

# SAFER CARE PLAN MANAGEMENT OF OSA AND AIRWAY AT THE “INSTITUTO NACIONAL DE REHABILITACION LUIS GUILLERMO IBARRA IBARRA”

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## ABSTRACT

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**Introduction:** Obstructive sleep apnea (OSA) is a very common sleep disturbance. It is related to many medical conditions and a poor postoperative outcome. Patients who are known carriers of OSA should be routinely assessed by the anesthesiology service.

We present our experience at the Instituto Nacional de Rehabilitación (INR), presenting functional algorithms for the perioperative assessment and management of OSA patients, with recommendations that may be used for the decision-making in this kind of patients.

## 1. INTRODUCCIÓN

Obstructive sleep apnea (OSA) is the most prevalent breathing disturbance in sleep. It is related to a number of preexisting medical conditions and associated with poorer postoperative outcomes. Screening and vigilance during the preoperative assessment identifies patients at high risk of obstructive sleep apnea. Further diagnostic tests may be performed, and plans can be made in order to achieve a tailored intraoperative care. The STOP and the STOP-Bang questionnaires are useful screening tools. Patients with a known diagnosis of obstructive sleep apnea should be evaluated in the preanesthetic consultation, where risk

stratification and optimization may be done before surgery. This experience article explains the everyday practices at the “Instituto Nacional de Rehabilitación” (National Institute of Rehabilitation -INR-), in Mexico City, and we present functional algorithms for the perioperative management of obstructive sleep apnea based on limited clinical evidence, and a collation of expert knowledge and practices. These recommendations may be used to assist the anesthesiologist in decision-making when managing the patient with obstructive sleep apnea.<sup>1</sup>

Patients with OSA may have an increase in postoperative adverse respiratory events, sustained arrhythmias, hypertension, and other cardiovascular events. The gold

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standard for the diagnosis of OSA is polysomnography, but some tools like the Berlin questionnaire and the American Society of Anesthesiologists OSA checklist are useful for screening, while the STOP and the STOP-Bang questionnaires are easy to use in adults. Patients scheduled for elective major surgery, who are at high risk of OSA with significant comorbidities, may be referred for preoperative polysomnography, and should have perioperative precautions, such as anticipation of a possible difficult airway, the use of short-acting anesthetic agents, using low-doses of opioid agents, neuromuscular blockage with rocuronium, immediate reversion with sugammadex if necessary and extubation in a non-supine position. All of this should be considered for known or suspected high-risk OSA patients. Postoperative considerations for the OSA patient should be based on the severity of the sleep disorder, recurrent post anesthesia care unit respiratory events, and the need for non-opioid analgesia. With proper screening and vigilance in the preoperative period, risk stratification should be undertaken for known and suspected OSA patients, and care should be individualized. Practical algorithms based on current best evidence and expert opinion may be useful in the perioperative management.<sup>2</sup>

Obstructive sleep apnea syndrome (OSAS) is characterized by episodes of airway obstruction. In Mexico it is under-diagnosed and therefore under-treated. In patients with this condition undergoing general anesthesia, mortality

may increase in the trans and post-anesthetic period due to complications at the respiratory, cardiovascular, and nervous levels. We know that the most frequently postoperative complications observed in patients with high risk of OSAS are arterial hypertension and desaturation that requires oxygen, they may be present in 2 out of 3 women, while in males the relationship is 6 out of 8. The prevalence of OSAS in the Mexican population is similar to that reported in the international literature, and it has been demonstrated a statistical correlation between the score obtained on the STOP-BANG scale with complications in the postoperative period, for which we consider that it is important to use scales such as STOP-BANG to assess the risk of OSAS in the preoperative period.<sup>3</sup> We have considered to follow these recommendations in the everyday practice at the head and neck-ear nose and throat (ENT) and anesthesia departments at the INR.

We must determine the risk of OSA in patients undergoing elective surgery, and its relationship with difficult intubation (DI), due to the high rate of DI in OSA patients, in whom the security of the airway is endangered. Therefore, it is necessary to use screening tools in operating rooms to suspect OSA. Early clinical recognition of this condition may help in designing a safer care plan. In medical literature, there is a lack of studies evaluating the risk of OSA in patients undergoing surgical procedures.<sup>4</sup>

Obstructive sleep apnea is one of the main

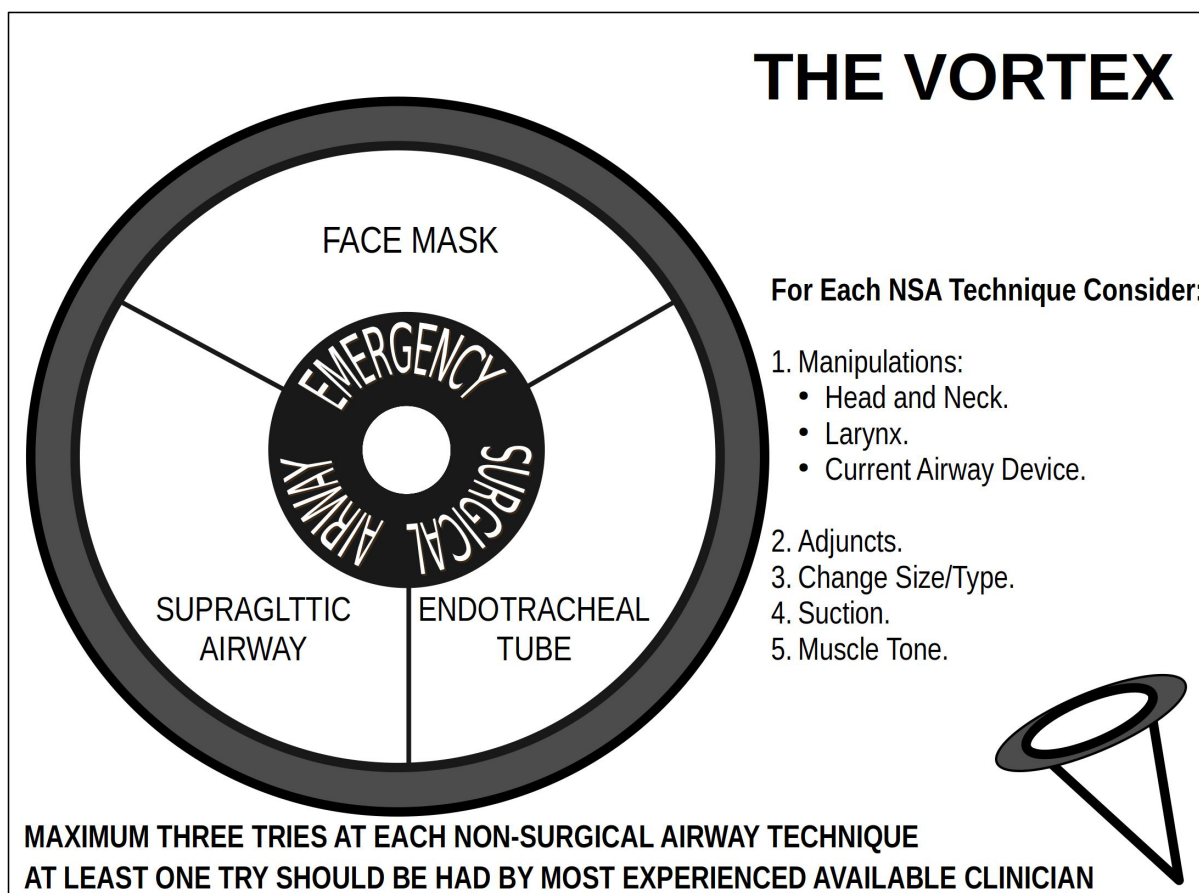


Figure 1

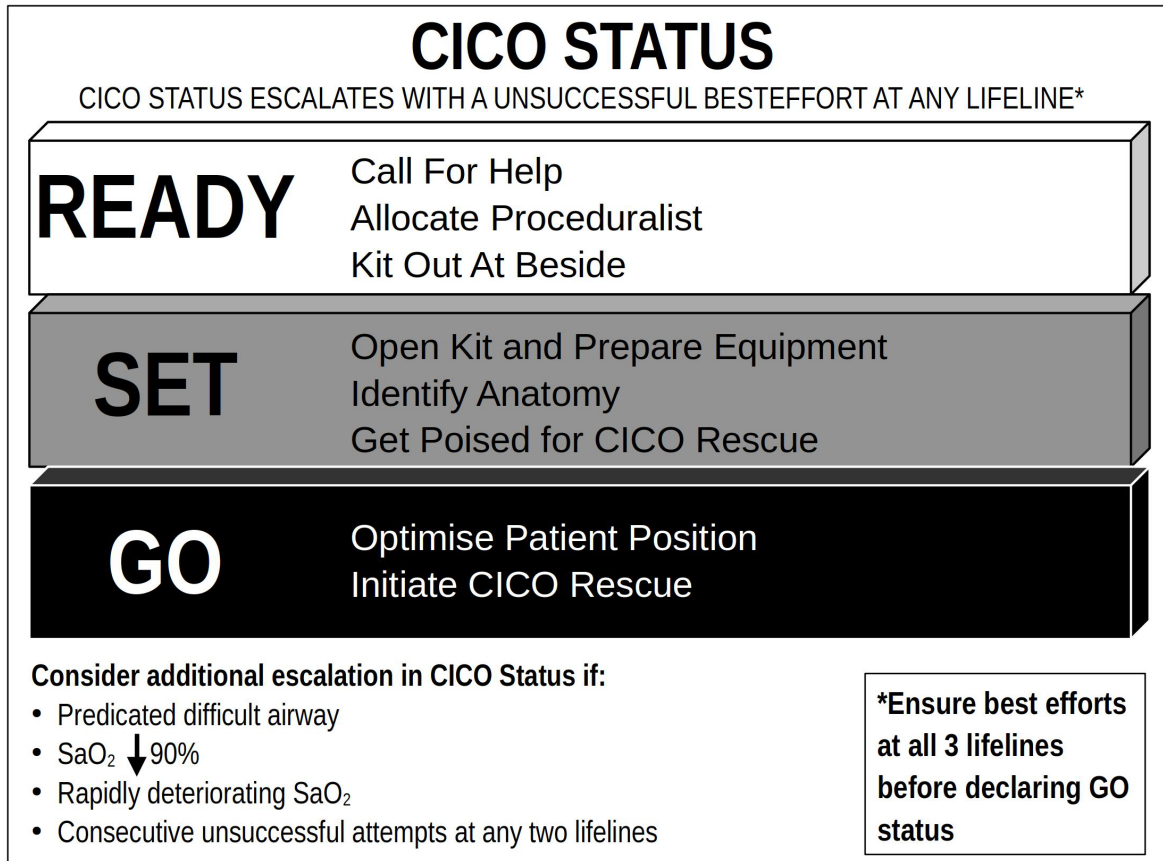


Figure 2: CICO: ‘can’t intubate can’t oxygenate’

risk factors for increased postoperative morbidity and postoperative complications and recovery time in OSA mortality. OSA is a chronic medical condition with long-term neurological and cardiovascular complications. Its pathophysiology varies among people and has different mechanisms. Several factors, including upper airway anatomy, effectiveness of the dilator muscles such as genioglossus, the individual’s stimulus threshold, and the stability of the respiratory control system determine the pathogenesis of OSA. General anesthesia may impact the stability of upper airways and control of breathing, and thus worsen postoperative recovery. It has been reported higher postoperative complications that included hypoxemia, Intensive Care Unit (ICU) admission, and longer hospital stay in patients with OSA compared to the control group. Further, sedative drugs and narcotics should be used with caution and with close monitoring as they may increase the risk of respiratory depression.

Most anesthesia guidelines for preoperative assessment recommend screening for OSA. Clinical practice guidelines have not been effective in changing the physicians’ behavior. A recent review indicated lack of familiarity (57%) and lack of awareness (54%) of the respondents as barriers for implementation of those guidelines. A survey among anesthesiologists showed lack of knowledge about sleep apnea. We are trying to determine the impact of anesthesiologists’ awareness of OSA risk on the incidence of

patients who undergo general anesthesia for elective ENT surgeries in a public practice setting with poor general awareness and familiarity about OSA among healthcare providers.<sup>5</sup>

## 2. SAFER CARE PLAN MANAGEMENT OF OSA AND AIRWAY IN THE “INSTITUTO NACIONAL DE REHABILITACION”

First, we decided to evaluate the difficulty of the airway with all the normal scores already known and available in the scientific area, including the STOP-BANG tool;<sup>6</sup> once we have classified the level of OSA along with the difficulty level of intubation; we have established a VORTEX approach algorithm,<sup>7</sup> (figures 1 and 2).

Once we had identified the possible issues leading to a difficult airway, we gather devices such as video laryngoscope, laryngeal mask, Guedel cannula, flexible bougie (a thin, flexible surgical instrument for exploring or dilating a passage of the body), and different intubation cannulas according to weight and age, as well as the participation of the neck surgeon in case that performing a tracheostomy is needed. To minimize the risk of an accident, a team leader should be present, counting the time in every action, avoiding to exceed the time of apnea and the possibility of falling into

an anoxyschemic encephalopathy situation, the possibility of death or both.

We should also consider the pharmacological treatment to obtain muscular neuroblocking, neck's patient position, mechanic ventilation, even before intubation; to avoid overpressure of the airway or stomach cavity, and whether necessary, the pharmacological reversion of rocuronium or vecuronium with sugammadex.

We must add as well an “agent of change” known everywhere as “residents” turnover; medical staff coming from different hospitals around the country rotating into the INR, as well as ETN residents and not only anesthesia residents; guiding them as part of the team, as well as all paramedic staff, teaching them the airway management as a “safer care plan for OSA”.

The next step is always to come with new generations and new knowledge or devices to ameliorate the anesthetic practice, but it will be all the time the better and safer planification of the airway what is going to show the best results in OSA or other surgical respiratory conditions, along with proper anesthesia care.

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