Obstructive Sleep Apnea
Intervention and Treatment for Surgical Patients at Risk

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Significance
There has been an increase in patient safety events related to the combination of Surgical Procedures, Obstructive Sleep Apnea (OSA) and High Dose Opioid use. A review of the current situation demonstrated inconsistent OSA screening processes, limited monitoring tools, and minimal treatment orders for high risk OSA patients. Beginning in May 2017, the Bone and Joint Center (B&J) at Grant Medical Center began a pilot with a revised screening tool and new treatment protocols. The results of this pilot have demonstrated zero Serious Safety Events and zero Codes at B&J.

Purpose
Purpose was to establish, develop and implement the following:
1) Screening process/tool for OSA surgical patients
2) Standard order set for patients with known/presumptive sleep disordered breathing/OSA
3) On-going monitoring of the patient to include end tidal CO₂ monitoring
4) Sleep-disorder education – sleep apnea, CPAP/BiPAP, end tidal CO₂

Bone and Joint Pilot Data
Timeline: March 2, 2017 – April 1, 2017
198 patients included in the study

Pilot Unit Considerations
- Closed Unit for surgical
- Primary RN model with 1:4 ratio
- High nurse staff new hires
- Modified Early Warning Score (MEWS) Implementation

Pilot Description:
- New Screening Tool
- New Order Set
- Tiered approach for treatment and monitoring based on screening risk
  - End Tidal CO₂
  - Continuous CPAP
  - Dedicated RT staff to assist RN with order execution

Pilot Interventions
• 2 patients during the pilot study required additional medical interventions that were identified by End tidal CO₂, alarm High Modified Early Warning Score (MEWS)

Warning Score (MEWS)
Both patients had an otherwise-uneventful post-op course and were discharged home
These cases had the potential to have a different ending.

Method
OSA Screening High Risk
OSA Screening Low Risk
End Tidal CO₂
CPAP/BiPAP Volume
Pilot Assumptions vs. Reality
Method
OSA Screening High Risk
OSA Screening Low Risk
End Tidal CO₂
CPAP/BiPAP Volume

Outcomes
Benefits of the new approach identified in the pilot were:
1) Early identification and intervention in Post Anesthesia Care Unit (PACU)
2) Improved interventions for patients at risk for OSA
3) Zero serious safety events and codes outside of critical care for this surgical population
4) Operational challenges mitigated
5) Decreased risk management and litigation
6) Patient compliance with end tidal CO₂ and CPAP was above 90%

Challenges to be addressed in the future that were identified from the pilot included:
1) Increased expense for Respiratory Therapy staff
2) Increased expense for Respiratory Therapy staff
3) Culture acceptance of initiatives

Strategy and implementation
A pilot unit was identified to trial a new OSA Screening Tool, a new OSA at risk order set, and a tiered approach for treatment and monitoring. The tiered approach was implemented based on the patient’s individual at risk score that is calculated by the Anesthesiologist. The Anesthesiologist then completes the order set for monitoring with end tidal CO₂ and/or CPAP as the risk score indicates. A dedicated Respiratory Therapist was also implemented to support this assessment, monitoring and treatment for those at risk patients.

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OSA Committee Members

References