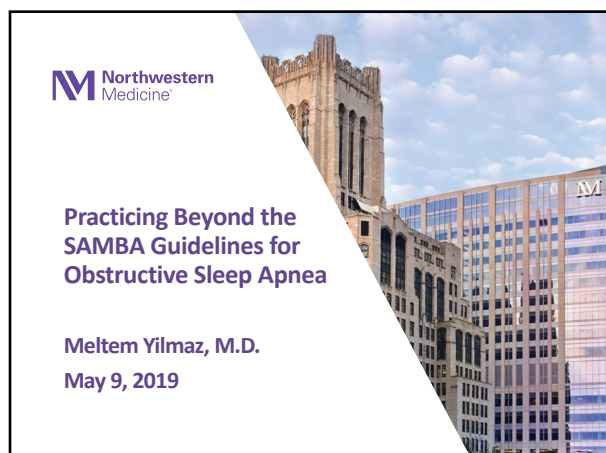
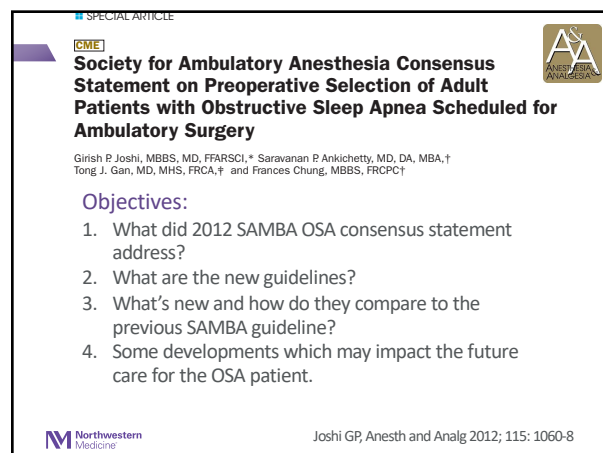
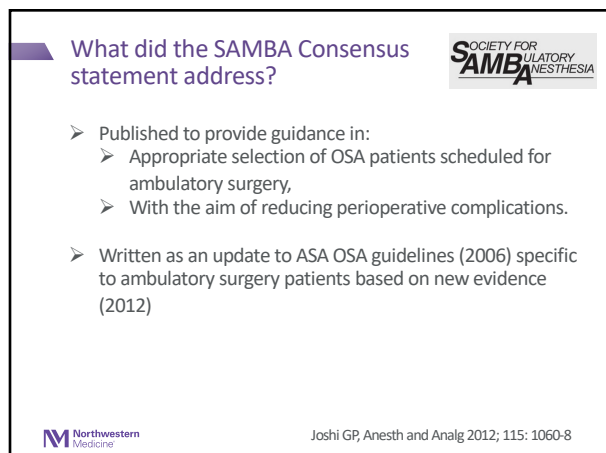




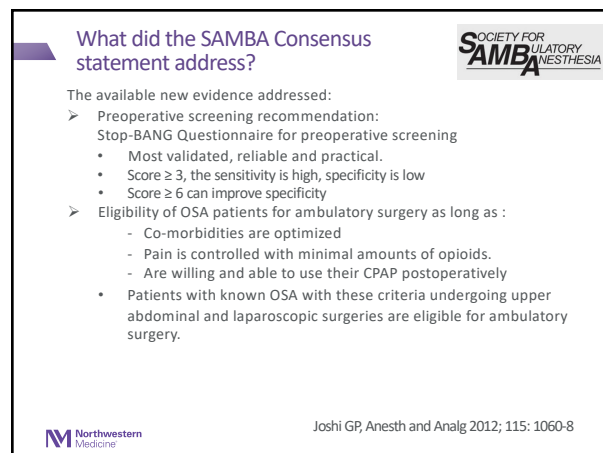
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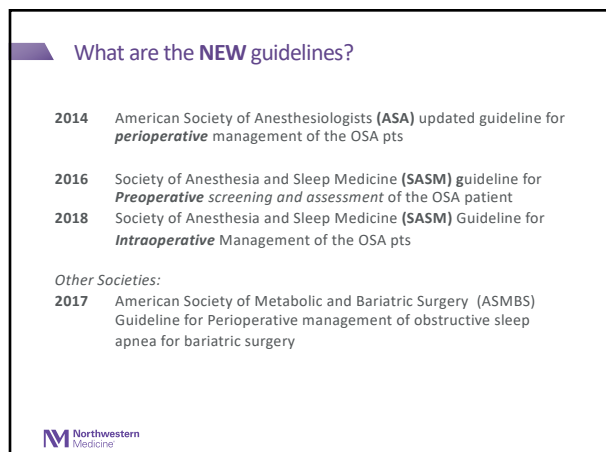
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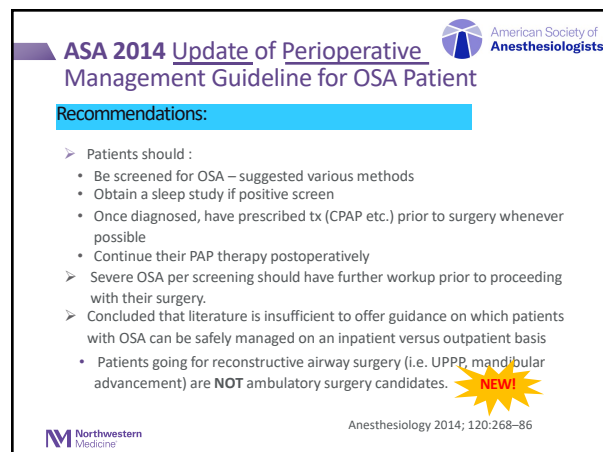
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SPECIAL ARTICLE

Society of Anesthesia and Sleep Medicine Guidelines on Preoperative Screening and Assessment of Adult Patients With Obstructive Sleep Apnea

Frances Chung, MBBS, FRCP, * Stavros G. Memtsoudis, MD, PhD,† Satya Krishna Ramachandran, MD,‡ Mahesh Nagappa, MD,§ Matthias Oppenr, MD,|| Crispiana Cozowicz, MD,¶ Sara Potrowski, MD,*** David Lam, BSc, * Anjana Kumar, BSc,‡ Girish P. Joshi, MD,‡ John Fleetham, MD,§ Naljo Ayes, MD,|| Nancy Collop, MD,†† Anthony G. Doufas, MD, PhD,‡‡ Matthias Eikermann, MD, PhD,‡‡ Marina Engleklis, HBA, MEd,††† Bhargav Gali, MD,‡‡‡ Peter Gay, MD,§§§ Adrian V. Hernandez, MD, PhD, ||||| Roop Kaur, MD,†††† Eric J. Kezirian, MD, MPH, ### Atul Malhotra, MD,**** Sabak Mokheisi, MD,††††† Saram Parthasarathy, MD,††††† Tracy Sterer, MD,§§§§ Frank Wappler, MD,|||||||††††† David R. Hillman, MD,#### and Dennis Auckley, MD,*****

Anesth Analg 2016; 123: 452-73

Goals:

- Appropriately identify patients with OSA
- Increase awareness of the increase in perioperative risks of OSA among providers
- Mitigate risk
- Improve outcomes

Chung F, Anesth Analg 2016;123:452-73

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SASM Guideline for Preoperative Screening and Assessment for Patients with OSA - 2016

Recommendations:

- Patients with OSA should be considered to be at increased risk for perioperative complications
- OSA screening be part of standard preanesthetic evaluation
- Screening tools help to risk stratify patients with suspected OSA
Divided into 3 groups for risk stratification
 1. Diagnosed OSA, treated
 2. Diagnosed OSA, partially treated or untreated
 3. Suspected OSA
- Unlike ASA, recommends **against** cancelling or delaying surgery for patients that **screen** positive for severe OSA to have further testing and treatment with CPAP etc.
 - Exception being morbidly obese pts undergoing bariatric surgery, tonsillectomy and obstetric patients with high-risk pregnancies

Chung F, Anesth Analg 2016;123:452-73

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SASM Guideline for Preoperative Screening and Assessment for Patients with OSA - 2016

➤ Patients With a Diagnosis of OSA Should Be Considered to Be at Increased Risk for Perioperative Complications
Level of Evidence: Moderate. Grade of Recommendation: Strong for)

- Cardiopulmonary adverse events increased by 2- to 3-fold

Patients with OSA vs no OSA had increased:

• Pulmonary complications in	11 of 17 studies reviewed
• Oxygen desaturation events	8 of 14 studies
• Difficult intubation	4 of the 6 studies
• Cardiac complications	2 of 11 studies
• Atrial fibrillation	5 of 6 studies reviewed
• Composite outcome of various complications	9 of the 11 studies

Chung F, Anesth Analg 2016;123:452-73

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SASM Guideline for Preoperative Screening and Assessment for Patients with OSA - 2016

Best Preoperative Practices for Surgical Patients with OSA

Diagnosed OSA, treated	Diagnosed OSA, partially treated or untreated	Suspected OSA
Aware of Increased postoperative morbidity		
Obtain results of sleep study and PAP setting before surgery		
Facility to consider PAP equipment in facility or pt brings own device		
Pt should continue to wear PAP device while in hospital; pre and postop		
Additional evaluation if pt has uncontrolled systemic conditions or ventilation or gas exchange prob. such as: hypoventilation syndromes, severe pulm htn, and resting hypoxemia in the absence of other cardiopulm ds		
Pts with optimized comorbid conditions may proceed to surgery, provided strategies for mitigation of postoperative complications are implemented.		Pts advised to notify their primary medical provider that they have a high probability of OSA, allowing for appropriate referral for further evaluation

Chung F, Anesth Analg 2016;123:452-73

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SPECIAL ARTICLE

Society of Anesthesia and Sleep Medicine Guideline on Intraoperative Management of Adult Patients With Obstructive Sleep Apnea

Stavros G. Memtsoudis, MD, PhD,†† Crispiana Cozowicz, MD,†† Mahesh Nagappa, MD,‡ Jean Wong, MD, FRCP,‡ Girish P. Joshi, MBBS, MD, FRCP,‡ David T. Wong, MD, FRCP,‡ Anthony G. Doufas, MD, PhD,‡ Meltem Yilmaz, MD,‡ Mark H. Stein, MD,‡ Megan L. Krajewski, MD,†† Mandep Singh, MBBS, MD, MSc, FRCP,‡‡‡‡‡‡‡ Lukas Pichler, MD,†† Satya Krishna Ramachandran, MD,*** and Frances Chung, MBBS, FRCP,‡

Anesth Analg 2018;127:967-87

Goals:

1. Evaluate considerations of difficult airway management in OSA patients
2. Assess impact of anesthetic drugs/agents on patients with OSA
3. Evaluate best anesthetic techniques in this patient population

Memtsoudis SG Anesth Analg 2018;127:967-87

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SASM Intraoperative Recommendations for Management of OSA patients

Recommendation:

- **Airway Management in OSA Patients**
 - Known or suspected OSA should be considered an *independent risk factor* for:
 - difficult intubation
 - difficult mask ventilation
 - or a combination of both
 Adequate difficult airway management precautions should be taken.
 - There is no association found between OSA and failed supraglottic devices

Memtsoudis SG Anesth Analg 2018;127:967-87

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SASM Intraoperative Recommendations for Management of OSA patients

Recommendations: Impact of Anesthetic Agents/Drugs

Neuromuscular blocking agents (NMBs) increase the risk of pulmonary complications due to residual neuromuscular blockade. Current evidence does not indicate significant outcome differences regarding different types of reversal agents

- NMBs**
- Opioids**
- Propofol**
- Benzos**
- Ketamine**
- α -2 agonists**

Opioids, Propofol and Benzodiazepines increase the risk of respiratory complications in patients with OSA

Ketamine better preserves airway tone and ventilation

α -2 agonists (dexmedetomidine and clonidine) Lack of evidence to make a recommendation

Limited data exists when comparing recovery after inhaled agents versus Propofol specifically in pts with OSA. In obese patients, inhaled agents may confer benefit, desflurane being superior

Inhaled agents

Memtsoudis SG Anesth Analg 2018;127:967-87

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SASM Intraoperative Recommendations for Management of OSA patients

Recommendation:

Best Anesthetic Techniques in OSA Patients

- Evidence, although limited in OSA patients, indicates higher risk of complications with general anesthesia compared to regional anesthesia.
- Regional anesthesia may confer advantages such as;
 - avoidance of upper airway effects and neuromuscular blockade,
 - effective pain management,
 - reduced opioid consumption,
 - and efficient suppression of the systemic stress response.
These features may be of benefit to patients with OSA.
- Whenever feasible, regional anesthetic is preferable over general anesthesia

Memtsoudis SG Anesth Analg 2018;127:967-87

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What is New?

Regarding Opioids and OSA

- OSA patients are at risk of Opioid Induced Respiratory Depression (OIRD)
- In the closed claims analysis from 2015, OSA was present in 45% of patients with OIRD (1)
- In another study, OSA was present in 38% of the patients with OIRD and 50% of patients who died as a result of OIRD had OSA (2)
- Recent systematic review of case reports of the death, or near-death, OSA patients had received a morphine equivalent dose of less than 10 mg per day (3)
- It is essential to minimize the use of opioids in OSA patients (4,5)

- Lee JA, Anesthesiology 2015; 122:659 – 665.
- Ramachandran SK, J Clin Anesth 2011; 23:207 – 213.
- Subramaniy Br J Anaesth 2017; 119:885-899.
- Nagappa M, Best Pract Res Clin Anaesthesiol 2017; 31:469 –485.
- Cozowicz C, Anesth Analg 2018; 127:988-1001

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What is NEW?

Coming to an Ambulatory Surgery Center Near You !

- With increasing need to decrease healthcare spending certain inpatient surgeries are now performed as outpatient surgeries;
 - Bariatric surgery
 - Ambulatory total joint replacement (70% eligible) 1
 - Laparoscopic colorectal surgery
 - Laparoscopic hysterectomy (58% of pts) 2
 - Laparoscopic prostatectomy 3
 - Ambulatory oncologic surgery 4

- Kingery MT, The J Arthroplasty, 2018 33:8-9
- MacKaoul P, JLS, 2019 Jan-Mar Vol:23 Issue:1 :1-8
- Berger AK, J Endourol, 2016 May;30 Suppl 1:S52-G.
- Szeto B, Anesth Analg, April 2019 EPUB ahead of print

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What is NEW?

Ambulatory Bariatric Surgery

American Society of Metabolic and Bariatric Surgery (MBS) Consensus Guideline for Bariatric surgery pts with OSA in 2017*

Recommendations:

The prevalence of OSA in bariatric surgery: 35% and 94%

Periop. complications are more frequent in OSA pts

Venous HCOs should be part of the routine screening tool for coexistence of OHS - incidence 10-20 % in obese pts

Perioperative usage of CPAP is recommended in patients with a preoperative AHI > 15/hr (mod-severe OSA)

Absence of a suitable home caregiver is an absolute contraindication to outpatient surgery in morbidly obese OSA patients

Per SASM Preop guideline in 2016

Recommendations for Bariatric surgery:

Prevalence of OSA in the bariatric population is 50-70%

Preop identification of OSA patients going for bariatric surgery is useful

Stop-BANG has been validated for the obese and morbidly obese population.

Stop BANG = 4 can be used as a cutoff. Pts with Stop-BANG > 4 not eligible for ambulatory surgery.

Stop-BANG score >5 + HCOs > 28 has a high prediction of obesity hypoventilation syndrome

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What is New?

Coming to an Ambulatory Surgery Center Near You!

Health Policy & Economics

The Journal of Arthroplasty

Total Joint Arthroplasty in Ambulatory Surgery Centers: Analysis of Disqualifying Conditions and the Frequency at Which They Occur

Matthew T. Kingery, BA^a, Germaine E. Cuff, PhD, BSN^b, Lorraine H. Hutzler, MPA^{a,*}, Jovan Popovic, MD^b, Roy I. Davidovitch, MD^a, Joseph A. Bosco, MD^a

^a Department of Orthopaedic Surgery, NYU Hospital for Joint Diseases, New York, New York
^b Department of Anesthesiology, NYU Langone Medical Center, Perioperative Care and Pain Medicine, New York, New York

Condition of Ineligibility for Ambulatory Surgery	Percentage of Patients
BMI	32.7 %
Severity of comorbidities	28.0 %
Untreated OSA	25.2 %
Hx of PCI	14.8 %
Hx of MI	10.1 %
ASA Class IV	7.2 %
Recent DVT or PE	2.8 %

Reasons for Ineligibility

Fig. 1. Frequency of factors leading to SDO/ASC ineligibility. DVT, deep vein thrombosis; MI, myocardial infarction; OSA, obstructive sleep apnea; PCI, percutaneous coronary intervention; PE, pulmonary embolism; SDO, same day discharge.

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What is New?

Coming to an Ambulatory Surgery Center Near You!

Outcomes and Safety Among Patients With Obstructive Sleep Apnea Undergoing Cancer Surgery Procedures in a Freestanding Ambulatory Surgical Facility

Betsy Szeto, MPH,* Emily A. Vertosick, MPH,† Karin Ruiz, RT,* Hanse Tokita, MD,* Andrew Vickers, PhD,† Melissa Assel, MS,† Brett A. Simon, MD, PhD,* and Rebecca S. Tiewsky, MD, MPH*



April, 2019
Epub ahead of print

- **Findings:** No significant association was found between the risk of OSA and length of stay, urgent care visits, readmissions, or risk of transfer for a variety of ambulatory surgery cancer procedures in a freestanding ambulatory surgery facility.
- **Meaning:** Patients with OSA can safely undergo outpatient and advanced ambulatory oncology surgery without increased health care burden or increasing adverse postoperative outcomes in a protocolized perioperative management environment.

Surgeries Included:

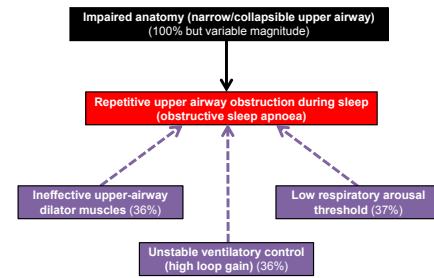
- Mastectomy
 - Unilateral
 - Bilateral
 - With or w/o immediate reconstruction
- Thyroidectomy and Parotidectomy
- Minimally invasive
 - Hysterectomy
 - Prostatectomy
 - Nephrectomy



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What is New?

Identification of Four Phenotypes of OSA Patients



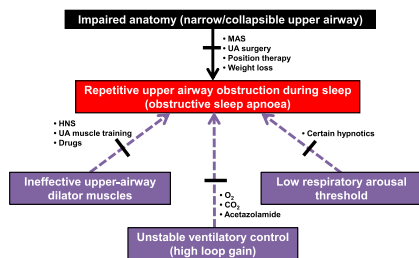
D.J. Eckert / Sleep Medicine Reviews 37 (2018) 45e59



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What is New?

OSA Treatment Targeted to the Four Different Phenotypes



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What the Future Holds?

Devices for OSA Detection

Health Tech Insider



Other Emerging Technologies

ApneaApp- detects sleep apnea by sonar technology

ResApp- Sound based algorithm

AI Uses Apple Watch to Detect Sleep Apnea & Hypertension
by Kimberly Houston | November 29, 2017 |

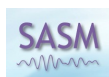
The study from health startup **Cardiogram** and UCSF suggests that wearables like Fitbit and Apple Watch were able to accurately detect and monitor hypertension and sleep apnea.



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THANK YOU!

Meltem Yilmaz, MD
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What the Future Holds?

Areas in Need of Research & Development:

- Development of better screening tools for OSA
- Practical tests for identification of OSA phenotypes
- Improved anesthetic agents with less effects on the airway and sleep cycle
- Targeted treatment for each of the phenotypes to improve patient modalities for OSA
- Better risk assessment tools that predict postoperative outcomes/complications in OSA pts



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