

Obstructive Sleep Apnea and Modifications in Sedation: An Update



Deborah Weatherspoon, PhD, MSN, RN, CRNA^{a,*},
Debra Sullivan, PhD, MSN, RN, CNE, COI^b,
Christopher A. Weatherspoon, APRN, MS, FNP-BC^{a,c}

KEYWORDS

• Sleep apnea • Obstructive sleep apnea • Sedation

KEY POINTS

- Obstructive sleep apnea is a common medical disorder and unrecognized obstructive sleep apnea may complicate the administration of sedation in the critical care unit.
- A screening tool for obstructive sleep apnea assists critical care nurses to identify patients at increased risk for airway obstruction.
- Sedation should be titrated to achieve comfort without compromise.
- Benzodiazepines should be avoided in patients with obstructive sleep apnea.
- Continuous positive airway pressure or bilevel positive airway pressure may offer needed airway support.

INTRODUCTION

Adequate oxygenation and airway support of patients are always of concern, especially in critical care patients. Many factors contribute to an increased risk for airway compromise and one of the most common contributing factors may be obstructive sleep apnea (OSA). In adults, this disorder is increasingly prevalent,¹ affecting nearly 9% of middle-aged women and 24% of middle-aged men²; it is one of the most common medical disorders of sleep.³ As the name implies, OSA causes reduced or complete airflow disruption during sleep; this in turn reduces oxygenation. Sedation in this

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^a School of Nursing Graduate Program, College of Health Sciences, Walden University, Washington Avenue South, Suite 900, Minneapolis, MN 55401, USA; ^b School of Nursing MSN Program, School of Nursing Graduate Program, College of Health Sciences, Walden University, Washington Avenue South, Suite 900, Minneapolis, MN 55401, USA; ^c Veteran Affairs, Tennessee Valley Health System, Fort Campbell, KY, USA

* Corresponding author.

E-mail address: Deborah.Weatherspoon@Waldenu.edu

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population carries an increased risk for hypopnea because it depresses the response to external stimulation and may cause relaxation of pharyngeal muscles during sleep.

Critical care nurses frequently work within titrated ranges of as-needed orders, and must decide on the amount and type of sedation to administer at the point of care. Therefore, it is important for critical nurses to understand OSA and the routinely prescribed sedatives that may affect this disorder. This article provides a basic understanding of the pathophysiology of OSA and traits that may help identify patients with undiagnosed OSA. In addition, the most commonly prescribed sedative pharmacologic agents and adjunctive airway support used in the critical care setting are discussed for use in this population.

ALTERED BREATHING PATTERNS DURING SLEEP

There are 2 types of sleep apnea and either may be of concern for critical care patients. Central sleep apnea (CSA) represents a change in breathing patterns or control, whereas OSA represents abnormal or interrupted air passage caused by obstruction.

Central Sleep Apnea

CSA occurs when the brain fails to transmit adequate signals to the diaphragm and intercostal muscles to initiate ventilation (inhalation). Several conditions may cause CSA, with the most common being associated with congestive heart failure or stroke.

Generally observed during sleep, this breathing pattern presents as a gradual increase and then decrease in breathing effort and airflow. At the weakest point, a total lack of airflow (CSA) may occur. This type of breathing pattern is familiar to most health professionals and is known as Cheyne-Stokes breathing. A formal definition of Cheyne-Stokes breathing is 5 or more central apneas and/or central hypopneas per hour alternating with a crescendo-decrescendo pattern of breathing.⁴

Naughton⁵ describes Cheyne-Stokes breathing as a transient, cyclic, or periodic loss of respiratory drive, interspersed with brief periods of hyperventilation. It is usually associated with normal (normocapnia) or low carbon dioxide (CO₂) levels (hypocapnia), measured as PaCO₂. Certain medications, such as opioids, may also depress the central respiratory center and result in irregular or decreased respiratory patterns (**Box 1**).

Obstructive Sleep Apnea

As the name implies, OSA is a repetitive partial or complete obstruction of the upper airway during sleep.¹ It may be caused by an abnormal anatomic feature or by relaxation of the genioglossus and pharyngeal constrictor muscles causing airway collapse and obstruction. A completely blocked airway without airflow is called an obstructive

Box 1

Conditions associated with CSA

- Congestive heart failure
- Stroke
- Brain injury
- Drug induced: opioids
- Idiopathic CSA

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