

## EAR, NOSE AND THROAT ASSOCIATES OF CHESTER COUNTY

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### SLEEP APNEA

Sleep apnea is a serious disorder characterized by breathing repeatedly stopping and starting during sleep. There are two types of sleep apnea. The most common, obstructive sleep apnea, occurs when the soft tissues of the throat and upper airway relax or collapse. A less common type of apnea, central apnea, occurs when the brain does not send the proper signals to the muscles which control breathing during sleep.

The signs and symptoms of sleep apnea include loud snoring with observable episodes during which there is a cessation of breathing, abrupt startled awakenings in which breathing resumes, and a sense of fragmentation of sleep with daytime tiredness. Additionally patients may experience a dry mouth or sore throat in the morning.

During episodes of apnea the muscles in the back of the back of the throat, including those which support the soft palate and tongue, relax, narrowing or obstructing the airway. This can lead to a lowering of the amount of oxygen in your blood. Your brain then senses these changes and briefly arouses you from deep sleep so that the airway can be reestablished.

Although sleep apnea can occur at any age (even children can experience it), certain factors increase the risk. These include being older, being a male, having excess weight, using sedative medications or tranquilizers, drinking alcohol, and smoking cigarettes.

Sleep apnea can vary from mild to extremely severe. It is considered a serious medical condition with potential complications including elevation of blood pressure or hypertension, heart failure, stroke, and even sudden death from a cardiac event. Additionally, because of the repeated awakenings, people with sleep apnea usually experience various levels of daytime drowsiness and fatigue. This could result in falling asleep at work or, more seriously, while driving a car. Lastly, patients with sleep apnea are at greater risk for general anesthetics, major surgery, and taking certain medications. In addition the loud snoring associated with sleep apnea can result in bed partners having difficulties with sleep.

Initial concerns over the possibilities of sleep apnea are raised when the history and physical examination suggests that the patient is experiencing obstruction in the back of the throat and cessations of breathing during sleep. The gold standard diagnostic study to evaluate a patient for sleep apnea is referred to as a nocturnal polysomnography or sleep study. This study determines the frequency of abnormal respiratory events per

hour of sleep, which is referred to as the RDI. An RDI of greater than six but less than 20 is considered mild. Between 20 and 40, it is considered moderate. Above 40, it is considered severe. Additionally the level of oxygen desaturation during the episodes of apnea as well as possible EKG abnormalities come into play in determining the level of severity of apnea. During this test, which takes place in a sleep laboratory, the patient is attached to various monitors which assess the activity of his heart, brain, and lungs as well as movements of the body and the amount of oxygenation within the blood. This is extremely helpful in making an accurate diagnosis.

The treatment of sleep apnea first and foremost involves elimination of those factors which might predispose one to apnea, such as obesity, excessive use of alcohol, sedative medications, and cigarette smoking. Additionally, since patients tend to experience obstruction of the airway in the back of the throat more commonly when lying on their back, sleeping on your side or abdomen may prevent or minimize tendencies towards sleep apnea.

Continuous positive airway pressure or CPAP is the gold standard of treatment for sleep apnea. The efficacy of this mode of treatment is determined by a separate or split-night sleep study. With CPAP, the patient wears a snug-fitting nasal mask attached to a fan which blows air into the nostrils to keep the airway open during sleep.

Dental appliances or bite guards can be used to bring the lower jaw forward and thereby lessen the tendency of the posterior airway to obstruct during sleep. These devices are specifically helpful in patients in whom posterior displacement of the base of the tongue is determined to be a major source of obstruction. Long term use of these appliances does carry with it the risk of developing secondary temporomandibular joint (jaw joint) difficulties.

On occasion patients choose surgical intervention in preference to CPAP, especially if they find that the device is restrictive or uncomfortable, if they have tendencies towards claustrophobia, or, despite their best efforts, if they find that they are noncompliant. Surgical treatment seeks to alleviate the areas of obstruction. The most common procedure is a uvulopalatopharyngoplasty (UPPP). This involves removal of the posterior portion of the soft palate with the uvula and redundant tissues around the tonsillar fossae or bed. If the patient has tonsils, removal of these is also required. The muscles are then tightened to secure a more patent airway.

In addition, for patients who have obstruction at the level of the base of the tongue, a coblation reduction of the base of the tongue with a radiofrequency device can shrink the tissues and improve the airway. In patients in whom there is an obstruction of the nasal airway, correction of this will reduce the level of sleep apnea. This may involve straightening the septum (the midline structure of the nose) if it is twisted and obstructive; reducing the turbinates (normal structures of the side of the nose which can become engorged or swollen, resulting in nasal obstruction); and, in some patients, the removal of nasal polyps. If the apnea is more severe, an advancement of the base of the tongue with repositioning of a portion of the bone in the front of the jaw may be

required. This is referred to as a genioglossal base of tongue advancement (GBAT) and utilizes a plating system to hold the tissues in place. In patients with extremely severe apnea, a tracheostomy may be considered either as a separate procedure or in combination with the various procedures noted above.

Otolaryngologists are specialists in determining the patency or status of the upper airway, offering patients a full option of treatment modalities. In addition they can perform a thorough evaluation of the upper airway including the nasal chambers, mouth and pharynx, base of tongue, and the status of the posterior palatal and peritonsillar tissues. This utilizes an endoscopic examination where an extremely small scope is passed through the nasal cavities into the back of the throat.

The physicians of ENTACC are Board Certified otolaryngologists and head and neck surgeons who are well versed in determining the patency or status of the upper airway and offering patients a full option of treatment modalities.