

Continuous Positive Airway Pressure for Adults with Obstructive Sleep Apnea

What is Obstructive Sleep Apnea (OSA)?

OSA (also called sleep apnea) is a common disorder in which people stop breathing while they are asleep. Studies suggest at least 10% of the US population has OSA. In OSA, the back of the throat collapses multiple times off and on throughout the night causing the airflow into the lungs to be cut off.



OSA patients wake up often throughout the night (although they may not remember doing so) and thus can be very tired during the daytime. In addition, each stoppage in breathing can lead to falls in oxygen level and a stress release of adrenaline, both of which can contribute to high blood pressure and put a strain on the heart. Left untreated, this situation can lead to serious health risk. Studies show that treatment of sleep apnea can make people feel better and reduce the risk of serious medical complications.

What is CPAP?

CPAP stands for continuous positive airway pressure. CPAP is being used by millions of people in the US every night. Your provider can get you a CPAP machine by writing a prescription with the machine provided either through a durable medical equipment (DME) company or sometimes via the provider's office. CPAP is delivered using a mask that covers the nose (or sometimes both the nose and mouth). CPAP works by blowing air into the nose and throat. This blowing of air causes a positive pressure to hold the upper airway (back of the throat) open during sleep. When the upper airway is open, airflow can pass to the lungs undisturbed. A person using CPAP will sleep more soundly without snoring or arousals. CPAP almost always can help sleep apnea if people tolerate it, but some patients find it uncomfortable. At times this discomfort can be reduced by use of a different mask and/or adjusting the settings of the CPAP. People with sleep apnea need to use CPAP every time they sleep to maximize benefits.

What causes OSA?

OSA is thought to be a disease where the back of the throat is smaller which can then cause it to collapse easily. In addition, the upper airway muscles, which hold the throat open, do not work properly in people with OSA. Also, the brain tells us when to breathe and sometimes the breathing pattern during sleep can be abnormal in OSA. Recent studies suggest that not all people with OSA have the disease for the same reason. Health care providers and researchers are continuing to figure out ways to personalize treatments to target to the underlying cause(s) rather than just take a 'one size fits all approach' to all people with sleep apnea.

How do I know if I have OSA?

OSA patients often complain of snoring and daytime sleepiness, but sometimes symptoms are not obvious. Subtle forms of OSA are quite common and people who have certain medical conditions can be at

high risk. People at high risk of sleep apnea include those who are male, elderly, women after menopause, or who are obese. People with diabetes, sickle cell disease, and those with heart or lung disease (such as asthma, emphysema or COPD) may be at special risk. If you think you might have sleep apnea, you should talk to your health care provider. A simple home sleep test often can usually be done to make a diagnosis, although in-laboratory sleep testing (polysomnography) can be helpful in select cases. The sleep apnea diagnosis is usually made by a combination of history and physical examination plus some form of sleep testing. For more information, see ATS Patient Information Series piece "Sleep Studies" at www.thoracic.org/patients.

Will my OSA ever go away?

In general, OSA is considered a lifelong condition, although there are a few exceptions in which OSA can improve or go away. Obesity is a major risk factor for OSA and weight loss has been shown to lead to improvement in OSA. Major weight loss can be very difficult to achieve through diet and exercise although some people are successful. At times, a patient may need help from a health care provider to help lose weight safely. Stomach stapling (bariatric surgery) can be highly effective for losing weight, although as with any surgery, complications can occasionally occur. The other situation in which apnea can resolve is in people with large tonsils that are blocking airflow in the throat. Removal of tonsils, particularly in children, has been shown to improve OSA. However, removal of tonsils is typically not sufficient to treat OSA in adults.

Why should I wear CPAP at night?

There are three major benefits from using CPAP with sleep:

- Snoring is often annoying to the bed partner, such that many people with sleep apnea use CPAP to keep their partner happy. Some people think snoring is funny or a nuisance, but it can have a big impact on quality of life if it interferes with intimacy or disrupts the sleep of the bed partner. Some studies suggest that snoring may have effects on the blood vessels in the neck which can affect blood flow to the brain; however, the risks of snoring itself (without sleep apnea) beyond the noise it produces remain unclear.
- CPAP can improve symptoms. Many people feel better after wearing nightly CPAP. Research trials have shown improved daytime sleepiness, quality of life, and reduced risk of car accidents.

- CPAP can improve cardiac and diabetes risk. CPAP has been shown in research trials to improve high blood pressure and likely reduces the risk of heart attack and other serious medical conditions. Large scale research trials are still in process to examine the long-term benefits of CPAP.

Can OSA kill me?

Some people hear about stoppages in breathing and get very worried that sleep apnea may kill them during sleep. For the most part, people with OSA wake up from sleep rather than allowing stoppages in breathing to go on for a long time. Some long term studies have shown that if OSA goes on for years without treatment that the risk of death may increase slightly. However, OSA is not considered a rapidly fatal disease, but rather a disease that can cause long term health problems without treatment.

What happens if I can't tolerate CPAP therapy?

CPAP therapy can provide major benefits for some patients but it is not for everyone. Most sleep experts will recommend further attempts of a different type of positive airway pressure therapy for patients who don't like CPAP. A variety of masks and pressure delivery approaches are available so patients are encouraged to try various devices before giving up. Education and support can also be helpful in getting people used to using the CPAP machine. Sometimes psychologists or respiratory therapists can be helpful in getting you get used to the equipment and being able to sleep with the equipment on. CPAP can be uncomfortable when you are not used to it, but is not invasive, so many patients do well if they stick with it over time.

Are there alternative therapies for OSA?

There are alternative treatments for OSA beyond CPAP that can be helpful for some people (For more information see ATS Patient Information Series piece "Alternative Therapies" at www.thoracic.org/patients).

- Oral appliances are made by dentists and can be useful to pull the jaw forward and help to prevent collapse at the back of the throat. Some people prefer oral appliances to CPAP although in most studies CPAP is more effective at controlling OSA.
- Surgery can be performed on the upper airway, but the improvements in OSA vary from person to person. Some studies show elimination of OSA in highly selected patients who undergo major operations on the throat, whereas other patients have no major change in their OSA particularly following minor surgical procedures. One type of surgery for sleep apnea is the uvulopalatopharyngoplasty (UPPP) which involves cutting the soft palate at the back of the throat. Not everyone will benefit from this surgery. Researchers are still trying to figure out which patients respond best to this procedure.
- Hypoglossal nerve stimulation (HGNS) uses a pacemaker-like stimulator device that a surgeon places in the neck and use electricity to activate the muscles in the tongue to hold the airway open. HGNS recently received approval by the Food and Drug Administration (FDA) and is being used increasingly in the past year.
- There are some devices that can be purchased at the drug store such as special pillows and nasal strips, but unfortunately most of these treatments do not work and/or there has not been enough research to determine if these are helpful.

What is expected in the future for sleep apnea?

Improvements are expected both on the diagnosis and treatment of OSA. Home sleep study testing is becoming common and research continues for getting information about breathing during sleep

through smartphones or electronic wrist devices. The goal of testing will be not only to provide a diagnosis (does the person have sleep apnea or not), but also to define high risk patients (e.g. who needs CPAP therapy right away and who is likely to benefit from treatment). It is also hoped new tests will help better define the underlying causes of OSA (why a given patient has sleep apnea or not). Nasal CPAP will continue to be the main treatment for OSA for some time, but efforts are ongoing to develop new devices to hold the airway open or pharmacotherapy (medicines) to eliminate apnea. Health care providers will consider what is the best approach for each person.

Why are there so many devices that sound like CPAP?

Are they all the same?

CPAP is continuous positive airway pressure, whereas APAP is automated positive airway pressure and BiPAP is a brand name which describes bi-level positive airway pressure. When talking about these therapies in general some people just use the term PAP (positive airway pressure) or use the term CPAP somewhat loosely to include all of the various therapies. CPAP is delivered at a fixed pressure which your provider can determine based on either in-laboratory titration or from an APAP device. APAP varies the pressure to keep the airway open with each company having a slightly different method to determine the ideal pressure. APAP devices are used commonly after home sleep testing but in some cases your provider may choose a fixed pressure once the ideal settings are known. Bi-level PAP is used by some health care providers to improve comfort over standard CPAP but most of the studies do not show benefit to this approach. Bi-level can also be used for patients who do not breathe enough (hypoventilation) but is generally not needed for usual OSA.

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Rx Action Steps

- ✓ Talk to your health care provider if you suspect you have sleep apnea because of symptoms such as snoring, waking up often during sleep, daytime sleepiness.
- ✓ Get a sleep study and ask if you need to talk to a sleep specialist about use of CPAP or other treatment for sleep apnea.
- ✓ If you are obese, work on a plan to lose weight but consider treatment for sleep apnea until you are successful.

Healthcare Provider's Contact Number:

Resources:

American Thoracic Society

www.thoracic.org/patients

American Sleep Apnea Foundation

www.sleepapnea.org

National Sleep Foundation

www.sleepfoundation.org

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