



Title:	Admission and Management of Surgical Patient with Obstructive Sleep Apnea (OSA)	<input checked="" type="checkbox"/> Policy <input checked="" type="checkbox"/> Procedure
Category:	Clinical Policies → General Clinical	Sub Category: Clinical
Original Date:	January 2008	Number: CLIN-015
Last Reviewed or Revised Date:	October 2020	

POLICY STATEMENT

Brockville General Hospital (BGH) will provide safe care of the surgical patient with a diagnosis of or suspected Obstructive Sleep Apnea (OSA) during all phases of their hospitalization.

OSA is a sleep breathing disturbance characterized by apneas (complete cessation of breathing) or hypopneas (significant reduction in airflow) during sleep from repeated upper airway obstruction. These events are clinically relevant if they last more than 10 seconds and may last as long as 30-60 second. Patients often have oxygen desaturation and arousals from sleep in addition to symptoms of excessive daytime sleepiness, non-restorative sleep, fatigue, and difficulty with concentration. OSA is associated with comorbidities such as coronary artery disease, hypertension, congestive heart failure, cor pulmonale, and cerebral vascular accident.

Perioperatively, patients with OSA are at risk for difficult intubation, increased sensitivity to sedative and analgesic medications, postoperative apnea, desaturation, and cardiac events. Therefore, premedication, anesthetic management, postoperative management, and analgesia must be modified to address the unique challenges presented by patients with OSA.

The **OSA Protocol** includes the following:

1. Unless otherwise indicated by the attending anesthetist on the pre-printed OSA order set:
 - a) Perform hourly monitoring of pulse rate, respiratory rate, and oxygen saturation assessments with continuous pulse oximetry
 - b) Use audible alarms which support early recognition of potential hypopnea events outside of the hourly assessments
2. The audible alarms will be set to capture measurements outside of a defined range of:
 - a) Oxygen saturation (SPO2) of less than 90%
 - b) Pulse rate of less than 60 beats/minute or greater than 100 beats/min.

DEFINITIONS

OSA - For the purposes of this policy, OSA will be defined as:

- a) Any respiratory illness requiring the use of nasal Continuous Positive Airway Pressure (CPAP) or BiLevel Positive Airway Pressure (BiLevel/BiPAP™) in the community
- b) Previous diagnosis of OSA
- c) Sleep study with an AHI (Apnea-Hypopnea Index) score of 5 to 15 for mild OSA and greater than 15 for moderate to severe OSA

Suspected OSA – For the purposes of this policy, suspected OSA will be defined as a STOP-BANG score greater than or equal to 3

Respiratory event (one or in combination) - In a 30-minute period, the patient has experienced:

- a) apneic periods of at least 10 seconds, with one or more events
- b) bradypnea with respiratory rate of 8 breaths/min in 3 or more events
- c) oxygen saturations less than 90% in 3 or more events (with or without supplemental oxygen)



Title:	Admission and Management of Surgical Patient with Obstructive Sleep Apnea (OSA)		Number: CLIN-015
Category:	General Clinical	Sub: Clinical	Page: 2 of 8

Monitored Environment – An area capable of providing continuous measurement of pulse and oxygen saturation with nursing staff and respiratory therapists capable of immediately responding to alarms from the monitoring equipment. The clinical staff must be competent to initiate management of patients in respiratory compromise (e.g. bag mask ventilation, administer naloxone, etc.)

PROCEDURE

A - Preoperative Evaluation

1. For patients with known OSA, the settings of the CPAP or BiPAP, if available, will be documented on the patients' preoperative record by the nurse. Patients will be directed by the Pre-Operative Assessment Clinic (POAC) to bring their machine and circuitry on the day of surgery.
2. The anesthetist who is assessing the patient in POAC will establish the patient's post procedure admission monitoring requirements.
3. All patients seen in the POAC will be assessed by Anesthesia using the STOP-BANG assessment tool in order to determine the presence of OSA.
4. Patients will be risk stratified by the POAC anesthetist as stated in the Pre-operative Anaesthesia Orders for Patients with OSA protocol, see appendix A.
5. Patients who are either non-compliant or non-adherent to home management of their sleep apnea with a CPAP machine may still be admitted to the medical/surgical floor post-operatively at the discretion of Anesthesia, as long as their surgery and comorbidities permit. The plan should not include starting the patient on their previous CPAP regime unless a consultation by the Respiratory Therapy program or their CPAP vendor occurs.
6. Obstetrical patients will be considered on a case by case basis with consideration for admission to the Intensive Care Unit (ICU).

B – Day of Surgery

1. Patients will call the day before their surgery and will be reminded to bring their routinely used CPAP/BiPAP with them during their preoperative phone call.
2. The nurse admitting the patient will label the patient's machine upon arrival
3. Anesthesia is to be aware that:
 - a. sedative premedication is to be avoided or at least judiciously used
 - b. Short-acting anesthetic drugs should be considered
 - c. Regional Anesthesia techniques should be considered however the expected level of pain and subsequent need for opioid therapy once these techniques have worn off must be taken into account

C - Post Anaesthesia Care Unit (PACU) Management

1. The Anesthetist will indicate on the Post Operative Anesthesia Orders, the disposition for the patient as well as the discharge criteria as per appendix C. In general, patients may be processed routinely or kept in PACU for extended monitoring of at least one hour, provided they meet discharge criteria using the Aldrete scoring tool on the post-operative patient record. For Same Day Admission patients, all patients with confirmed OSA or patients suspected of having OSA must be admitted to a monitored environment if indicated by the Post Operative Anesthesia Orders;
2. The Intensivist will receive handover from the anesthetist if the patient experienced a respiratory event while in Post Anaesthetic Care Unit (PACU).
3. A consult to Respiratory Therapy will be completed while the patient is in PACU. Phone handover between the PACU nurse and the Registered Respiratory Therapist (RRT) will occur before transferring the patient to the med/surg unit.
4. If the patient has a CPAP machine, the CPAP pressure will continue as the patient has been prescribed at home.
5. The RRT will determine need for oxygen titration.



Title:	Admission and Management of Surgical Patient with Obstructive Sleep Apnea (OSA)		Number: CLIN-015
Category:	General Clinical	Sub: Clinical	Page: 3 of 8

D - Medical/Surgical Department

1. The RRT is the first contact for patients with emergent desaturations and/or declining status requiring immediate intervention.
2. RRT will be responsible to assess patient's respiratory status on arrival and round on patient throughout night shift and will contact the intensivist with issues regarding the patient's sleep apnea.
3. Continuous SpO2 monitoring while resting or sleeping until 0800 the following day post op.
4. Post-operative patients who have received intrathecal analgesia will require 24 hours of continuous monitoring on oximetry. Vital sign assessment to continue as per intrathecal order set.
5. Assessment and documentation by nurse of hourly **pulse, respiration rate and oxygen saturation level** (unless ordered otherwise by attending anesthesiologist)
6. Continuous audible alarms of pulse rate and oxygen saturation settings (unless ordered otherwise):
 - a. SpO2 greater than 90%
 - b. Pulse rate greater than 60 beats/minute and less than 100 beats/minute
7. The morning after surgery, or 24 hours after surgery for intrathecal patients, the RRT will review the patient with the patient's primary nurse based on the below parameters to determine if the patient meets criteria for discontinuation of continuous monitoring:
 - a. SpO2 maintained above 90% with home CPAP settings on room air while awake or asleep
 - b. Level of consciousness is alert;
 - o The patient's pain has been adequately managed with the initial pain orders written by the anesthesiologist in PACU

NOTE: If the above criteria were not met then the RRT would discuss the case with the Intensivist/Most Responsible Physician (MRP)

E - Documentation

1. Document hourly pulse rate, respiration rate and oximetry until 0800 post –op Day 1 followed by post-operative documentation standard.
2. For patients that have received intrathecal analgesia, document hourly pulse rate, respiratory rate and oximetry until 0800 post-op day 1 followed by intrathecal documentation standard.
3. At their discretion, the Anesthesia provider may write a discharge letter recommending a polysomnography follow-up for patients with suspected OSA, with copies to the patient and their primary care provider

RELATED POLICIES

N/A

ASSOCIATED DOCUMENTS

Appendix A - Preoperative Evaluation of Known or Suspected OSA Patients

Appendix B - Intraoperative Anesthetic Management of the OSA Patient

Appendix C - Postoperative Management of the Known or Suspected OSA Patient after General Anaesthesia

Appendix D – Stop-Bang Questionnaire

REFERENCES

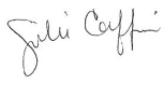
¹Benumof, J.L. (2015) Mismanagement of obstructive sleep apnea may result in finding these patients dead in bed. Retrieved from <http://link.springer.com/article/10.1007%2Fs12630-015-0513-x>

²Chung, C.L. et al. (2016). Perioperative management of patients with obstructive sleep apnea: a survey of Canadian anesthesiologists. *Can J Anaesth*, 63(1), 16-23.



Title:	Admission and Management of Surgical Patient with Obstructive Sleep Apnea (OSA)		Number: CLIN-015
Category:	General Clinical	Sub: Clinical	Page: 4 of 8

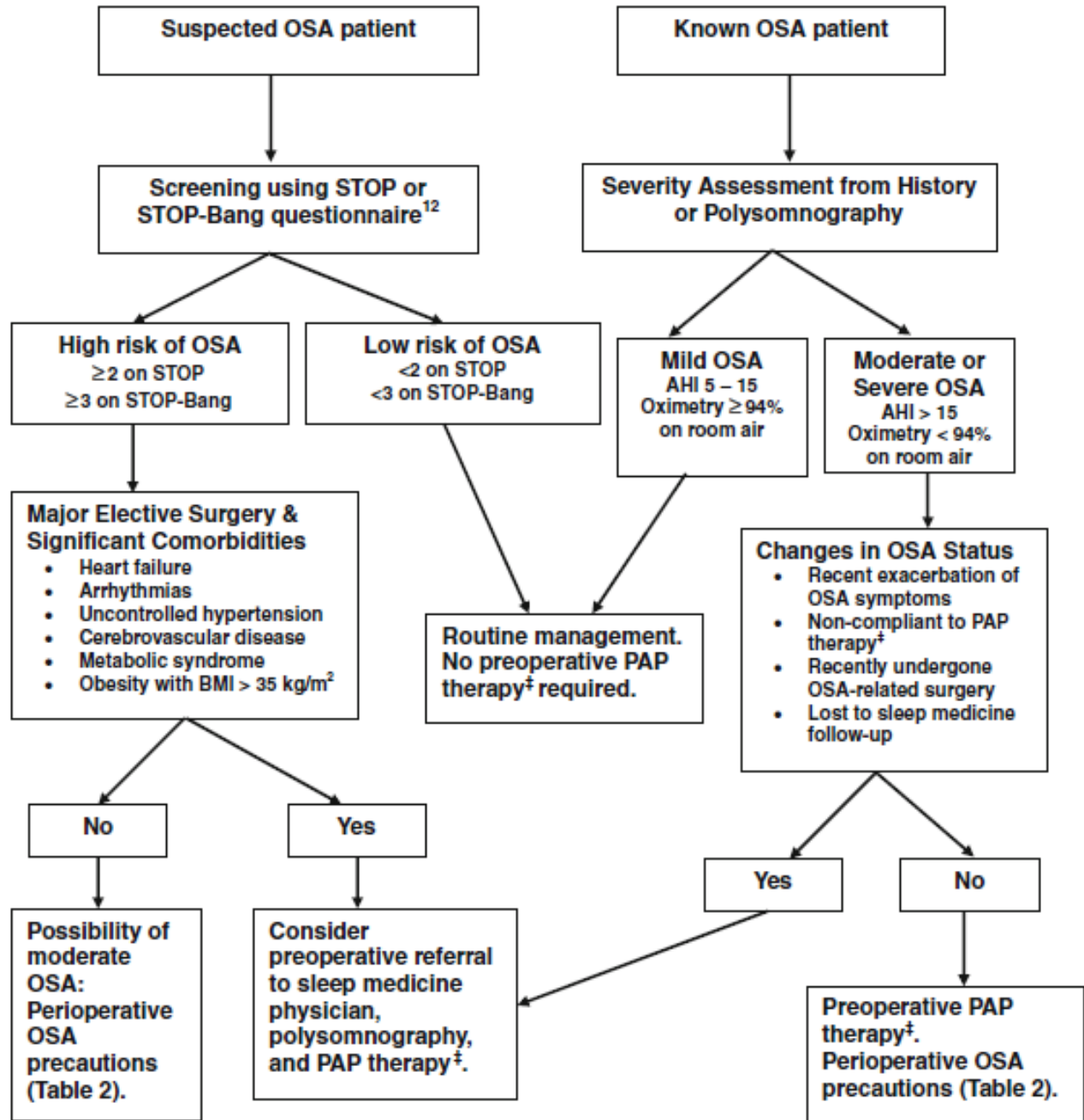
- ³Cordovani, L., Germain, G., Turner, K. & Turgeon, A.F. (2015). Perioperative ,management of patients with obstructive sleep apnea: a survey of Canadian Anesthesiologists. Retrieved from <http://link.springer.com/article/10.1007%2Fs12630-015-0512-y>
- ⁴Seet, E. & Chung, F. (2010). Management of sleep apnea in adults – functional algorithms for the perioperative period: continuing professional development. *Can J Anaesth*, 57(9), 849-864.
- ⁵Swart, P., Chung, F. & Fleetham, J. (2013). An order-based approach to facilitate postoperative decision making for patients with sleep apnea. *Canadian journal of Anesthesia*, 60(1), 321-324.
- ⁶UC San Diego & the University of Toronto (2011). Perioperative Management of OSA Patients: practical Solutions and Care Strategies. Retrieved from https://cme.ucsd.edu/OSAonline/osa%20monograph_web.pdf
- ⁷UptoDate, 2019, Postoperative Management of Adults with Obstructive Sleep Apnea
- ⁸Seet, E, 2010, Management of sleep apnea in adults – function algorithms for the perioperative period: Continuing Professional Development
- ⁹Management of the Perioperative Adult Patient with known or suspected Obstructive Sleep Apnea (OSA) – Hamilton Health Sciences (2016)
- ¹⁰Stop-Bang Questionnaire, University Health Network. www.stopbang.ca

Approved By:	 <hr/> Julie Caffin, Sr. VP and Chief Nursing Executive
Retired Date:	



Title:	Admission and Management of Surgical Patient with Obstructive Sleep Apnea (OSA)		Number: CLIN-015
Category:	General Clinical	Sub: Clinical	Page: 5 of 8

APPENDIX A: PREOPERATIVE EVALUATION OF KNOWN OR SUSPECTED OBSTRUCTIVE SLEEP APNEA PATIENT IN THE ANESTHESIA CLINIC. POSITIVE AIRWAY PRESSURE (PAP) THERAPY-INCLUDING CONTINUOUS PAP, BILEVEL PAP OR AUTO TITRATING PAP.





Title:	Admission and Management of Surgical Patient with Obstructive Sleep Apnea (OSA)		Number: CLIN-015
Category:	General Clinical	Sub:	Clinical
			Page: 6 of 8

APPENDIX B: INTRAOPERATIVE ANESTHETIC MANAGEMENT OF THE PATIENT WITH OBSTRUCTIVE SLEEP APNEA (OSA PRECAUTIONS).

Table 2 Intraoperative anesthetic management of the patient with obstructive sleep apnea (OSA precautions)

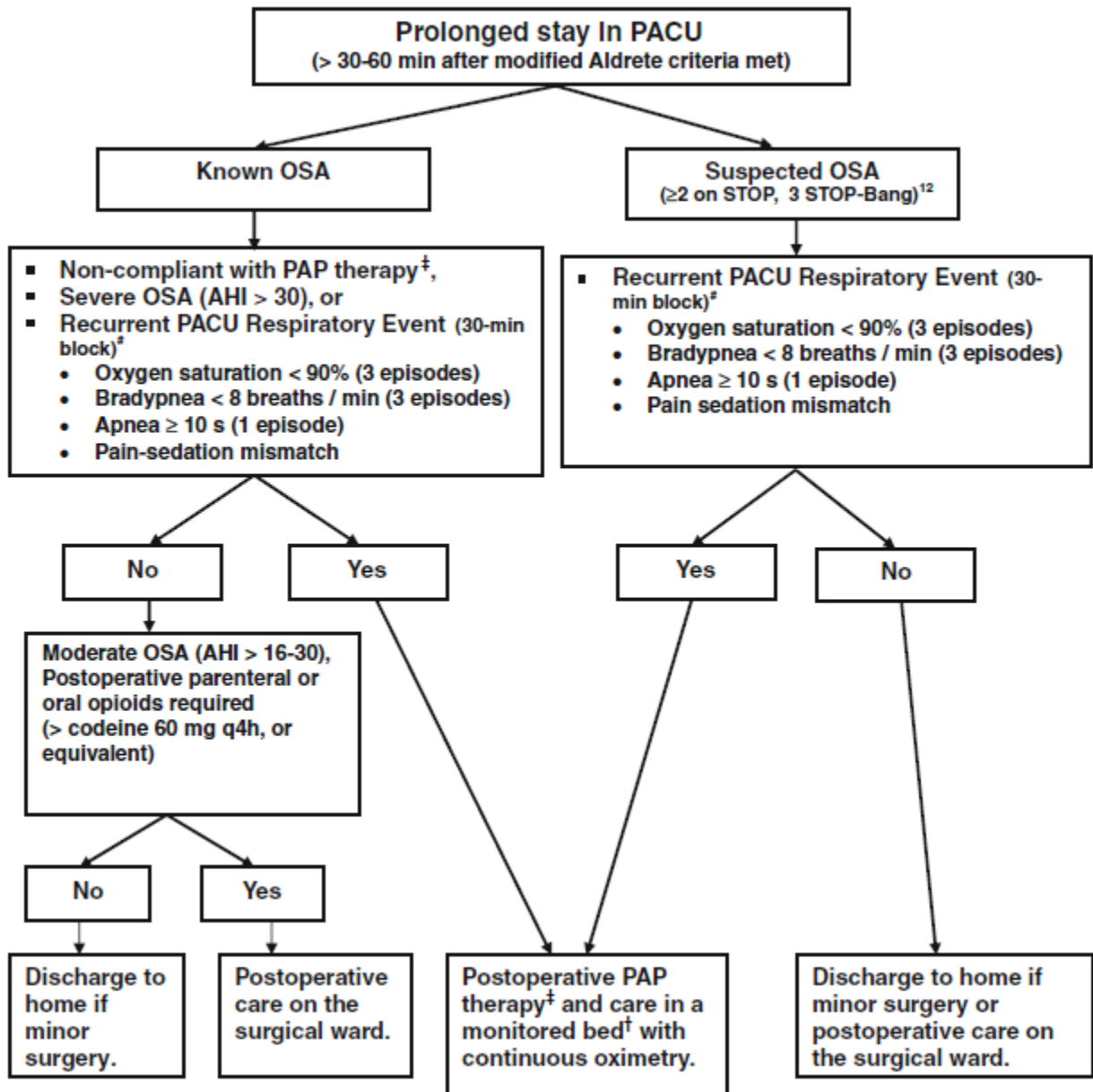
Anesthetic concern	Principles of management
Sedative premedication	Avoid sedating premedication. ⁸ Alpha-2 adrenergic agonist (clonidine, dexmedetomidine) ²⁴ may reduce intraoperative anesthetic requirements and have an opioid-sparing effect.
Possible difficult airway ¹⁸	Ramp from scapula to head if patient is obese. Adequate preoxygenation. ASA Difficult Airway Algorithm. ¹⁹
Gastroesophageal reflux disease ²⁰	Consider proton pump inhibitors, antacids, rapid sequence induction with cricoid pressure.
Opioid-related respiratory depression ⁸	Minimize use of opioids for analgesia. Use of short-acting agents (remifentanyl). Regional and multimodal analgesia (NSAIDs, acetaminophen, tramadol, ketamine, gabapentin, pregabalin, dexmedetomidine, dexamethasone). ⁷
Carry-over sedation effects from longer-acting intravenous sedatives and inhaled anesthetic agents	Use of propofol / remifentanyl for maintenance of anesthesia. ⁸ Use of insoluble potent anesthetic agents (desflurane). ⁸ Use of regional blocks as a sole anesthetic technique. ⁷
Excessive sedation in monitored anesthetic care ⁷	Use of intraoperative capnography for monitoring of respiration. ⁷
Post-extubation airway obstruction	Verification of full reversal of neuromuscular blockade. ⁷ Ensure patient fully conscious and cooperative prior to extubation. ⁷ Non-supine posture for extubation and recovery. ⁷ Resume use of positive airway pressure device. ⁷

ASA = American Society of Anesthesiologists; NSAIDs = non-steroidal anti-inflammatory drugs



Title:	Admission and Management of Surgical Patient with Obstructive Sleep Apnea (OSA)		Number: CLIN-015
Category:	General Clinical	Sub: Clinical	Page: 7 of 8

APPENDIX C - POSTOPERATIVE MANAGEMENT OF THE KNOWN OR SUSPECTED OSA PATIENT AFTER GENERAL ANAESTHESIA



LEGEND

Recurrent post anesthesia care unit (PACU) respiratory event – any event occurring more than once in each 30-min evaluation period (not necessary to be the same event).



Positive airway pressure (PAP) therapy – including continuous PAP, bi-level PAP, or auto-titrating PAP.



Monitored bed - environment with continuous oximetry and the possibility of early nursing intervention (e. g. intensive care unit, step-down unit, or remote pulse oximetry with telemetry in surgical ward).

Pain-sedation mismatch = simultaneous occurrence of high pain scores and high sedation levels



Title:	Admission and Management of Surgical Patient with Obstructive Sleep Apnea (OSA)		Number: CLIN-015
Category:	General Clinical	Sub: Clinical	Page: 8 of 8

APPENDIX D: STOP-BANG QUESTIONNAIRE FOR OBSTRUCTIVE SLEEP APNEA (OSA)

Yes	No	Criteria
		<u>S</u>NORING – Do you snore loudly (loud enough to be heard through closed doors or your bed-partner elbows you for snoring at night)?
		<u>T</u>IRED – Do you often feel tired, fatigued or sleepy during the daytime (such as falling asleep during driving or talking to someone)?
		<u>O</u>BERVED – Has anyone observed you stop breathing or choking/gasping during sleep?
		<u>P</u>RESSURE – Do you have or are you being treated for high blood pressure?
		<u>B</u>ody Mass Index – More than 35 kg/m ² ?
		<u>A</u>GE – Older than 50 years old?
		<u>N</u>ECK SIZE LARGE – (measured around Adams apple) For male – is your shirt collar 17 inches/43 cm or larger? For female – is your shirt collar 16 inches/41 cm or larger?
		<u>G</u>ENDER – Male?

Scoring Criteria for general population:

LOW risk of OSA: Yes to 0-2 question
 INTERMEDIATE risk of OSA: Yes to 3-4 questions
 HIGH risk of OSA: Yes to 5-8 questions
 OR Yes to 2 or more of 4 STOP questions _ + male gender
 OR Yes to 2 or more of 4 STOP questions + BMI > 35 kg/m²
 OR Yes to 2 or more of 4 STOP questions + neck circumference
 (17 inches/43 cm in male, 16 inches/41 cm in female)

*Proprietary to University Health Network www.stopbang.ca