

Obstructive Sleep Apnea

What is Obstructive Sleep Apnea?

Obstructive sleep apnea syndrome (OSAS) is a condition characterized by repeated pauses or blockages of breathing during sleep. This is caused by collapse of the soft tissues of the throat which blocks airflow into the lungs.

Because sleep causes muscle relaxation, there is usually slight narrowing of the throat during sleep. In normal individuals, this narrowing is very mild, and does not compromise airflow to the lungs; however, in people with OSAS, this narrowing is so great that it either partially or completely blocks airflow to the lungs.

When these breathing blockages occur, the brain senses the drop in airflow and oxygen levels, and forces the person to increase the effort to breathe. Eventually, this increased effort awakens the brain, which signals the throat muscles to become active again and results in reopening of the breathing passage. This cycle of falling asleep, throat narrowing, struggle to breathe followed by arousal from sleep tends to repeat itself throughout the night, and can disturb sleep dozens to hundreds of times. However, because most of these awakenings are very brief, most people are not aware of them.

What causes Obstructive Sleep Apnea?

Obstructive sleep apnea occurs in all age groups, and both genders, although it seems to be more common in men, people over the age of 40, and possibly in young African-Americans.

Several factors can contribute to the easily collapsible airway of patients with obstructive sleep apnea. These include:

- Obesity - increases the fatty tissue in the throat making it more prone to collapse.
- Anatomic features such as small jaw, large tongue, enlarged tonsils, or tissues that partially block the entrance to the breathing passage.
- Neuromuscular problems which affect muscle tone
- Alcohol use before bedtime can worsen muscle relaxation and depress respiratory effort.
- Regular use of sleeping pills, pain medications or muscle relaxants.
- Family history of obstructive sleep apnea

Often, more than one of the above factors plays a role in any one individual.

How do you Diagnose Obstructive Sleep Apnea

Symptoms suggestive of obstructive sleep apnea include:

- Loud snoring
- Breathing pauses during sleep, or episodes of waking up gasping/choking
- Frequent awakenings during the night
- Excessive daytime sleepiness with tendency to fall asleep at inappropriate times
- Trouble with concentration and memory
- Difficulties with irritability, anxiety and depression
- Morning headaches and/or dry mouth

Often these symptoms arise slowly over years, and so the patient may not be aware of them, or may blame aging, or other medical problems for his/her functional decline. Family members, friends or co-workers may be the first to recognize the problems and should encourage a visit to a healthcare professional.

Once the diagnosis is suspected, an evaluation usually includes a detailed review of patient's sleep history followed by an overnight sleep study (polysomnogram). A sleep study records details of a patient's sleep (sleep stages, awakenings), breathing parameters such as air flow, breathing effort and oxygen levels, as well as heart rate and rhythm, and limb movements during an entire night. The results of the sleep study determine whether the patient has OSAS, and the severity of the disorder.

Consequences of Obstructive Sleep Apnea

Due to the frequent awakenings caused by breathing blockages, patients with OSAS are generally tired and/or sleepy during the day. The severity of this fatigue varies from person to person, but can be so severe as to affect social life, work performance, and increase the risk of motor vehicle accidents. There can also be difficulties with concentration and short term memory, as well as problems with irritability and depressed mood.

Obstructive sleep apnea also has very concerning "silent" cardiovascular effects that can impact a patient's long term health. These include:

- Increased incidence of hypertension
- Increased incidence of heart attacks and heart failure
- Increased incidence of stroke
- Increased incidence of cardiac arrhythmias, and even sudden death

In addition, in people in whom these conditions are already present, treatment of coexistent OSAS has been shown to improve their underlying disease by improving blood pressure control in hypertension, improving cardiac function in heart failure, reducing the frequency of angina in coronary artery disease, and reducing the recurrence of arrhythmias in atrial fibrillation.

How do you Treat Obstructive Sleep Apnea

Treatment for sleep apnea is tailored to the individual patient, based on his medical history, physical examination and the results of the polysomnogram.

There are general measures that are helpful for everyone with OSAS:

- Weight Loss - even small amounts of weight loss may improve breathing during sleep
- Avoidance of alcohol within 4 hours of bedtime - alcohol depresses breathing and adds to muscle relaxation, making sleep apnea worse.
- Avoidance of sleeping pills, muscle relaxants and some pain medications - these often depress breathing, relax muscles of the throat and therefore can worsen OSAS severity
- Avoid sleeping on back
- Treat nasal stuffiness or obstruction - this can help not only with snoring, but also with OSAS

However, most people with OSAS require specific treatments to try to maintain an open airway during sleep. Treatment options include:

- Continuous positive airway pressure (CPAP) – pressurized air administered via a small mask applied to the nose (or nose and mouth) which splints the throat open allowing for normal breathing during sleep.
- Oral Appliances – devices which advance the jaw and/or tongue in an attempt to widen the airway
- Surgery – usually involving reduction or elimination of throat tissue that may be contributing to airway obstruction (palate, uvula, tongue, tonsils), or repositioning of the jaw. Can sometimes also involve nasal surgery when there is significant nasal obstruction.

The choice of treatment depends on the individual patient and takes into consideration the severity of the sleep apnea, severity/nature of associated symptoms and presence of coexisting cardiovascular disease, anatomic features, tolerance of CPAP and personal preference. Occasionally, more than one treatment modality must be combined to provide optimal treatment.

Further information about OSAS and other sleep disorders is available at the following websites:

- www.sleepfoundation.org
- www.sleepeducation.com
- www.sleepapnea.com
- www.nhlbi.nih.gov