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## Society of Anesthesia and Sleep Medicine: Safety of Patients with Obstructive Sleep Apnea in the Perioperative Period

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### INTRODUCTION

The Society of Anesthesia and Sleep Medicine (SASM) was founded in 2010 as a collaboration between anesthesia professionals and sleep specialists focused on the perioperative safety of patients with sleep disorders. Obstructive sleep apnea (OSA) is one of the sleep disorders that has become recognized as a risk factor for perioperative complications.<sup>1,2</sup> SASM has been involved in research and education in the management of patients with OSA and at high risk of undiagnosed OSA in the perioperative period, including development of guidelines to address provision of safe care.<sup>3-5</sup> Other sleep disturbances can impact provision of optimal care in the perioperative period, and SASM continues to work to identify and address knowledge gaps of providers to help optimize patient outcomes.<sup>3-7</sup>

SASM continues to work to identify ongoing needs for education and further research, in addition to utilizing the expertise of sleep specialists and anesthesia professionals to provide

guidance in preventing and detecting adverse events in the perioperative period (Figure 1).

### POSTOPERATIVE MANAGEMENT, AND CLINICAL GUIDELINES

Obstructive sleep apnea (OSA), a prevalent sleep-related breathing disorder in perioperative environments, is characterized by repeated upper airway collapses that may lead to reduced oxygen saturation during sleep and a heightened risk of chronic cardiovascular diseases.<sup>8</sup> The surgical population exhibits a higher frequency of OSA compared to the general population.<sup>9</sup> In a retrospective nested cohort study, 819 surgical patients underwent either laboratory or portable polysomnography (PSG). Clinical diagnosis of OSA was determined through chart reviews conducted by surgeons and anesthesia professionals who were blinded to the PSG results. Among the 267 patients identified with moderate-to-severe OSA prior to surgery, 92% (n=245) had not been diagnosed by surgeons, and 60% (n=159)

remained undiagnosed by anesthesia professionals.<sup>10</sup> This condition is linked to increased perioperative complications<sup>2</sup> and consequently, increased hospital and resource utilization.<sup>11-14</sup>

Although guidelines for preoperative screening<sup>3</sup> and intraoperative management<sup>4</sup> of OSA patients have been disseminated, a gap persists in evidence-based directives for postoperative care. The development of an evidence-based system for triaging patients with confirmed or suspected OSA is critical when they are admitted post-surgery to ensure the judicious allocation of resources for the management and enhancement of OSA. Moreover, the post-discharge counseling for patients lacks clarity, necessitating evidence-based guidelines established in partnership with patient advocates. Such guidelines are crucial for those undergoing ambulatory surgery, who return home on the same day of the operation, often while under opioid analgesia. Moreover, a significant portion of inpatients, who are initially

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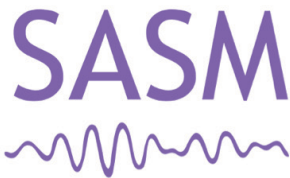


Figure 1: Heeding the "Don't Look Up" Call—Society of Anesthesia and Sleep Medicine Leadership, and Collaborative approach to Perioperative Sleep Health Research, and Innovation.

SAMBA: Society for Ambulatory Anesthesia; SASM: Society of Anesthesia and Sleep Medicine; SOAP: Society for Obstetric Anesthesia and Perinatology; SOCCA: Society of Critical Care Anesthesiologists.

# SASM Creating Guidelines of Postoperative Management For OSA Patients

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under close observation in the Post Anesthesia Care Unit (PACU) and Intensive Care Unit (ICU), are later transferred to general care floors where monitoring might not be sufficient for the early detection of vital ventilatory changes.<sup>15</sup>

To bridge these knowledge gaps, the Society of Anesthesia and Sleep Medicine (SASM) has embarked on a joint venture with the Society

for Ambulatory Anesthesia (SAMBA) and the Society of Critical Care Anesthesiologists (SOCCA), aiming to establish evidence-based guidelines for the postoperative management of OSA patients. This initiative aims to augment the SASM's evidence-informed recommendations for preoperative<sup>3</sup> and intraoperative<sup>4</sup> management of OSA, along with the SAMBA's consensus for the ambulatory management of

such patients.<sup>16</sup> The collaborative guidelines task force is working on recommendations for risk stratification and identification of OSA, postoperative analgesia regimen, postoperative OSA treatment options, monitoring standards, and postoperative discharge considerations, including patient counseling.

In alignment with our mission to foster collaborative, evidence-based perioperative care, SASM offers expert opinion-based recommendations for managing patients with OSA that provide a continuum of strategies from preoperative screening to postoperative follow-up<sup>17</sup> (Table 1).

**Table 1: Perioperative Management Strategies for Patients with Obstructive Sleep Apnea.<sup>17</sup>**

Perioperative Phase	Recommendations and Considerations
<b>Preoperative Screening</b>	<ul style="list-style-type: none"> <li>Implement routine OSA screening using validated screening tools like the STOP-Bang, or other questionnaires.</li> <li>For diagnosed OSA, particularly in patients with comorbid conditions, review results from PSG (for nature, and severity of OSA), or CPAP downloads (for treatment compliance), whenever possible.</li> <li>For parturient: Screen pregnant people with BMI &gt; or equal to 30 kg/m<sup>2</sup>, hypertensive disorders of pregnancy and/or gestational diabetes in the first or second trimester; recommend using screening tools validated in pregnant populations.</li> </ul>
<b>Intraoperative Management</b>	<ul style="list-style-type: none"> <li>Whenever possible, prioritize local or regional anesthesia.</li> <li>Use continuous capnography for patients undergoing moderate to deep sedation.</li> <li>Consider definitive airway for patients undergoing general anesthesia, as there is a higher propensity for upper airway closure and oxygen desaturations if deep planes of anesthesia are desirable for the surgical procedure.</li> <li>Ensure careful airway management and consider nonsupine positions for extubation.</li> <li>Ensure complete reversal of sedative, and neuromuscular blockade following general anesthesia.</li> <li>Plan for the availability of CPAP and adopt an opioid-sparing, multimodal approach to analgesia.</li> </ul>
<b>Postoperative and PACU</b>	<ul style="list-style-type: none"> <li>Semi-upright position for recovery. It has been shown that semi-upright position can decrease the AHI, upper airway collapsibility and hence be protective in patients with OSA.</li> <li>Monitor patients for desaturation, hypopnea, apnea, or other respiratory events, pain-sedation mismatch in the PACU. Persistent events may necessitate higher levels of monitoring postoperatively.</li> <li>For patients with new initiation of PAP or notable PACU events, consider postoperative care in a step-down unit or ICU.</li> <li>Minimize the use of long-acting opioids, titrating to the lowest effective dose.</li> <li>Verify functionality of the patient's PAP equipment if brought from home.</li> </ul>
<b>Management of Respiratory Depression</b>	<ul style="list-style-type: none"> <li>Initiate appropriate interventions, including noninvasive ventilation or opioid antagonists, if needed.</li> <li>Monitor hospitalized patients in units with experience in OSA, considering enhanced monitoring, if available.</li> </ul>
<b>Ambulatory Surgery</b>	<ul style="list-style-type: none"> <li>Select patients with optimized comorbidities for ambulatory surgery, employing regional</li> </ul>
<b>Home Treatment and Follow-Up</b>	<ul style="list-style-type: none"> <li>Advise consistent use of PAP therapy and limited opioid use post-discharge.</li> <li>Arrange for follow-up care with appropriate providers for patients with suspected OSA.</li> </ul>

OSA: Obstructive Sleep Apnea, CPAP = Continuous Positive Airway Pressure, ICU: Intensive Care Unit, , PACU = Post-Anesthesia Care Unit, PAP = Positive Airway Pressure, PSG = Polysomnography.

## PROVIDER KNOWLEDGE ON OSA MANAGEMENT

Assessing the awareness and practices concerning OSA among health care professionals, SASM, with the support of the American Academy of Sleep Medicine Foundation (AASM), led a multisite survey. This extensive study canvassed nine prominent academic institutions and spanned physicians in training and Advanced Practice Providers (APPs) in the fields of Anesthesiology, Internal Medicine, Family Medicine, Surgery, and Obstetrics and Gynecology (OB/GYN), bringing invaluable insights into OSA's perioperative management.<sup>18</sup> Both physicians-in-training and APPs reported that they did not feel their training regarding OSA was adequate. Only 51% overall with 82% in Anesthesia, 34% in Surgery, and 12% in OB/GYN reported they felt adequately trained. Across all specialties, 77% desired additional training. When asked about training to assess for OSA in the perioperative period, only 38% of all participants reported feeling that they had been adequately trained. This included 84% in Anesthesia, 33% in Surgery and 15% in OB/Gyn. This opportunity to improve clinical practice was reflected in the participants' perception of their training .

## CLINICAL GUIDELINES FOR MANAGEMENT OF OBSTETRIC PATIENTS WITH OSA

Recent studies have highlighted the maternal morbidity associated with OSA; it has been particularly associated with hypertensive disorders of pregnancy and gestational diabetes mellitus.<sup>19-23</sup> The correlation of maternal OSA with neonatal outcomes such as pre-term birth, Apgar scores, and low birth weight, however, remains contentious.<sup>24-27</sup> Pregnancy is a dynamic state during which physiologic changes and weight gain, along with patho-

# Maternal Morbidity is Associated with OSA

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physiologic changes related to conditions such as preeclampsia present unique challenges for clinicians in the screening, diagnosis, and management of OSA that had not been addressed in the available literature. Thus, SASM and the Society for Obstetric Anesthesia and Perinatology (SOAP) assembled a task force of experts to review the available evidence and generate recommendations on the screening, diagnosis, and treatment of patients with OSA during pregnancy including expert opinion where evidence was lacking. The multidisciplinary committee was composed of anesthesia professionals, sleep medicine specialists and research scientists, maternal fetal medicine specialists, and a research librarian. These recommendations were published in *Obstetrics and Gynecology* in August 2023 ([https://journals.lww.com/greenjournal/abstract/2023/08000/society\\_of\\_anesthesia\\_and\\_sleep\\_medicine\\_and\\_the.22.aspx](https://journals.lww.com/greenjournal/abstract/2023/08000/society_of_anesthesia_and_sleep_medicine_and_the.22.aspx)).<sup>28</sup>

The guidelines do not recommend screening all pregnant people for OSA, but do suggest screening those people with pre-existing risk factors for OSA including BMI > 30 kg/m<sup>2</sup>; hypertensive disorders of pregnancy; and/or gestational diabetes in the index or prior pregnancy. The recommended timing of screening is between 6–29 weeks' gestation. The Guideline committee reviewed several OSA screening tools that had been studied in pregnant populations and suggest that screening tools that have been validated in pregnant cohorts are the most promising for predicting OSA in this population. Recommendations regarding the diagnosis of OSA in parturients focus on considering home sleep tests when appropriate, as well as considering repeat postpartum testing due to the dynamic airway changes that occur during and after pregnancy. Treatment guidance emphasizes the lack of evidence that OSA treatment modulates any pregnancy-specific outcomes, but that OSA treatment is still indicated in pregnancy to treat symptoms, modify objective measures of OSA, and to improve quality of life. These are the first guidelines to address specific considerations for OSA management in those that are pregnant.

## CONCLUSION

The integration of the SASM's comprehensive approach across the continuum of OSA management—from preoperative assessment to postoperative and long-term care—underscores the necessity of a multifaceted strategy. The article has provided a cohesive narrative that aligns with the Society's overarching goal

of improving patient safety and outcomes in anesthesia and sleep medicine.

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