Title: **OBSTRUCTIVE SLEEP APNEA: THE SILENT PANDEMIC**

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Introduction: Obstructive sleep apnea (OSA) afflicts 2-4% of the U.S. adult population.[1] The incidence is rising as the population ages and as obesity becomes more prevalent. Eighty to 90% of people with OSA are thought to be undiagnosed.[2] This is likely due to health care professionals' poor awareness of this disorder, a lack of routine screening, and the costly and time-consuming process of diagnostic sleep studies. Patients with OSA may be vulnerable during the perioperative period, particularly if they receive general anesthesia and opiate analgesia. The protective arousal reflexes are diminished thus increasing the risk for prolonged periods of apnea and respiratory arrest during sleep. The prevalence of OSA among surgical patients at Barnes Jewish Hospital (BJH) in St. Louis is unknown. We designed a prospective observational study to discover the extent of diagnosed and undiagnosed OSA among surgical patients at BJH.

Methods: In the Center for Pre-operative Assessment and Planning, patients routinely undergo a comprehensive evaluation prior to their upcoming surgery. During this visit patients are now asked to complete a validated questionnaire that assigns them a risk level for OSA: no risk, low risk, moderate risk, and high risk. All patients who screen high risk are offered an ARES Unicorder® to take home. This is a validated portable diagnostic device whose results compare favorably with formal sleep studies.[3] The option of using an ARES Unicorder® is also offered to patients who do not screen high risk. The ARES Unicorder® is worn at home during sleep. A computer chip stores continuous data on oxygen saturation, pulse rate, air flow, head position, and decibel level of snoring. The patient returns the Unicorder® on the day of surgery. The data are downloaded and a report is generated that details the respiratory disturbance index (RDI) and apnea-hypopnea index (AHI) during sleep. The RDI is the number of abnormal breathing events per valid hour of recording time and the AHI is the sum of the apneas and hypopneas per valid hour of recording time. Both of these values indicate the severity of OSA..

Results: Seven hundred fourteen consecutive patients have been screened thus far over 2 months and 671 (94%) have completed the screening questionnaires. Twenty three percent (n=167) have been found to be at high risk, 22% (n=156) at moderate risk, 26% (n=182) at low risk, and 23% (n=167) at no risk. Of the 167 high risk patients, 95 (56.9%) have taken Unicorders® home. Forty-nine Unicorders® have been returned. A Unicorder© result was considered to be valid if at least 3 valid hours of data were collected. The median AHI and RDI for the high risk patients with valid studies (n = 29) are 16 (inter quartile range 10 -28) and 29 (inter quartile range 23 – 54) respectively.

Discussion: Based on our preliminary screening results, we have found that an alarming 23% of the adult surgical population at BJH may be at high risk for OSA. Initial data from the ARES Unicorders® suggest that most patients who screen high risk really do have moderate to severe OSA. If these results are confirmed and are reflective of the general surgical population in the USA, it is essential to develop a practical process for OSA screening and to establish guidelines for perioperative management of OSA.

References:

1. Young T et al. *NEJM* 1993;328:1230-1235.
2. Young T et al. *Sleep* 1997;20:705-706
3. Westbrook P et al. *Chest*. 2005; 128;2166-2175