

# Sleep Apnea

Normally while sleeping, air is moved at a regular rhythm through the throat and in and out the lungs. When someone has sleep apnea, air movement becomes decreased or stops altogether. Sleep apnea can affect long term health.

## Types of sleep apnea:

1. Obstructive sleep apnea (narrowing or closure of the throat during sleep) which is seen most commonly, and,
2. Central sleep apnea (the brain is causing a change in breathing control and rhythm)

## Obstructive sleep apnea (OSA)

About 25% of all adults are at risk for sleep apnea of some degree. Men are more commonly affected than women. Other risk factors include:

1. Middle and older age
2. Being overweight
3. Having a small mouth and throat

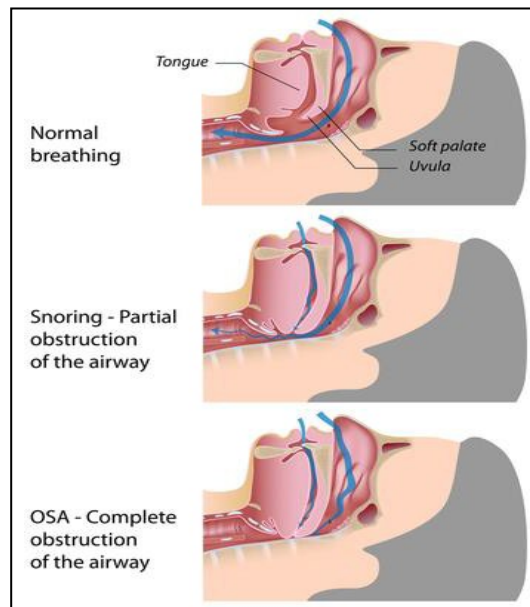
## Down syndrome

Because of soft tissue and skeletal alterations that lead to upper airway obstruction, people with Down syndrome have an increased risk of obstructive sleep apnea. Statistics show that obstructive sleep apnea occurs in at least 30 to 75% of people with Down syndrome, including those who are not obese. In over half of person's with Down syndrome whose parents reported no sleep problems, sleep studies showed abnormal results. Sleep apnea causing lowered oxygen levels often contributes to mental impairment.

## How does obstructive sleep apnea occur?

The throat is surrounded by muscles that are active controlling the airway during talking, swallowing and breathing. During sleep, these muscles are much less active. They can fall back into the throat, causing narrowing. In most people this doesn't affect breathing. However in some the narrowing can cause snoring. Partial obstruction with decreased airflow is called hypopnea. If the muscles actually block the throat, no air is able to pass - this is obstructive sleep apnea.

With apnea (complete loss of airflow) or hypopnea (very shallow breathing or an



abnormally slow rate of breathing), insufficient breathing causes oxygen levels to fall. Because the airway is blocked, breathing faster or harder does not help to improve oxygen levels until the airway is reopened. Usually, the person awakens after airflow is blocked and activates the upper airway muscles. Once the airway is opened, several deep breaths are taken to “catch up” on breathing. Sometimes during this period of awakening, the person may move, snort, or snore, and then take a deep breath. Sometimes the person may awaken with a feeling of gasping, choking, or smothering.

When the person falls back to sleep quickly, the event is usually not remembered. Most people with sleep apnea are not aware of abnormal breathing during sleep. This type of sleep with awakening several times during the night is unrefreshing and causes fatigue and daytime sleepiness.

### **Causes of obstructive sleep apnea**

1. Small upper airway
  - As the bones of the face and skull develop, some people develop a small lower face with a small mouth and tongue that seems too large. These features are genetically determined.
2. Obesity
3. Enlarged tonsils (especially in children)

### **Symptoms**

1. Loud snoring
2. Fatigue
3. Daytime sleepiness
4. Restless sleep
5. Suddenly waking up with choking, gasping, smothering sensations
6. Morning headaches
7. Dry mouth or sore throat
8. Getting up frequently to urinate
9. Awakening unrested and groggy
10. Low energy, difficulty concentrating, memory impairment

### **Complications**

1. Daytime sleepiness and difficulty concentrating contribute to an increased risk of accidents and errors in daily activities.
2. People with OSA are more than twice as likely to be involved in a motor vehicle accident.
3. People with OSA have an increased risk for:
  - a. High blood pressure
  - b. Heart attacks
  - c. Abnormal heart beats/rhythms
  - d. Type 2 diabetes

## **Diagnosis**

The diagnosis of obstructive sleep apnea is generally made through a “sleep study” which includes monitoring the person overnight in a sleep laboratory. The study monitors the persons breathing effort, airflow, blood oxygen levels, heart rate and rhythm, duration of the various stages of sleep, body position, and movements of the arms/legs.

## **Treatment:**

The goal of treatment is to keep the airway open during sleep. This is often done with the use of CPAP (continuous positive airway pressure). The device uses an airtight attachment to the nose with a mask connected to the tube and a blower that generates pressure. The pressure can be adjusted so that the airway remains open.

Most people tolerate using CPAP well however difficulty with mask comfort and nasal congestion prevent up to 50% of people from using treatment on a regular basis.

Other treatments that can help with obstructive sleep apnea include:

- Adjustment of sleep position to stay off the back
- Weight loss
- Avoidance of alcohol and other sedatives
- Dental devices that can reposition the jaw and bring the tongue and soft palate forward.
- Surgery to reshape the structures in the upper airways or surgically reposition the facial bones. Removal of the excessive tissue in the throat is also done.
  - Surgery has a poor rate of success (less than 50%)
  - Surgery has a high rate of return of OSA symptoms soon after surgery.

Benefits of treatment include improved quality of life, improved blood pressure control, and possibly decreased heart problems and related deaths.

## **Central Sleep Apnea**

Central sleep apnea is a disorder characterized by repetitive stopping or a decrease of airflow and effort to breathe during sleep. The condition can be primary which means that it is idiopathic which simply means that it arises on its own from an unknown cause. It can also be secondary which means that it is caused from a medical condition, a drug, or can be associated with high-altitude breathing.

## **Risk factors for central sleep apnea**

- Age: more common after age 65
- More common in men than women
- Heart failure or stroke
- Can be associated with long-acting narcotic use

## **Symptoms**

Common findings in someone with central sleep apnea include:

- Excessive daytime sleepiness
- Poor sleep quality or insomnia
- Inattention and poor concentration
- Morning headaches

## **Diagnosis and treatment**

Like obstructive sleep apnea, diagnosis is made through an overnight sleep study. Treatment is generally with continuous positive airway pressure (CPAP) or bilevel positive airway pressure (BPAP). Supplemental oxygen during sleep is often needed. There are also some medications that can help stimulate breathing; however these drugs can have harmful side effects and require careful monitoring.