Are You Addressing the New #1 Patient Harm in Your Hospital? Pneumonia NOT Related to a Ventilator

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The story of May and how we began this journey

• May is a 57 year old grandmother who develops non-ventilator hospital acquired pneumonia (NV-HAP)

Why does this keep happening?

We were familiar with VAP but was NVHAP flying under the radar?

• How much non-ventilator pneumonia was occurring in the hospital?

• Was it happening in other hospitals?

• Could it be prevented? If so, how?
Incidence of NV-HAP:
Three hospital systems study (2012 used 2010 data)
similar results from Kaiser and the VA

- Sutter Medical Center (2010 data):
  - 24,482 patients; 94,247 patient days
  - 1.25/1000 pt days & 0.49/100 pts
  - 115 NV-HAP
  - Most on Med/Surg Units
- Total estimated annual impact:
  - $4.6 million
  - 23 deaths
  - 1035 days

Summary of Recent Literature
NVHAP is a National Problem

- Incidence:
  - 2/100 admitted patients
  - HAP Top HAI in U.S. (60% NVHAP)
- Mortality: 14 to 30%
- Length of Stay: 4-16 days
- Cost: 28K – 40K
- Readmission: 20%
- Sepsis: 40-50%
- “The Next Frontier”

IMPACT
HAPPI-2 Preliminary Analysis

- 21 U.S. hospitals
- 1300 NV-HAP Cases
- Same mortality, LOS, Readmission data
- In addition:
  - 60% occurred on Med/Surg units
  - 26% transferred to ICU
  - 34% admitted from home were discharged to a higher level of care
In Addition…

HAIs New on Top 10 Public Health Concerns in U.S.  

NVAP: The New Frontier

By reducing NV-HAP we address quality goals of every healthcare organization:

- Mortality
- Length of stay
- 30 day Readmission
- Affordability
- Sepsis
- ICU utilization
- Long term morbidity

How Can We Prevent Pneumonia?

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Identify the most modifiable risk factors and develop prevention programs to address them. (CDC, 2002)

- **Germs**
  - Reduce harmful pathogens with:
    - Comprehensive oral care

- **Aspiration**
  - Reduce aspiration with:
    - Swallow assessments
    - Head of bed elevated
    - Oral/Nasal gastric Tube Care

- **Host**
  - Increase host resistance with:
    - Early mobility *Keep patients warm during surgery
    - Pulmonary toilet *Glucose control
    - Limit use of acid suppressive meds

Most Pneumonia Starts in the Mouth

- **Microbiome of Oral Cavity**
  - 200 billion oral microbes
  - 200-1000 species

- **48 hours for HAP pathogens in mouth**
  - If aspirated =100,000,000 bacteria/mL saliva into lungs


Prevent Hospital Acquired Pneumonia

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http://helios.bto.ed.ac.uk/bto/microbes/biofilm.htm

Microaspiration

At least 50% of healthy adults microaspire.

Elevating the head of the bed does not prevent all aspiration or micro aspirations.

- Who is at most risk?

- Who is not at risk?

Who is “at-risk”? **ALL** patients in the hospital – therefore a standard of care is required.
Why Oral Care as Primary Intervention?

- Systematic Review & Meta Analysis
- 5 RCTs: Oral care to prevent NV-HAP
- Risk Reduction for NVHAP (P=.02)
- RR for fatal NV-HAP (P=.002)

Kaneoka (2015) ICH Prev of HCAP w/ oral care

Underused care associated with the development of pneumonia*

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<th>IS/CADS</th>
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<td>84%</td>
<td>16%</td>
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*Data from Sutter HAPPI 1st study

What have we learned?

- Pneumonia occurring in nonventilated patients in All types of hospital systems
- Patients are at risk on ALL types of hospital units
- Costing significant number of lives and dollars
- Opportunities for prevention are unused – Preventive care not completed
“I don't mind change; I just don't like to be changed”

Recommendations to Address NV-HAP & Post op pneumonia at your facility:

- Use a scientific model to change behavior
- Measure baseline NV-HAP
- Gather an interdisciplinary team
- Select Interventions based on Gap Analysis findings & EBP

Recommendations to Address NV-HAP & Post op pneumonia at your facility:

- Focus on one intervention at a time, beginning with the most modifiable risk factors
- Monitor process and outcome measures; calculate ROI
- Provide feedback to staff and leadership
- Celebrate and share your successes
**NV-HAP** 70% from baseline!

Control chart for representative HAP January 2010 to December 2014

Oral care for all adult pts
Pharmacy starts PPI protocol
NGT standards revised
Baseline documentation
Mandatory education for nurse assistants
Post-operative NV-HAP (all adult inpatient surgery) Incidence 6 months pre oral care vs. 6 months after

Post Op NV-HAP

Return on investment: What does prevention mean?

- Between May 2012 and December 2014
- we avoided 164 cases of NV-HAP
  - 31 lives saved
  - $5.9 million not spent
  - 656-1,476 extra days in the hospital avoided
NV-HAP #1 hospital-acquired infection, costing patient lives and dollars

NV-HAP can be prevented and harm to patients reduced

Monitoring for NV-HAP and prevention programs must rise to the same level of attention as other HAIs

Courage

One must always be aware, to notice, even though the cost of noticing is to become responsible.

Thylias Moss
References

- CDC (2003). Guidelines for preventing HCAHAP.