Inter-professional Evidence-Based Care of Hospitalized Patients with and at Risk for Sleep Apnea Improves Care Quality

LISA A. KUHEN DNP, APRN-BC, ADULT CNP
Disclosures: permission was granted for use of the STOP-Bang screening tool by the original author, Dr. Francis Chung and permission was granted for use of the Obstructive Sleep Apnea Knowledge and Attitude Questionnaire (OSAKA) (Schotland & Jeffe, 2003) which was used to evaluate intervention effectiveness.

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Authors: Lisa A. Kuhen DNP, APRN-BC, CNP, Christine Wynd PhD, RN, Janet Baker DNP, CNS, & Robyn Woidtke MSN, RN

Objectives: Upon completion of the session, the attendees will be able to:
• Summarize the prevalence, risk, and burden of sleep apnea in hospitalized patients
• Explain rationale and methods for sleep apnea screening in patients admitted to the hospital
• Describe nurse led inter-professional sleep apnea care guideline for hospitalized patients
Background: Sleep Apnea

Chronic Disease
• ↑morbidty, mortality
• Economic burden est. $20 billion dollars

1:4 American Adults
• 70-80% undiagnosed
• ↑risk heart disease, hypertension, diabetes, stroke

80% Hospitalized Patients
• Critical safety concern
Sleep Apnea-Hospitalized Patients

- 2004 National Hospital Discharge Survey
  - 6.8% reported SA in discharge data
  - 5.8% received CPAP
    - Morbid Obesity, CHF, CAD, COPD exacerbation, PNA
  - 64% age 40-69 years, 55% male

- Regardless of admission diagnosis
  - ↑ vulnerability to adverse outcomes when left untreated
  - ↑ utilization health care resources
  - ↑ risk hospital litigation

Significant gap in patient care
Needs Assessment Project Site

No current SA screening or management protocols
- Significant revenues lost
  - 90% not receiving PAP therapy
  - 2-fold ↑ hospital LOS

Fragmentation of care: RN, RT, MD, NP, PA
- Knowledge deficit
- Inconsistency in care and documentation of care
- Communication breakdown
Purpose

Enhance healthcare outcomes for hospitalized patients with and at risk for sleep apnea (SA) by:

- Increasing the ability of hospital staff nurses to
  - Assess and identify patients with a known diagnosis of SA
  - Identify patients who are at-risk for SA
  - Design appropriate care management for patients with and at high-risk for SA
Patients with SA not on PAP therapy have highest incidence of cardio-respiratory complications and death (Liao et al., 2009).

Knowledge gap must be addressed to implement SA care guideline (McEnany, & Redeker, 2011)

- Current nursing focus for sleep is on environment and pain management
- Curriculum: Accreditation Counsel of Graduate Medical Education: sleep disorders not included

AASM: guidelines proven effective (Bolden et al., 2008).
Supporting Evidence Inter-professional SA Care Guideline

Nursing interventions such as elevating the head of the bed 30-degrees at all times and continuous pulse oxymetry can decrease periods of apnea, hypopnea and hypoxia that are associated with adverse outcomes in hospitalized patients with SA (Bolden et al., 2009, Sheldon, Belan, Neil, & Rowland, 2009)
A 43% reduction in unplanned transfers to ICU and a 25% decrease in patient cardiac arrest codes resulted after system-wide implementation of SA identification and management guideline in a community hospital. (Carle Foundation Hospital, 2011)
Methods

Health Care Team Participants Inclusion Voluntary
- RNs, LPNs, and RTs

Intervention

Education of the health care team nurses and respiratory therapists:
- Overview of SA diagnosis, treatment, and impact on health
- Use of the STOP-Bang to identify SA risk
- Instruction in the use of an inter-professional SA care guideline

Intervention Effectiveness
Obstructive Sleep Apnea Knowledge and Attitude Questionnaire
# Patient Participants

## Inclusion
- Adult patients aged 25 to 90 years
- Male and female, direct admit, emergency room admit, post-operative admit
- Admitted directly to the MCU under the care of the hospitalist physician group

## Exclusion
- Underlying dementia, altered mental status, mental-developmental disabilities, terminal hospice-like care
- Patients admitted to other hospital divisions that are transferred to the MCU
Patient admitted to hospital → RN admission assessment →

1. Have you ever been told you have Sleep Apnea?
2. Do you currently use CPAP/Bi-PAP when you sleep?
3. Have you ever had a sleep study?

   + SA → Complete STOP-Bang → STOP-Bang ≥3 → Record Score → End of Assessment
   
   no →

   - Home PAP →

   yes → Implement Appropriate SA Care Guideline Document Chart Identifier → End of Assessment
   
   no →

   Implement Appropriate SA Care Guideline Document Chart Identifier → End of Assessment

New Assessment Process
Interprofessional Sleep Apnea Care Guideline

**SA ON PAP**

- Yes: Obtain Physician PAP Order
- No: IS PAP ordered?
  - Yes: Notify Respiratory Therapy
  - No: Cautious use of narcotics, opioid analgesics, & pharmacologic sleep aides

**IS PAP ordered?**

- Yes: Notify Respiratory Therapy
- No: Follow SA NO PAP Guideline

**SA NO PAP**

- Yes: Notify Respiratory Therapy
- STOP: Bang ≥3

**Document use of SA safety precautions**

- Elevate HOB 30 degrees all time
- Obtain physician order: Continuous POX monitoring during sleep: Alarm limits 88%
- Avoid supine position
- Cautious use of narcotics & opioid analgesics
- Cautious use of pharmacologic sleep aides

**Give patient SA education handout**

**Document education in nursing documentation**

**End**
Evaluate the impact of the use of the inter-professional SA care guideline on:

- Hospital Length of Stay
  - **Goal:** decrease the SA patient’s LOS when SA is identified and evidence based care is implemented
- Adverse Events
  - **Goal:** absence of unplanned transfers to higher acuity of care units and absence of death.
- 30-day Readmission
  - Monitor readmission rates of patient participants
## Patient Outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>f (%)</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td><strong>ALOS (days)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Risk</td>
<td>2.74</td>
<td>1.6</td>
<td></td>
<td>1-8</td>
</tr>
<tr>
<td>High Risk</td>
<td>3.28</td>
<td>2.32</td>
<td></td>
<td>1-13</td>
</tr>
<tr>
<td>Known SA</td>
<td>2.6</td>
<td>1.71</td>
<td></td>
<td>1-6</td>
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<tr>
<td><strong>30-Day Readmission</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Low Risk (n=34)</td>
<td>5</td>
<td>(14.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Risk (n=70)</td>
<td>7</td>
<td>(10)</td>
<td></td>
<td></td>
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<tr>
<td>Known SA (n=22)</td>
<td>0</td>
<td>(0)</td>
<td></td>
<td></td>
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<tr>
<td><strong>Unplanned Transfer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td>No unplanned transfer to higher acuity care or death occurred for any group</td>
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- Use of the inter-professional SA care guideline eliminated a 90% gap in care
- 21% (n=22) of the project patient population self-identified a known SA diagnosis
- 100% received PAP
- 77% (n=17) had SA captured in their ICD discharge code summary compared to 5.5% reported in 2011/2012
Implementing and sustaining quality improvement changes designed to improve outcomes for patients with and at risk for SA will require inter-professional collaboration led by the hospital nurse.

Education provides a means to bridge the current care gap and enhance healthcare outcomes in this vulnerable population.

National and local policy directing the care of the vulnerable population is recommended.

Adoption of practice policy to support identification of patients SA risk score and implementation of inter-professional hospital care of this patient population can improve patient outcomes.
Recommendations

- Acknowledge that patients with and at-risk for SA are vulnerable to experience adverse outcomes
- Repeat pilot project with an all inclusive, larger patient population
- Educate hospital nurses and medical staff
- Annual SA health care competencies
- New hire SA education