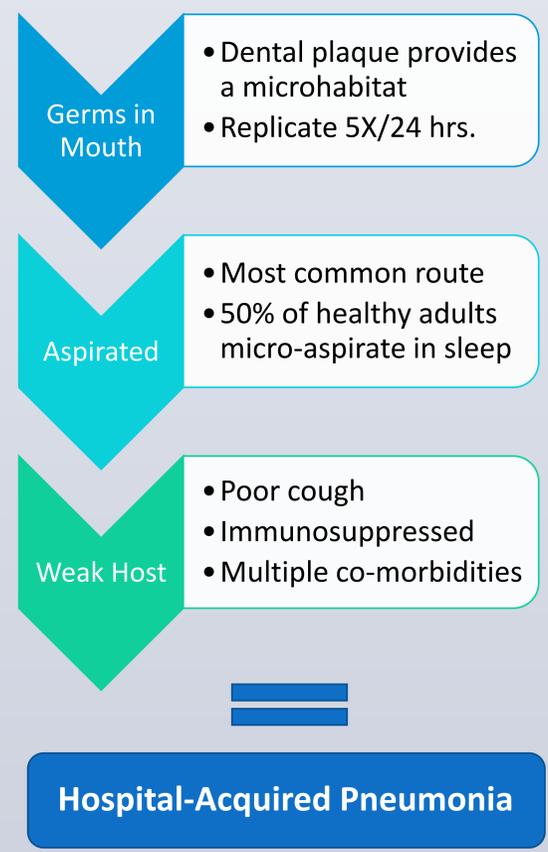
Nursing care known to prevent pneumonia was frequently missed.



CONCLUSIONS

- HAP is occurring in non-ventilated patients, resulting in loss of dollars and lives.
- Non-ventilated ICU patients may be at higher risk to develop NV-HAP when compared to adult patients on a medical/surgical unit and ventilated patients with a ventilator prevention bundle in place.
- Prevention efforts and best practice should be rigorously applied.
- Recommended focus: increase the frequency of basic nursing care to at-risk patients.

PATHOGENESIS OF NV-HAP



PREVENTION OF NV-HAP

- Identify **modifiable risk factors** and develop programs to reduce the risk of pneumonia by changing those risk factors." (CDC, 2003)
- Reducing pathogens in the mouth/throat** is a simple, modifiable risk factor for pneumonia – we chose to start here.

IMPROVING ORAL CARE IN THE ICU

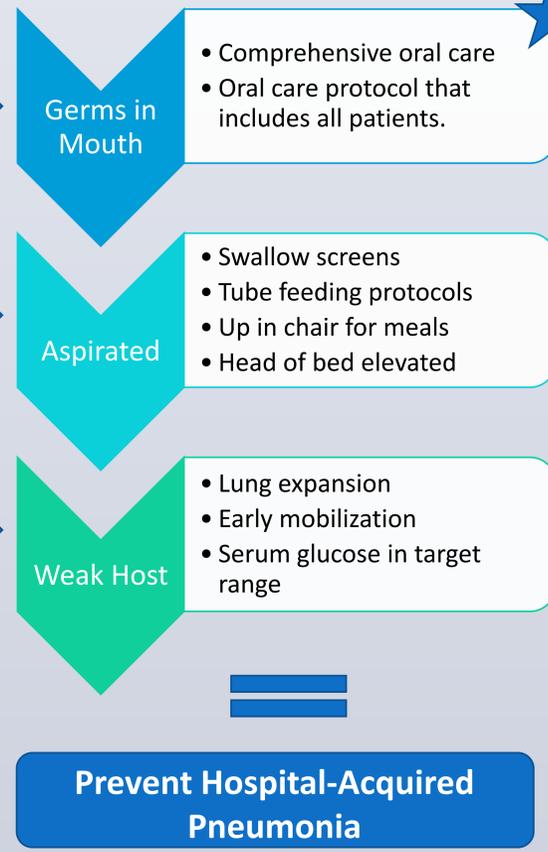
INTERVENTIONS:

- Revised Oral Care Protocol to include non-ventilated patients.
- Purchased therapeutic oral care tools.
- Educated staff
- Monthly data collection of oral care *process* and NV-HAP *outcome*.



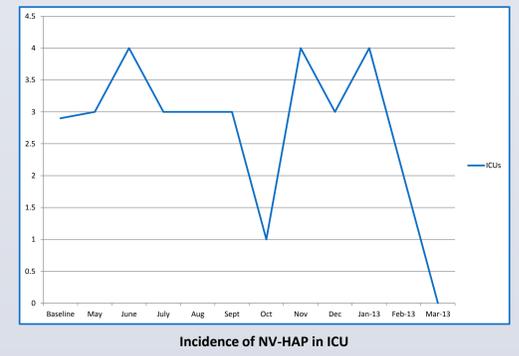
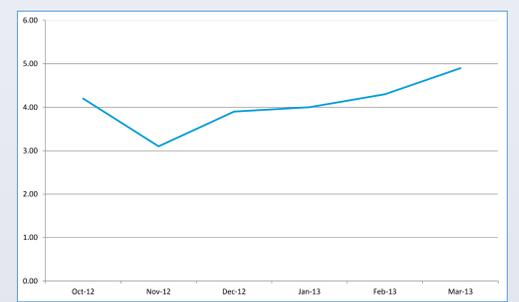
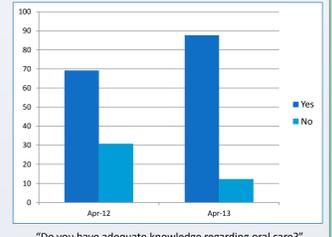
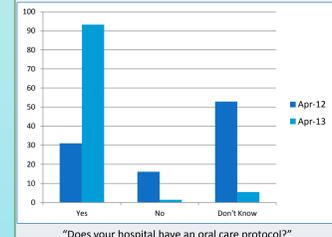
"We are preventing pneumonia and saving lives, one clean mouth at a time." (HAPPI Team, 2012)

PREVENTION OF NV-HAP



OUTCOMES

- Improved knowledge regarding oral care.
- Increased frequency of oral care for ventilated and non-ventilated patients.
- Decreased incidence and rate of NV-HAP in the ICU.



ACKNOWLEDGEMENTS

- We appreciate the grant from Sage to help us with costs of data collection and analysis.
- A special "thank you" to our ICU leaders and oral care champions: Tracy Chu, RN, Educator and Traci Sheesley, RN, ICU Director.
- We could not have made this much progress without the tireless efforts of our Hospital-Acquired Pneumonia Prevention Initiative (HAPPI) team and all our bedside nursing staff: you are making a difference for our patients!—thank you!

