

# Sleep Apnea

**Sleep apnea** is a sleep disorder characterized by pauses in breathing or periods of shallow breathing during sleep. Each pause can last for a few seconds to several minutes and they happen many times a night. In the most common form this follows loud snoring. There may be a choking or snorting sound as breathing resumes. As it disrupts normal sleep, those affected are often sleepy or tired during the day. In children it may cause problems in school or hyperactivity.

## Diagnosis

Sleep apnea may be diagnosed by the evaluation of symptoms, risk factors and observation, (e.g., excessive daytime sleepiness and fatigue) but the gold standard for diagnosis is a formal sleep study (polysomnography, or sometimes reduced channels home based test). A study can establish reliable indices of the disorder, derived from the number and type of event per hour of sleep (Apnea Hypopnea Index (AHI), or Respiratory Disturbance Index (RDI)), associated to a formal threshold, above which a patient is considered as suffering from sleep apnea, and the severity of their sleep apnea can then be quantified. Mild OSA (Obstructive Sleep Apneas) ranges from 5 to 14.9 events per hour, moderate OSA falls in the range of 15–29.9 events per hour, and severe OSA would be a patient having over 30 events per hour.

## Symptoms

People have problems with excessive daytime sleepiness (EDS) and impaired alertness. In other words, common effects of sleep apnea include daytime fatigue, a slower reaction time, and vision problems. OSA may increase risk for driving accidents and work-related accidents. If OSA is not treated, people are at increased risk of other health problems, such as diabetes. Even death could occur from untreated OSA due to lack of oxygen to the body. Moreover, people are examined using "standard test batteries" in order to further identify parts of the brain that may be adversely affected by sleep apnea including those that govern:

"executive functioning", the way the person plans and initiates tasks

paying attention, working effectively and processing information when in a waking state

using memory and learning.

Due to the disruption in daytime cognitive state, behavioral effects may also be present. These can include moodiness, belligerence, as well as a decrease in attentiveness and energy. Another symptom related to sleep apnea is sleep paralysis, the fear of which can sometimes lead to insomnia. These effects may become intractable, leading to depression.

There is also evidence that the risk of diabetes among those with moderate or severe sleep apnea is higher. There is also increasing evidence that sleep apnea may also lead to liver function impairment, particularly fatty liver diseases. Finally, because there are many factors that could lead to some of the effects previously listed, some people are not aware that they have sleep apnea and are either misdiagnosed, or just ignore the symptoms altogether.

## Risk factor

Sleep apnea can affect people regardless of sex, race, or age. However, risk factors include:

- being male
- excessive weight
- an age above 40
- large neck size (greater than 16–17 inches)
- enlarged tonsils or tongue
- small jaw bone
- gastroesophageal reflux
- allergies
- sinus problems
- a family history of sleep apnea
- deviated septum

Alcohol, sedatives and tranquilizers may also promote sleep apnea by relaxing throat muscles. Smokers have sleep apnea at three times the rate of people who have never smoked.

Central sleep apnea is more often associated with any of the following risk factors:

- being male
- being older than 65 years
- having heart disorders such as atrial fibrillation or atrial septal defects such as PFO
- stroke
- brain tumor

Brain tumors may hinder the brain's ability to correctly regulate breathing. High blood pressure is also very common in people with sleep apnea.

## **Treatment**

### **Continuous positive airway pressure**

For moderate to severe sleep apnea, the most common treatment is the use of a continuous positive airway pressure (CPAP) or automatic positive airway pressure (APAP) device. These splint the person's airway open during sleep by means of pressurized air. The person typically wears a plastic facial mask, which is connected by a flexible tube to a small bedside CPAP machine.

With proper use, CPAP improves outcomes and decreases the risk of death due to heart disease. Long term compliance, however, is an issue with more than half of people not appropriately using the device.

Although CPAP therapy is effective in reducing apneas and less expensive than other treatments, some people find it extremely uncomfortable. Patients complain of feeling trapped, having chest discomfort, and skin or nose irritation. Other side effects a patient may experience are dry mouth, dry nose, nosebleeds, sore lips and gums. Many patients refuse to continue the therapy or fail to use their CPAP machines on a nightly basis, especially in the long term.

## Surgery

Illustration of surgery on the mouth and throat.

Several surgical procedures (sleep surgery) are used to treat sleep apnea, although they are normally a third line of treatment for those who reject or are not helped by CPAP treatment or dental appliances. Surgical treatment for obstructive sleep apnea needs to be individualized to address all anatomical areas of obstruction.

*Edited by NDU medical office*  
Reference: CM department, TSGH