**Supplementary Table 3. Study details including target population, research objectives, and recommendations**

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| **Study#** | **Guideline** | **Target population** | **Time period** | **Research questions or objectives** | **Recommendations** |
| 1 | Evaluation and management of obesity hypoventilation syndrome | Not defined | Evaluation andmanagement of patients with obesity hypoventilation syndrome (OHS) | * Should HCO3- and SpO2 rather than PaCO2 be used for OHS screen in obese adults with sleep-disordered breathing?
* Should adults with OHS be treated with CPAP or NIV?
* What is better: CPAP or NIV?
* Should hospitalized adult suspected OHS, be discharged with PAP treatment?

Should weight-loss intervention be used for adult OSA? | -Use S. bicarbonate level<27 mmol/L to exclude OHS in obese patients with sleep disordered breathing -PAP for stable ambulatory patients with OHS  -Offer CPAP rather than NIV first-line treatment to stable ambulatory patients with OHS and coexistent OSA -Discharge patients hospitalized with respiratoryfailure and suspected OHS with NIV until seen in sleep laboratory (ideally within 2–3 mo), -Bariatric surgery to produce sustained weight loss of 25% to 30% of body weight to achieve OHS resolution  |
| 2 | Preoperative screening and assessment of adult patients with OSA | Diagnosed or suspected adult OSA patients  | Preoperative risk assessment of diagnosed or suspected adult OSA patients  | * Does OSA diagnosis change postoperative outcomes?
* Should at risk patients be identified before surgery?
* Which tools can be used to identify suspected OSA preoperatively?
* What is clinical value of performing additional preoperative tests?
* What are best preoperative practices in patients who were diagnosed with OSA, nonadherent with CPAP therapy or have a high pretest probability for OSA?
* What is evidence on CPAP efficacy for perioperatively?
* What are best preoperative practices to improve outcomes for OSA patients who are adherent to PAP therapy?
* What are best preoperative practices to improve outcomes for OSA surgical patients who poorly adherent to PAP therapy?

What are best preoperative practices to improve outcomes for surgical patients with high probability of OSA? |  -Anesthesia in OSA poses increased perioperative risk of complications -Screening tools to risk stratify in suspected OSA  -Insufficient evidence to cancel/delay surgery for a formal diagnosis (laboratory or home PSG) -Both diagnosed/suspected OSA associated with increased postoperative morbidity -Get sleep study results and start PAP therapy  -Optimize preoperative cardiopulmonary status in associated uncontrolled systemic disease or ventilation or gas exchange problems e.g.: (i) hypoventilation syndromes, (ii) severe pulmonary hypertension, and (iii) resting hypoxemia  -Discuss risks and benefits to proceed with or delay surgery with patient and surgeon -Consider PAP therapy in undiagnosed but suspected OSA -Continued use of PAP at previous settings during sleep preoperatively and postoperatively, with adjustments for perioperative changes (e.g. facial swelling, upper airway edema, fluid shifts, pharmacotherapy, andrespiratory function) |
| 3 | Diagnosis and treatment of sleep disordered breathing in adults | Adults with OSA | Diagnosis and treatment of OSA patients | * In patients with obstructive sleep apnea syndrome (OSAS), what are the current recommended maximum assessment wait times to

initiate treatment that correspond to better patient outcomes?* What is the role of portable monitoring in the diagnosis of sleep

disordered breathing?* Does treatment of asymptomatic adult obstructive sleep apnea

(OSA) patients improve health outcomes?* Do OSAS patients benefit more from autotitrating positive airway

pressure (APAP) than from using conventional continuous positiveairway pressure (CPAP)?* Is bariatric surgery an effective treatment strategy in obese patients with OSAS compared with standard care, exercise and diet?
* Does CPAP lead to improved outcomes in patients with heart

failure and central sleep apnea syndrome (CSAS) compared withthe standard medical therapy for heart failure (HF)?* Is complex sleep apnea (CompSA) a distinct clinical syndrome

and, if so, what criteria should be used to make the diagnosis ofCompSA?* What are the optimum positive airway pressure technologies

 available? |  -Use daytime sleepiness with Epworth sleepiness scale (ESS) questionnaire to assess degree of OSA -Patient referrals to be physician generated -Medical assessment and PSG referral within 2-4 weeks for urgent and 4-6 months for other cases -PSG accepted standard -Role of pulse oximetry -Increased risk of motor vehicle collisions -Weight loss to be encouraged -Potential of alcohol & sedatives exacerbates OSA -Relief of nasal obstruction as adjunct -Positional therapy role for positional OSA -SSRI, progesterone not effective -Asymtpomatic patients with significant comorbidities need treatment as well -Assess compliance in 2-4 wks -Long-term follow-ups  -Educate patients by professionals (respiratory therapist/nurse/PSG technologist)  -Conventional CPAP at a fixed pressure is primary treatment -Automatic CPAP is effective in the absence of comorbid disease -CPAP titration PSG is accepted standard to determine optimal CPAP pressure -Bilevel ventilation should not be used routinely -Oral appliances are appropriate first-line therapy in mild-moderate condition  -Oral appliances as an alternative for patients who are unable to tolerate CPAP |
| 4 | Intraoperative management of adult patients with OSA | Adult OSA undergoing elective surgeries | Intraoperative events (airway, anesthesia drugs & techniques, adverse events) | Are OSA patients* ..at increased risk for difficult airway management and do special precautions needed?
* ..at increased risk for postoperative respiratory complications with muscle relaxants?
* ..at increased risk for opioid-related respiratory events?
* ..altered pain perception and opioid potency?
* ..at increased risk for adverse events from propofol use for procedural sedation?
* ..at increased risk for residual effects of inhalational anesthetics?
* ..at increased risk for adverse events from ketamine use?
* ..at increased risk for AEs from IV BZD sedation?
* ..at increased risk with α-2 agonists use?
* Does choice of muscle relaxant impacts postoperative respiratory complications?

Should regional anesthesia be preferred over general? | ***Airway:*** -Consider difficult intubation, difficult mask ventilation and take precautions***Anesthetic medication***: *Neuromuscular blockade*:  -Increased risk of postoperative residual blockade, hypoxemia, respiratory failure. -Insufficient evidence of any reversal drug to reduce risk *Opioids:*  -Increased risk for adverse respiratory events. -Consider altered pain perception in OSA *Propofol:*  -Increased risk during procedural sedation *Inhalational agents*:  -Lack of evidence on residual effects *Ketamine:* *-*Lack of evidence on residual effects *Benzodiazepines*:  -Increased risk for adverse events.  -Use IV sedation with caution *α2 agonists*: Lack of evidence***Anesthesia technique***:  -Prefer regional over general anesthesia when applicable |
| 5 | Perioperative care of patients with OSAundergoing upper airway surgery | Adult OSA patients | Perioperative care of OSA patients undergoing upper airway surgery | To provide initial guide specifically addressing the perioperative care of OSA patients undergoing upper airway surgery | Perioperative treatment with PAP might reduce the risk of postoperative airway complications after UA -Surgery Patients receiving PAP recommended to continue PAP therapy preoperatively -Sedative premedication should not be routinely used -Opioid agents should be minimized or avoided  -Plan for difficult mask ventilation, airway management & extubation -Avoid supine position and elevate head of bed postoperatively -Include breathing monitoring postoperatively -Aim to reduce edema with postoperative steroids, elevated head of bed and cooling tissue -Use full-face mask PAP after nasal surgery -Don’t use PAP after maxillofacial surgery -Consider tracheostomy in aggressive surgery -Don’t use obstructive nasal packing routinely -Judge clinically for day-care surgery  -Minimally invasive surgery of the palate and/or base of tongue are safe in day-care setting  -Invasive palatal surgery,lower pharyngeal & maxillofacial surgery necessitates overnight stay  -Maxillomandibular advancement surgery should have prolonged postoperative monitoring |
| 6 | Perioperative OSA management in bariatric Surgery | OSA patients undergoing Metabolic & Bariatric surgery (MBS) | Perioperative care of OSA patients based on screening, treatment, monitoring, anesthesia and follow-up | To provide guidelines for * preoperative screening
* treatment
* postoperative monitoring
* anesthetic care

follow-up of OSA patients with metabolic syndrome. | ***Preoperative screening*** -STOP-Bang score to screen and Berlin Questionnaire to stratify OSA risk -PSG gold standard  -ODI & venous HCO3 – should be useful for screening -Consider neuromuscular disease and obstructive lung disease for preevaluation  -OSA treatment in bariatric surgery -Recommend preoperative CPAP for AHI ≥15/hr***Anesthetic care*** -Ramped position for induction/ intubation -Avoid sedative premedication; sparingly use opioids -Use videolaryngoscopy if concerns for intubation -Consider High flow oxygenation during induction -Minimize postoperative opioid use; consider alternatives (PCM/NSAIDS/Las/Epidural/PNBs) -Make patients fully awake at surgery end -CPAP use (±O2) in moderate/severe OSA -NIV for persistent CO2 retention -Use regional anesthesia as adjunct when feasible***Postoperative monitoring*** -Continuous monitoring especially male,> 50 yr, BMI >60, open surgery -May need prolonged PACU stay -Outpatient surgery contraindicated if no home caregiver -Pulse oximetry minimum requirement***Follow-up*** -Reevaluate before discontinuing CPAP -Use PSG to assess residual disease depending on wt loss/symptoms -Continue therapy until documented to be free of OSA -If persistent OSA manage conservatively |
| 7 | Preoperative selection of adultpatients with OSA scheduled forambulatory surgery | Adult OSA patients scheduled for ambulatory surgery | Intraoperative, immediate postoperative and postdischarge periods during ambulatory surgeries | To guide appropriate selection of OSA patients scheduled for ambulatory surgery, aiming to reduce perioperative complications. | -Use STOP–Bang criteria for preoperative OSA screening -Considers comorbid conditions in the selection process |
| 8 | Perioperative Managementof patients with OSA | Adult & pediatric | Perioperative (anesthesia or sedation) | Management of patients with confirmed or suspected OSA because of potential difficulty in maintaining a patent airway | ***Preoperative evaluation & preparation*** -Anesthesiologist works with surgeon -Check for H/O airway difficulty with previous anesthetics, HTN, CV problems, congenital or acquired medical conditions -Review sleep studies -Consider preoperative CPAP, mandibular advancement or oral appliance***Intraoperative management*** -Consider potential for postoperative respiratory compromise in selecting medications -Consider LA/PNBs ± sedation(with capnography) for superficial procedures -Consider CPAP/oral appliance in sedation -Prefer GA with secure airway over deep sedation -Prefer SA/EA for peripheral procedures -Prefer awake extubation -Verify full extubation of neuromuscular blockade***Postoperative management*** -Consider regional analgesia -Consider supplemental O2 for longer duration -Continue CPAP/NIPPV -Use non-supine position position -Minimize opioid/BZD/barbiturate use -Consider NSAIDS or non-medicine modalities (ice/TENS) -Avoid background opioid infusions |
| 9 | Anesthetic perioperative care and pain management in weight loss surgery | OSA patients undergoing weight loss surgery | Preoperative, intraoperative and postoperative management | To provide key aspects of anesthetic perioperative practice to * improve patient safety
* provide suggestions for medical error reduction

systems improvements, credentialing, and future research | ***Preoperative evaluation and preparation*** -PSG in selected patients; clinical (gender, waist-to-hip ratio, neck circumference) -Preoperative CPAP period for PSG diagnosed moderate to severe OSA -Smoking cessation at least 6 weeks prior Consideration preoperative oral clonidine***Intraoperative management*** -Routine use of >30° reverse Trendelenburg position during induction and emergence  -CPAP of >10 cm H2O during preoxygenation - Include intubating LMA alternative airway  -Treat intraoperative hypoxemia with recruitmentmaneuvers and PEEP (15 cm H2O) -Maintain euvolemia -Cisatracurium/Rocuronium dose according to IBW as standard induction -Dose succinylcholine 1 mg/kg acc. to TBW -Calculate propofol dose acc to TBW for TCI***Postanesthesia care*** -NIV support to treat early postoperative hypoxemia**Postoperative pain management** -Opioid-sparing multimodal analgesic strategies (LA/NSAIDS) -Thoracic epidural pain management |
| 10 | Diagnosis & treatment sleep disordered breathing | Adults with OSA | Perioperative care of OSA in Upper Airway Surgery (UAS) | No clear research questions formulated or objectives defined | -Investigate suspected severe OSAS, unstable ischemic heart disease, recent cerebrovascular disease, congestive heart failure, refractory systemic hypertension, obstructive/restrictive lung disease, pulmonary hypertension, hypercapnic respiratory failure or pregnancy.  -Refer within 6 months to diagnostic sleep facility. -PSG is accepted standard for diagnosis of OSA -Portable monitoring (including pulse oximetry can be used to diagnose OSA) -Consider treatment in asymptomatic OSA with significant cardiovascular disease (includingHTN), especially if the AHI is 19/h or greater -Conventional CPAP at a fixed pressure is primary treatment |