

Positive Airway Pressure (CPAP and BPAP) 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 limited or cut off. People with OSA can often benefit from use of a medical therapy called continuous positive airway pressure (CPAP) with sleep. This fact sheet will discuss use of CPAP with OSA in adults. For more information about OSA and OSA in children, go to www.thoracic.org/patients.



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 release of the stress hormone, adrenaline. Both of these can lead to high blood pressure and can put a strain on the heart, and can lead to serious health risks, if untreated. 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 PAP?

PAP stands for positive airway pressure. Continuous PAP (CPAP) is the most common form of PAP that is used for OSA treatment. Millions of people in the US use PAP every night. Your healthcare provider can get you a PAP machine by writing a prescription with the machine with the settings. The machine will be provided through a durable medical equipment (DME) company or sometimes via the provider's office. PAP is delivered using a mask that blows air into the throat through the nose or mouth, or both. 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 PAP will sleep better without snoring or waking up. People with sleep apnea need to use PAP every time they sleep, night or day, to maximize benefits.

Most PAP devices have a built-in modems that can transmit data from the machine to your smartphone, your healthcare provider, or DME company, and/or your insurance. The data will include how many hours you use the device (not just how long the PAP machine is on), the pressure setting, and airleaks. Many insurance companies require proof from this data that you are using the PAP device regularly. This data is also helpful for your healthcare provider to troubleshoot any problems you may have with the machine.

Types of PAP Therapy

CPAP is the most common type of PAP therapy. CPAP delivers a fixed pressure to keep the airway open. The pressure setting can be determined by an in-laboratory "titration study". Another type of PAP therapy for OSA is automatic PAP (APAP), which is also a constant pressure, but the pressure can automatically adjust based on the patient's breathing pattern. Every company that makes an APAP device uses slightly different methods to determine the ideal pressures. Your provider may look at the downloaded information from the APAP device and prescribe a fixed pressure, like CPAP. BPAP is Bilevel PAP, which may also be called Bilevel Pressure Support (BiPAP™ is a brand-name machine). BPAP may be used for some OSA patients to improve comfort over standard CPAP, but most of the studies do not show benefit to this approach. BPAP can also be used for patients who do not breathe enough on their own (hypoventilation).

Why should I wear PAP at night?

There are three major benefits from using PAP with sleep: improves snoring, improves sleep quality and symptoms, and improves control of other chronic diseases.

- **Stop snoring:** Snoring is often annoying to the bed partner, such that many people with sleep apnea use PAP 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.
- **Improve sleep quality and symptoms:** Many people feel better after wearing nightly PAP. Research trials have shown improved daytime sleepiness, quality of life, and reduced risk of car accidents.
- **Improve control of chronic medical conditions:** PAP 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 PAP.

What happens if I can't tolerate PAP therapy?

PAP therapy can provide major benefits for some people but it is not for everyone. Most sleep experts will work with the person to troubleshoot why he or she doesn't tolerate PAP. For example, use of heated humidification (water vapor) can help with making PAP more comfortable without drying out the nose and mouth. If the mask is uncomfortable, there are a variety of types and sizes of masks to try. If the pressure is too high, there are comfort settings on the PAP machine that can slowly ramp up the pressure to the final setting, or slightly decrease the pressure when trying to exhale, that can make it more comfortable. Sometimes CPAP is changed to BPAP, which may be more comfortable for some patients. Education and support can also be helpful in getting people used to using the PAP machine. Sometimes psychologists, respiratory therapists or sleep therapists can coach you to use the equipment when sleeping. For more information, see ATS Patient Information Series fact sheet "PAP Troubleshooting".

If these interventions do not work, alternative treatments for OSA beyond PAP can be helpful. Also, patients with milder forms of OSA may choose another proven form of treatment. Weight loss may be helpful for obese patients,

but may not treat OSA completely. Oral appliances work by pulling the jaw or tongue forward to open up the back of the throat, and can be used in some OSA patients, although PAP therapy is better at controlling OSA. Some patients may consider surgical treatment for OSA, but the results vary a lot from person to person. Hypoglossal nerve stimulation uses a implanted device to activate the muscles in the tongue to hold the airway open. For more information on these and other alternative treatments for OSA, go to the ATS Patient Information Series

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Rx Action Steps

- ✓ If you have been told to use a PAP machine for OSA, be sure to use it every time you sleep.
- ✓ Talk to your healthcare provider or a sleep specialist if you are having trouble using PAP treatment.
- ✓ If you are obese, work on a plan to lose weight but continue PAP treatment for sleep apnea until you are successful.

Healthcare Provider's Contact Number:

Resources:

American Thoracic Society

- www.thoracic.org/patients
 - OSA in adults
 - PAP troubleshooting
 - Other therapies for Sleep Apnea
 - Sleep Studies
 - Oral appliances for sleep apnea

American Sleep Apnea Foundation

- www.sleepapnea.org

National Sleep Foundation

- www.sleepfoundation.org

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