

## Best Practice for Inpatient Sleep Disordered Breathing Screening and Management

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### SUMMARY:

The purpose of this guideline is to provide the clinical sleep health educator a standardized approach for working with a sleep specialist in identifying, assessing and managing hospitalized patients at increased risk for sleep disordered breathing. The complex interactions between sleep disordered breathing and other common disorders such as treatment resistant hypertension, chronic obstructive pulmonary disorder (COPD), Type 2 diabetes, atrial fibrillation, stroke, and congestive heart failure (CHF) have been associated with multiple hospitalizations and readmissions in many patients as well as an increased risk of sedation complications and medication interactions.

### RATIONALE:

Despite widely available information about the clinical importance of screening for sleep disordered breathing (SDB), and the citation of SDB as a patient safety issue by the Joint Commission<sup>1</sup>, the majority of patients with SDB remain unrecognized and undiagnosed. There may be a variety of reasons for this. The symptoms and risk factors for SDB are neither sensitive nor specific for SDB and overlap many other important medical conditions, some of which may be the conditions driving admission to the hospital.

The recent declaration by the U.S. Preventive Services Task Force (USPSTF) that “the current evidence is insufficient to assess the balance of benefits and harms of screening for obstructive sleep apnea (OSA) in asymptomatic adults” has led to some unfortunate confusion<sup>2</sup>. Healthcare professionals may mistakenly apply this recommendation to the acute care setting, where symptoms are often present, and where the balance of risk and benefit favors screening for SDB.

Adult and pediatric patients with SDB are at risk for complications during hospitalization or surgery. These patients may experience complications when receiving sedatives, opioid analgesics or general anesthesia, increasing the risk of prolonged apnea and respiratory arrest. SDB can be worsened by the use of sedatives and narcotics. Evidence suggests an association between SDB and COPD and CHF readmissions- conditions monitored closely by Medicare’s Hospital Readmission Reduction Program. Untreated obesity hypoventilation syndrome increases risk of acute and chronic hypercapnic episodes, as well as having a significant impact on long-term survival<sup>3</sup>. SDB screening programs are an important way to identify these patient populations. Implementation of treatment in these patients has been shown to convey benefits<sup>4</sup>. Studies have shown that patients hospitalized with CHF and /or COPD with SDB who are

adherent to treatment have a lower 30-day readmission rate than untreated SDB patients<sup>5</sup>.

Sleep technology professionals, especially sleep health educators with [established core competencies](#), have an opportunity to participate in implementing procedures that help reduce readmission by establishing screening solutions. These strategies include building processes that identify, screen, facilitate testing and initiate treatment of patients with SDB.

## **1.0 SCOPE**

Inpatient sleep disordered breathing screening is intended to help prevent SDB-related complications, protect patients from potential harm, reduce readmissions, and provide exceptional patient-centered care by improving patient wellness.

The role of the clinical [sleep health educator](#) in this process is to collect and summarize patient health information including vital signs and questionnaire results necessary for evaluation of risk of SDB, and then follow set protocols to alert appropriate health care providers when patients meet criteria for elevated risk of SDB. The clinical sleep health educator will assist the process of monitoring patients during hospitalization and work with the patient care team to coordinate an appropriate sleep care follow-up plan.

## **2.0 PROCESS CONSIDERATIONS**

Development and implementation of a SDB screening program requires working with a variety of members of the patient care team and creation of policies and procedures to guide team members.

### **2.1 WORKING WITH A TEAM**

Composition of the team will vary from hospital to hospital and may require involvement of a variety of stakeholders to implement and manage the process:

- CFO/Administrators
- Risk management or patient safety officers
- Hospitalists
- RN Administrators
- Bariatric program team members
- Anesthesiology team members
- Case managers
- Discharge planners
- Members of the sleep care team
  - Sleep specialists
  - Sleep health educators
  - Sleep technologists
  - Sleep nurses and physician assistants
  - Sleep center office staff

### **2.2 POLICIES AND PROCEDURES**

An effective program will require development of policies and procedures including:

- Screening and documentation tools and processes
- Care coordination

- Follow up procedures
- Tracking and outcomes reporting

### **3.0 PROCEDURE**

- Identify at-risk hospitalized patients for SDB
- Perform screening for SDB based on American Academy of Sleep Medicine (AASM) guidelines
- Safeguard and monitor
- Educate patients and families
- Educate healthcare team
- Coordinate diagnostic testing when appropriate (in-lab vs HSAT)
- Assure treatment implementation as needed
- Monitor patient adherence and outcomes

#### **3.1 IDENTIFY HOSPITALIZED PATIENTS WITH SDB**

Use established risk factors to identify populations at risk for SDB such as:

- Implementation of evidence-based obstructive sleep apnea (OSA) screening tools indicating intermediate or high risk such as STOP Bang, Berlin, Epworth, Mallampati
- Identification of patients with body mass index (BMI) more than 35 kg/m<sup>2</sup>
- Identification of patients with conditions that are often comorbid with SDB such as treatment resistant hypertension, COPD, Type 2 diabetes, atrial fibrillation, stroke, and congestive heart failure
- Identification of patients with symptoms of SDB such as complaints of witnessed apneas, snoring, gasping/ choking at night, restless sleep
- Identification of clinical manifestations such as nocturnal hypoxemia, nocturnal shortness of breath, waking with angina
- Identification of patients with a previous diagnosis of apnea and non-adherence to treatment
- Identification of patients using medications such as opiates that may increase the risk of SDB

Suggested means for identifying patients and generating a SDB assessment referral:

- Incorporate screening questions in hospital electronic medical record (EMR)
- Develop an identification and referral process with clinical staff (such as respiratory therapists, nursing staff, case managers, physicians)

#### **3.2 SCREEN FOR SLEEP DISORDERED BREATHING**

The sleep health educator or other sleep team member provides screening evaluations such as:

- Overnight pulse oximetry screening
- Home sleep apnea testing (HSAT)
- Identification of arrhythmias or desaturations during patient monitoring
- Patient symptom assessment

#### **3.3 SAFEGUARD AND MONITOR AT-RISK PATIENTS**

- Institute an EMR alert for at risk sleep disordered breathing patient

- Implement a pharmacy review of medications for at-risk SDB patients
- Consider continuous telemetry, end-tidal or transcutaneous CO<sub>2</sub> and/or pulse oximetry monitoring

### **3.4 EDUCATE PATIENTS AND FAMILIES**

- Determine appropriate literacy level and educate patient and family
- Follow the AAST standardized [Patient Education Curriculum](#) guidelines
- Provide personalized patient information on sleep health and hygiene, sleep disorders, SDB and comorbidities, and therapeutic options
- Document education provided in the patients' medical record
- Consider using hospital patient education TV channel or EMMI videos to provide accessible patient education

#### **3.4.1 EDUCATE HEALTHCARE TEAM**

- Outline the program and educate hospitalists, nursing staff, cardiologists, pulmonologists, risk management, case management, respiratory therapy team, etc. (with special attention to night shift care team) about the risk of SDB in hospitalized patients and available resources
- Reference the AAST OSA Care Plan and the AAST [Patient Education Curriculum](#)
- Provide CEC/CEU in-service programs
- Provide a method to contact the sleep health educator and other members of the sleepcare team for support

#### **3.4.2 COORDINATE DIAGNOSTIC TESTING**

- Work with sleep care team to assess patient risk
  - Triage patient based on risk assessment
  - Obtain order for additional screening tests as needed (consider overnight oximetry or HSAT)
  - Schedule post-discharge in-lab studies if appropriate
- Report outcome of testing to the patient care team
- Obtain order for treatment from sleep specialist or other physician

#### **3.4.3 ASSURE TREATMENT IMPLEMENTATION**

- Identify any barriers to treatment and work with the healthcare team to resolve them
- Assist with implementation of positive airway pressure (PAP) therapy
  - Assure appropriate documentation for durable medical equipment (DME) order
  - Document DME supplier, interface and treatment settings
  - Coordinate with DME supplier if necessary to assure appropriate equipment is in place upon discharge

#### **3.4.4 MONITOR PATIENT ADHERENCE AND OUTCOMES**

- Implement a monitoring plan that includes:
  - Frequent monitoring of adherence data
  - Telephone support
  - Support of DME liaison for home visits if necessary

- Digital patient engagement tools if applicable
- Follow policies and procedures to determine and document the need for intervention
  - Physician follow-up
  - Clinical intervention when needed (further testing, evaluation or support)
- Track and report patient outcomes
  - Reporting should include previous history of readmission, adherence and any readmission post treatment
  - Collect data for AASM outcomes measures as indicated
- Track and report overall program outcomes
  - Establish metrics and reporting process (data collection tool, or EMR)
  - Maintain a database for outcomes tracking (readmission rates, adherence to therapy, improvement in quality of life, etc.)

#### 4.0 REFERENCES

1. The Joint Commission. [At risk: Obstructive sleep apnea patients](#). June 2015;14.
2. U.S. Preventive Services Task Force. Screening for obstructive sleep apnea in adults: Recommendation statement. *JAMA*. 2017;317(4):407-414.
3. Nowbar S et al. Obesity-associated hypoventilation in hospitalized patients: Prevalence, effects, and outcome. *Am J Med* 2004;116;1-7.
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5. Kauta SR, Keenan BT, Goldberg L, Schwab RJ. [Diagnosis and treatment of sleep disordered breathing in hospitalized cardiac patients: A reduction in 30-day hospital readmission rates](#). *J Clin Sleep Med* 2014;10(10):1051-1059.

#### 5.0 ADDITIONAL RESOURCES

1. Coughlin S, Liang WE, Parthasarathy S. [Retrospective assessment of home ventilation to reduce rehospitalization in chronic obstructive pulmonary disease](#). *J Clin Sleep Med* 2015;11(6):663–670.
2. Khayat R Abraham W Patt B Brinkman V Wannemacher J Porter K Jarjoura D. Central sleep apnea is a predictor of cardiac readmission in hospitalized patients with systolic heart failure. *J Card Fail*;2012;18:534–540.
3. Marin J, [Outcomes in patients with chronic obstructive pulmonary disease and obstructive sleep apnea: The overlap syndrome](#). *Am J Respir Crit Care Med* 2010;182:325-31.

4. Peppard, P.E., et al. [Prospective study of the association between sleep-disordered breathing and hypertension](#). *N Engl J Med*; 2000;342:1378–1384.
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6. Sharif, R., et al. [Predictors of early readmission among patients 40 to 64 years of age hospitalized for chronic obstructive pulmonary disease](#). *Annals of the American Thoracic Society*; 2014;11(5):685-694.
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8. Takatoshi Kasai, T. Douglas Bradley, [Obstructive sleep apnea and heart failure: Pathophysiologic and therapeutic implications](#). *Journal of the American College of Cardiology*; 2011;57(2):119-127; DOI: 10.1016/j.jacc.2010.08.627.