

Southern California Pulmonary & Sleep Disorders Medical Center

Diagnosing, Treating, and Learning to Live with Obstructive Sleep Apnea

a White Paper by
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Purpose and Overview

Obstructive Sleep Apnea

Most individuals have experienced an occasional night of disruptive sleep. Disruptive sleep may have any number of causes – from temporary restlessness due to stress or excitement, to ongoing issues like chronic insomnia and other sleep disorders. But one cause in particular can be life threatening. This danger is obstructive sleep apnea, also known as OSA.

The First Step Toward Change Is Awareness

Our purpose in creating and publishing this paper is not to frighten or alarm but to educate. If you have an occasional bad night's sleep and find yourself tired and sleepy the following day, it's not our intent to make you feel endangered. You're probably like most adult Americans who are sometimes overworked, overstressed, under-rested and poorly nourished. To be sure, these things can cause serious health issues if allowed to persist to the point that they have become your "lifestyle." But if this is only an intermittent issue for you, then you're not likely suffering from a sleep disorder but a lack of sleep.

Our objective here is to raise awareness in those who may actually be in danger from the effects of a sleep disorder but may not recognize the symptoms. While there are many reasons one may not get a restful night's sleep and a variety of sleep disorders that could be responsible, in this paper we will deal with only one – obstructive sleep apnea.

Obstructive sleep apnea is the most common form of sleep apnea and is essentially an obstruction of the upper airway during sleep. While not everyone who experiences disruptions in sleep is suffering from obstructive sleep apnea, many of those who are do not even know that it may be the cause of their nights of broken sleep. It is important for those who may be at risk to understand the symptoms and causes of OSA and to understand the health risks of such a diagnosis. Once diagnosed, it is imperative that individuals seek appropriate and effective treatment.

In the following pages, we will define OSA and explain how to recognize its symptoms. We will clarify the risks, outline diagnostic procedures and talk about the current treatment options available should you be diagnosed with obstructive sleep apnea.

About the Author

Meet Dr. Ronald A. Popper

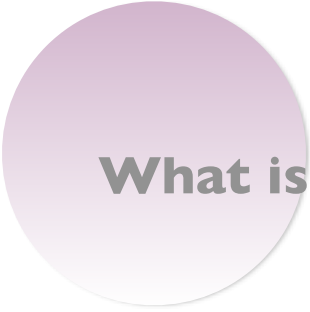


Ronald A. Popper is the Founder and Medical Director of The Southern California Pulmonary and Sleep Disorders Medical Center since its inception in 1984. He is Board Certified in Sleep Disorders Medicine by both the American Board of Sleep Medicine and the American Board of Internal Medicine – Subspecialty of Sleep Medicine. As one of the pioneers in the field of Sleep Medicine, he championed the concept of the free-standing sleep center. Dr. Popper recognized the difficulty of performing personalized and efficient medical care within the confines of a hospital or university center. As a result of his efforts, the Southern California Pulmonary and Sleep Disorders Medical Center was the first non-hospital, non-university based sleep disorders center to be fully accredited by the American Academy of Sleep Medicine.

Born in Detroit, Michigan, Dr. Popper grew up in the suburbs of Oak Park and Southfield. He attended Michigan State University for both undergraduate and medical school. As an undergraduate, he became one of the first paramedics in the State of Michigan. As a result of his training as a paramedic, he was recruited to teach advanced first aid and resuscitation techniques to first year medical students at the MSU Medical School.

Following his internship and medical residency at the Hospital of the Good Samaritan in Los Angeles, California, he did a pulmonary medicine fellowship at VA Wadsworth / UCLA Medical Center. At the VA he did his fellowship research in the new field of “sleep disordered breathing” which ultimately became known as sleep apnea. Dr. Popper helped start the sleep center at the VA Medical Center prior to going into private practice. He is currently a speaker for the National Sleep Foundation and has written and lectured extensively on the subject of obstructive sleep apnea as well as numerous other sleep disorders. He is passionate about educating the public about sleep disorders and the need to accurately diagnose and treat them. To this end, he has been interviewed by numerous newspapers, magazines, television and radio programs.

Dr. Popper lives with his wife in Westlake Village, California as a blended family with 4 adult children, ranging in ages from 18 to 25, along with a fifth child, Ella, a cockapoo. His other passion, besides his family and medical practice, is golf. He recently ventured into uncharted territory, known as Facebook, where he became reacquainted with his old rock and roll band members from the 1960s.



What is Obstructive Sleep Apnea?

Without Breath

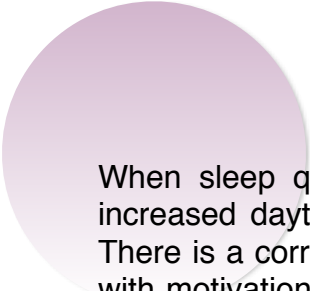
OSA is characterized by numerous pauses in breathing throughout the night. Essentially, sufferers snore and hold their breath during sleep. These pauses in breath are called “apneas,” which literally means “without breath.” The throat is comprised of soft tissue that relaxes as a matter of course during sleep. During this relaxation, the soft tissue can collapse and cause obstruction. Patients that have OSA have extra tissue in the upper airway that stretches from the nose to the vocal cords. This extra tissue is less taut than those without OSA and is therefore more susceptible to collapse.

An excellent way to envision the airway of a patient with OSA is to consider their compromised airway as a straw and the airway of a patient without OSA as a lead pipe. The OSA airway is thin and flimsy while the normal airway is thick and rigid. When sucking air into the lungs, the patient with the OSA or “straw-like” airway will have to suck much harder to get the air past the extra tissue than the patient sucking through the “pipe.” When a patient has to suck much harder through the “straw,” it results in the collapse of the surrounding tissue. This is a very simple analogy of what happens to a patient with obstructive sleep apnea when they fall asleep. This occurs only while asleep. During wakefulness, the upper airway muscles maintain airway patency by counteracting the tendency of the airway to be “sucked closed.” However, during sleep, the compensation of the upper airway muscles disappears as these muscles “go to sleep” as well, allowing the airway to collapse.

The Brain Doing Its Job

When an obstruction to the airway occurs, it causes the patient to stop breathing. This cessation in breathing causes oxygen levels to drop sometimes to dangerously low levels. When our oxygen level drops, the brain sends a signal to the body to wake up and start breathing again. The brain does not like to be deprived of oxygen, so it will make sure to signal that it needs a better oxygen supply. As a result of this signal, we wake up so we can begin to breathe normally again.

Once we awaken, our oxygen levels usually return to normal within a few breaths, and we can fall back asleep very quickly. Typically, we are not even awake long enough to remember being awake at all. In a patient with OSA however, this cycle of waking and falling back to sleep may occur hundreds of times a night as the body tries to keep itself oxygenated. The result of all of these bouts of waking is an extremely disrupted period of sleep. The patient is left feeling fatigued and un-refreshed due to their decreased quality of sleep.



When sleep quality is so severely affected, patients with OSA typically experience increased daytime sleepiness, and this can be far more harmful than one may think. There is a correlation between daytime fatigue and an increase in depression, difficulty with motivation, and concentration, poor job performance, and a significantly increased risk of motor vehicle accidents.

While many individuals may experience short bouts of OSA in their lifetime due to upper respiratory infection, alcohol consumption, or nasal congestion from a cold, allergies, or other illnesses, people for whom OSA has become a chronic condition are strongly advised to become educated and seek treatment. In addition to the numerous complications associated with sleepiness, there are several health risks associated with OSA, some of which may be severe and potentially life threatening.

Who is at Risk for OSA?

Most cases of OSA can be attributed to a handful of factors:

- ✓ Obesity – Fatty deposits can occur within the upper airway leading to obstruction
- ✓ The aging process – This can be either natural aging or premature aging due to lifestyle choices.
- ✓ Brain Injury – Whether temporary or permanent.
- ✓ Decreased Muscle Tone – This can be caused by drug or alcohol use, neurological problems or other disorders.
- ✓ Structural Features that Result in a Narrowed Airway – such as a deviated nasal septum, enlarged tonsils or adenoids or a large tongue.
- ✓ Increased Soft Tissue Around the Airway – most often caused by obesity.

Age and Weight Are Important Factors to Look At

Obesity has a direct correlation to obstructive sleep apnea due to an increase in the amount of soft tissue that surrounds the airway. In the absence of obesity, men have a higher risk of developing OSA, particularly during middle age or later, due to the anatomic increases in the tissue they carry around the neck and torso. Women are at higher risk during pregnancy or when they are post-menopausal.

Old age is considered to be a contributing factor due to the loss of muscle tone that often accompanies aging. Decreased muscle tone can also be caused by alcohol or sedatives that can induce relaxation of the muscles, or premature muscle tone loss can occur after a traumatic brain injury or with a neuromuscular disorder.

There does appear to be a genetic component to OSA. If you have a family history of OSA, you are more likely to develop the condition yourself. In addition to lifestyle factors such as alcohol consumption, smoking can also be a risk factor. Smoking promotes fluid retention and can inflame soft tissues that can result in the narrowing of the upper airway.

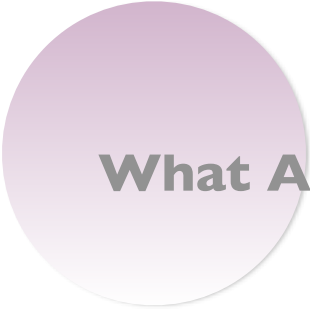
What Are the Risk Factors Associated with Obstructive Sleep Apnea?

If left untreated, the risks associated with OSA can be serious. The lack of oxygen and sleep deprivation that are inherent with OSA lead to an increase in the risk for high blood pressure, heart attack, stroke, irregular heart rhythms such as atrial fibrillation, diabetes, cancer, clinical depression, and weight gain. There are numerous studies that indicate that with each apneic event, the body elicits a “fight or flight” response. This natural response causes hormonal changes in the body that, when coupled with low oxygen saturation in the blood, can cause damage to the body over time.

Heart Attack is a Serious Risk

By far, the most serious consequence of untreated OSA is the damage it can cause to the heart. Sufferers of untreated OSA have a significantly higher risk of heart attack and possibly even death. While the discussion of how OSA impacts the heart is complex, the end result is that the added stress on the heart results in a noted risk in cardiovascular complications.





What Are the Symptoms of OSA?

As you are now aware, determining whether or not you may be suffering from OSA is imperative to avoid the serious health risks that can manifest if left untreated. Symptoms associated with OSA are:

- ☒ Loud snoring, typically with periods of silence followed by gasps
- ☒ Restless, un-refreshing sleep
- ☒ Fatigue or daytime sleepiness
- ☒ High blood pressure and especially difficult to control hypertension
- ☒ Diabetes or difficult to control diabetes
- ☒ Frequent heartburn or acid reflux, especially if it occurs during sleep
- ☒ Morning headaches
- ☒ Forgetfulness
- ☒ Mood changes, such as, anxiety, depression, and irritability
- ☒ Trouble concentrating
- ☒ Heavy night sweats
- ☒ Unexplained weight gain or difficulty losing weight despite adequate diet and exercise
- ☒ Decreased sex drive

The classic patient with OSA is a middle aged, overweight male. However, one need be neither male nor obese to have OSA. Persons of normal height and weight can have OSA if they have obstruction of the upper airway or a decrease in upper airway muscle tone from a variety of possible causes.

Are You Often Sleepy During the Day?

While the symptoms of OSA may be many and varied, the hallmark symptom is typically excessive daytime sleepiness. Patients with OSA will often experience brief bouts of sleepiness during the course of a normal day and find themselves falling asleep if given any opportunity to do so. Instead of a brief moment of sitting or resting, it will become a moment of sleeping. In extreme instances, this behavior may occur during conversation, at a social function or even while driving their car.

Symptoms in Adolescents and Children

In cases of adolescent OSA, the presence of excessive sleepiness often manifests very differently. Instead of falling asleep if given the opportunity, children will often behave hyperactively or as if they are “overly tired.” While adult sufferers of OSA are typically overweight, the opposite is usually found in children. Children with this condition are often underweight for their age and may have reduced growth.



Tonsils and Adenoids Can Be the Culprits

OSA in children is typically caused by enlarged tonsils and adenoids. When the tonsils and adenoids obstruct the airway, breathing becomes so labor intensive that these children burn far more calories than is normal, resulting in weight loss or stunted growth. The nose and throat can also become so obstructed that eating becomes both tasteless and physically uncomfortable. OSA in children can often be cured with removal of the tonsils or adenoids.

While less common than with adults, OSA in adolescents can also be caused by carrying excessive weight. When obesity is present, the symptoms in children are very similar to those of adults. Whatever the cause, it is important to seek treatment if you believe your child may be suffering from OSA. If left untreated, children may experience learning and memory deficits, and there is research to indicate a link between OSA in children and lower IQ scores.

How is OSA Diagnosed?

The inherent nature of the symptoms of OSA can make it tricky to diagnose. The symptoms of OSA are often confused with other disorders. Most people who feel tired during the day or snore while sleeping do not have sleep apnea. If you suspect you may be suffering from OSA, the first step is to visit your doctor to determine if your symptoms are consistent with OSA or if you may be experiencing these symptoms due to another medical disorder. If a thorough medical evaluation suggests a **diagnosis of OSA**, a referral to a board certified sleep disorders specialist is in order.



A Process of Elimination

When visiting your physician, he or she will want to consider all factors that may be contributing negatively to your sleep patterns that might potentially rule out OSA. For example:

- ☒ Medications (sleepiness can be a side effect of many commonly prescribed medications such as anti-histamines, high blood pressure medications, anti-depressants, anti-anxiety medications)
- ☒ Medical conditions (certain medical conditions cause excessive sleepiness) such as an underactive thyroid, heart failure, diabetes, chronic pain, fibromyalgia)
- ☒ Alcohol abuse
- ☒ Working varying shifts (nights, weekends, etc.), working excessively long hours or simply not getting enough sleep for your individual needs
- ☒ Depression or other psychiatric conditions
- ☒ Other sleep disorders (such as insomnia, narcolepsy, or restless limb syndrome)

When considering your exam and the factors that may be causing your symptoms, your physician may decide further evaluation by a sleep specialist is in order. This may become necessary when:

- ☒ Your sleepiness is affecting your overall quality of life
- ☒ You or others may be in danger due to your sleepiness (sleepiness on the job, while driving, etc.)
- ☒ Others have observed you holding your breath or having apneic episodes while you sleep
- ☒ The presence of Obstructive Sleep Apnea may worsen another medical condition that is present
- ☒ Children are experiencing behavioral, learning, or physical deficiencies

After evaluating all of these factors, your doctor will refer you to a specialist who is certified in Sleep Medicine. This specialist can determine whether OSA or another sleep disorder may be the cause. The sleep specialist will perform an in-depth medical history, sleep history, and physical exam. If your symptoms warrant a visit to a sleep center for evaluation, be sure the center is accredited by the American Academy of Sleep Medicine. This accreditation ensures the highest standard of care in the specialty area of sleep medicine in the United States.

When the Sleep Specialist Takes Over

Once you are under the care of a board certified sleep specialist, the diagnostic process of sleep apnea will be comprehensive. Your specialist may use any number of diagnostic tools to make a final determination of your condition. Typically, he will ask a series of questions, perform a physical examination, and will obtain results from one or more sleep studies using diagnostic equipment.



The Extensive Q & A

When you visit a sleep specialist, here are some of the most common questions you can expect to be asked, and their answers explored:

- ☒ Are you withdrawing from any stimulants, such as, coffee or nicotine?
- ☒ Are you taking any medications?
- ☒ How much alcohol do you consume daily?
- ☒ Do you suffer from heartburn?
- ☒ Do you have trouble with mental or emotional functioning due to lack of sleep?
- ☒ What is your normal sleep position (side, stomach, back)?
- ☒ How restful is your sleep?
- ☒ How often are you sleepy during the day and when does it occur?
- ☒ Do you have a sleeping partner who has observed you snoring or gasping for breath during sleep?

Typically you may know the answers to some or all of these questions. To better track the answers, your specialist may request you keep a record of your sleep. Keeping a sleep diary for two weeks and noting all sleep-related information can be very helpful in forming a diagnosis. Your sleep specialist may also ask you to use audio or video to record your sleep behavior at home and may want to interview your sleep partner if you have one. Your sleep partner can be a valuable source of information on your sleep habits. [CLICK HERE](#) to download our new patient questionnaire without obligation.

The Physical Examination

During the physical examination by your specialist, he will look for common physical signs that are often present with OSA. These include:

- ☒ Obesity (particularly in the upper body)
- ☒ A large neck (larger than 17 inches for males or 16 inches for females)
- ☒ Physical abnormalities in the soft palate or upper airway (such as enlarged tonsils)

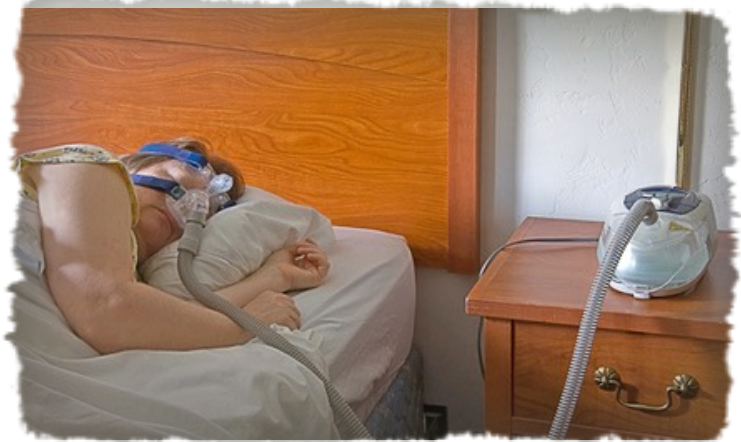
Typically a diagnosis of sleep apnea is fairly obvious after a thorough history and physical examination. If the specialist is in doubt, he may take steps to rule out a diagnosis of another sleep disorder or another medical or psychological condition that could cause symptoms that mimic OSA. Once these other potential disorders are ruled out, your specialist can focus more intently on a sleep apnea diagnosis.

Many times specialists will ask you to participate in an overnight sleep study known as a Polysomnographic Evaluation or PSG. An in sleep center PSG is the gold standard for the diagnosis of a variety of sleep disorders including OSA. The PSG is typically performed during your normal sleep period.

The Clinical Sleep Study

Upon arrival at the sleep center, patients enter a testing bedroom, change into their sleepwear and are then connected to the monitoring equipment through the placement of about 30 electrodes (small wires held in place by sticky pads, much like an electrocardiogram). The wires are long enough to allow patients to sleep in any position they desire. In addition, infra-red cameras allow the sleep technicians to record movements and sounds from the patient and directly observe and communicate with the patient throughout the study.

During the course of the PSG, the patient is monitored for wakefulness, sleep and the various sleep stages, any abnormal brain wave activity (seizures or epilepsy), eye movements (to determine rapid eye movement [REM] or dream sleep), airflow at the mouth and nose and respiratory efforts (to determine if there is shallow or absent breathing or other abnormal breathing patterns), muscle activity (to demonstrate restless limb syndrome, periodic limb movements during sleep, or other abnormal movements during sleep, or any other abnormalities that may occur during sleep).



The Home Sleep Study

In recent years, home sleep testing (HST) has been utilized for screening patients for the presence of OSA in the comfort of their own home without having to sleep overnight in a sleep center. HST is not appropriate for all patients suspected of having OSA. HST should only be utilized in a patient with a high probability of having OSA, such as an obese patient who snores loudly, has had witnessed apneas and complains of excessive daytime sleepiness. In patients with significant other coexisting medical conditions, such as congestive heart failure, irregular heart rhythms, diabetes, chronic lung disease, etc., HST is inappropriate. Furthermore, HST will not aid in the diagnosis of any sleep diagnoses other than OSA.

Many patients are intimidated by the thought of participating in a sleep study. While it may not be a fun experience, it does not have to be an unpleasant one. An accredited sleep center will employ highly trained technicians that will make you feel as comfortable and at ease as possible. The rooms are well appointed, sound attenuated, temperature controlled, and private. A microphone is on at all times to ensure that you and your technician can communicate at any time.



How is Obstructive Sleep Apnea Treated?

There are several **treatment options** available for OSA. Some are more beneficial than others depending on the underlying cause of the apnea.

Weight Loss

Statistics show that approximately 70 percent of all patients diagnosed with OSA are overweight or obese. Most health care professionals will encourage weight loss for anyone in this category for health benefits beyond just that of sleep apnea. In select situations, a physician may prescribe weight loss medication or surgical weight loss for overweight or obese patients with diagnosed OSA.

Nasal Decongestants

The use of nasal decongestants, steroid nasal sprays or anti-histamine nasal sprays to improve the airway may be effective in cases of mild sleep apnea. More often, it is useful in helping to treat nasal allergies and snoring. If a patient's apnea is caused by a physical obstruction in the nose (nasal polyps or a deviated septum), surgery may be an effective long-term solution to improve airflow through the nose.

Surgery

Surgery in adults is typically more effective in treating persistent snoring than it is for treating OSA. However, there are instances where surgery can be beneficial. The difficulty with surgery lies in isolating which part of the upper airway is obstructed and diminishing airflow. There are numerous possible sites, and sleep testing does not specifically isolate these areas. If there are multiple sites of obstruction or if the surgeon fails to address the offending area, it is highly unlikely that surgery will help the apnea enough to eliminate the need for further treatments.

There are several types of surgery that can be used to treat OSA. The most common is uvulopalatopharyngoplasty, better known as UPPP. UPPP is a procedure used to remove tissue in the throat such as the soft palate, uvula, adenoids, tonsils or extra tissue in the back of the throat. While commonly used as a surgical treatment, the success rate of UPPP is only around 50%. In many cases, multiple staged operations may be necessary for success. With any surgical solution, it is highly recommended to be routinely re-assessed for sleep apnea after surgery takes place.

Surgery (Children)

Most children that suffer from OSA have either enlarged adenoids or tonsils or both. In a significant percentage of these cases, the breathing problems can be alleviated by surgical removal of these obstructions. Surgical intervention is the treatment of choice when it comes to treating OSA in children with enlargement of the tonsils or adenoids.

Positional Therapy

Though not often the only cause, there are a large number of people who experience greater instances of OSA when they sleep on their backs. Many times a patient can reduce or eliminate airway blockage by learning to sleep on their side. Positional therapy can be effective in those patients who the majority of apneas occur when they are asleep on their back. If significant OSA is still present when they are on their sides, positional therapy as a solo treatment will be ineffective.

Oral Appliances

For select patients, the use of an oral device is recommended for treatment of OSA. These devices are made by dentists and are usually acrylic and look similar to mouth guards worn by athletes. But instead of protecting the mouth, they are specially designed to treat sleep apnea and snoring. This appliance is worn during sleep and works by positioning the lower jaw slightly forward from its normal position. This small position change can actually be enough to keep the airway open during sleep in certain individuals. An additional type of oral appliance holds the tongue in a forward position without moving the lower jaw forward.



Side Effects

Oral appliances can be associated with a number of side effects including saliva build-up, gum and / or teeth sensitivity and changes to the teeth, mouth or position of the jaw. It is important to consult periodically with a dentist specializing in sleep dentistry to ensure your oral appliance fits correctly. Oral appliances are typically only recommended for mild to moderate cases of OSA or for patients with severe OSA who fail or do not tolerate CPAP (see below). Once therapy with an oral appliance has been implemented, it is important to be routinely re-assessed for OSA by a sleep specialist.

Positive Airway Pressure (PAP) Devices

PAP machines are the most widely used treatment method for patients with moderate to severe cases of OSA. The machine supplies pressurized air continuously or intermittently to the patient's upper airway during sleep through a mask worn snugly over the nose or nose and mouth. The increased air pressure supplied by the machine prevents the sleeper's airway from collapsing.

There are **several types of PAP machines** available for therapy including CPAP (continuous positive airway pressure), BiPAP (bilevel positive airway pressure), and VPAP (variable positive airway pressure). Your sleep specialist will evaluate your needs and choose the machine that is appropriate for your condition.

Nasal Pillow Style



Evidence through numerous studies shows that patients with OSA who use PAP therapy consistently feel better and encounter fewer complications because of the reduction of apneic episodes during sleep. And although PAP machines alone are not used to treat snoring, they do provide the added benefit of eliminating snoring in addition to treating OSA.

Full Face Style



Bongo Rx Therapy for OSA

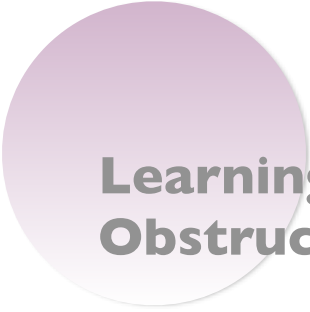
While the PAP therapies above have been shown to be the most effective treatment for patients with OSA, there are individuals who cannot tolerate the use of a mask during sleep. This has led to the development of a new form of therapy called Bongo Rx. Bongo Rx therapy is very similar to CPAP in that positive airway pressure is applied to allow the airway to remain open. It differs from CPAP, however, in that the positive pressure is applied only during expiration and does not require the use of a mask.

Bongo Rx therapy is a sleek FDA-cleared EPAP device designed for the treatment of mild to moderate OSA (Obstructive Sleep Apnea). Its soft silicone nasal pillows form a seal just inside the nasal openings. When inhaling, small valves in the OSA nasal device open to allow you to breathe normally.

When exhaling, the valves close, which directs exhaled air through precisely sized vent holes to generate EPAP (Expiratory Positive Airway Pressure). This keeps your airway open until you inhale again, thereby reducing the effects of OSA.



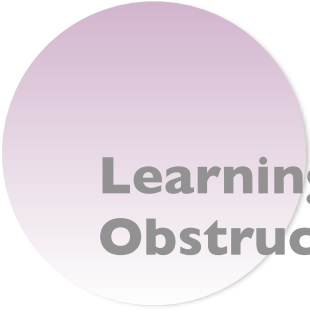
If you have mild to moderate OSA, but are non-compliant with CPAP and looking for a user-friendly option, The Bongo sleep apnea therapy device may be just what you need. Bongo requires no machine, humidifier, hose, electricity or batteries. Or, if you *are* compliant with CPAP, but would like to have a supplemental therapy option for use while traveling, camping, at home, or anyplace electricity may not be available, Bongo Rx will fit the bill. [CLICK HERE](#) to learn more about Bongo Rx therapy for OSA.



Learning to Live with Obstructive Sleep Apnea

As with everything, your ability to manage a condition is entirely dependent on the severity of that condition. When it comes to living with OSA, there are several tips that can be utilized to lessen the complications of OSA regardless of the severity of your diagnosis:

- ☑ Lose weight. Hands down, this is the most effective way of lessening or eliminating sleep apnea. Even a small amount of weight loss can greatly improve pressure on the airway. By opening up the throat, you can improve the symptoms of OSA and possibly eliminate them. However, even in some patients who lose significant amounts of weight, OSA will persist, but you will be healthier for having lost the weight.
- ☑ Quit smoking. Among the many health risks associated with smoking, OSA is one. Smoking can contribute to sleep apnea by increasing fluid retention and inflammation in the airway, thus causing obstruction. Patients are highly encouraged to put down the cigarettes to live a longer, healthier life.
- ☑ Avoid alcohol, sedatives, and sleeping pills. These substances are notorious for relaxing the muscles in the throat and interfering with breathing. In the case of alcohol, at the very least, be sure to avoid consumption before bedtime.
- ☑ Avoid caffeine and heavy meals. Anything that is a stimulant or may cause the need to stay awake longer can impact your sleep habits. In order to ensure the best night's sleep possible, avoid these stimulants prior to going to bed.
- ☑ Sleep on your side. Sleeping on your back makes it more likely for your tongue and soft tissues to obstruct your airway. Sleeping on your side can prevent this. If you're a back sleeper and need to help train your body, there are tricks like sewing a tennis ball into the back of your pajamas or wedging a pillow full of tennis balls behind your back that may help you keep from rolling over. There are even products available that are manufactured for this purpose.
- ☑ Sleep with your head propped up. Elevating your head from your waist by four to six inches can help improve your airway. This can be done through special beds that elevate, a foam wedge or a special cervical pillow.
- ☑ Keep your nasal passages clear. To help keep your nasal passages open at night, consider a neti pot, breathing strips, saline spray, or a nasal dilator.



Learning to Live with Obstructive Sleep Apnea

Exercises to Help Reduce Severity of OSA

There are several studies that show you may be able to reduce the severity of OSA by doing a daily routine of simple throat exercises. These exercises can strengthen the muscles of the airway, making them less likely to collapse during sleep. Here are some exercises to try:

- ☒ Place your lips around a regular deflated balloon. Inhale a deep breath through your nose and exhale through your mouth to inflate the balloon as much as possible. Keeping the balloon in your mouth the whole time, repeat this process five times.
- ☒ Press your tongue to the roof of your mouth and hold it for three minutes.
- ☒ Flatten your tongue against the floor of your mouth and brush the top and sides of the tongue with a toothbrush while keeping it flattened. Repeat the brushing movement five times, three times a day.
- ☒ Put your lips together and pretend like you are giving a kiss. Keep them tightly together and move them up and to the right and then up and to the left 10 times. Repeat this exercise three times.
- ☒ Place one finger into the side of your mouth. Hold the finger against your cheek while pulling the cheek muscle simultaneously. Repeat this 10 times. After a brief rest, alternate sides. Repeat this entire sequence three times a day.

A Word About Exercises

Exercises alone are not enough to treat sleep apnea. They are merely a way to lessen the effects and improve symptoms. As with any treatment recommended for OSA, the key is in consistency. Exercises must be done on a daily basis. The good news is that these exercises are quick and easy and can be performed at home, work, or even while stuck in traffic.



Living with a CPAP Machine

With the use of a CPAP machine being the gold standard for treatment of moderate to severe OSA, many people will inevitably find themselves in the position of needing to learn to live with a CPAP to treat their condition. Due to the importance of treating OSA effectively once diagnosed, it is imperative that a CPAP machine is used consistently. While a CPAP machine may be inconvenient, here are some tips to help you live with it more comfortably:

- ☑ Ease into it gradually. Begin using your CPAP device for short periods throughout the day. Most machines have a “ramp” setting that you can use that gradually increases air pressure.
- ☑ Make sure your device is fitted correctly. Having the correct fit can make a huge difference. Make sure the straps are not too loose or too tight and that the mask seals appropriately. Your doctor should monitor you regularly to check the fit of your mask, the pressure on your PAP unit and your overall progress.
- ☑ Customize your CPAP options. Your mask, tubing, and straps can be customizable for the best fit. There are options like chinstraps to keep your mouth closed and reduce throat irritation, soft pads to reduce skin irritation and nasal pillows for nose discomfort.
- ☑ Use a humidifier. Humidifiers decrease dryness and skin irritation. Many CPAP machines now come with a humidifier built into the machine itself.
- ☑ Keep your machine clean. This includes the tubing, mask, and headgear. The CPAP and humidifier filters should be replaced regularly for maximum comfort and benefit.
- ☑ Reduce the noise of the CPAP machine. If you are bothered by the sound of the running machine at night, try placing it under your bed. You may also consider using a white noise or sound machine to help disguise the sound coming from your CPAP machine.

Life as You Know It Has Not Come to an End

Life's little pleasures are still possible with a **CPAP machine**. One of the biggest concerns expressed by those newly diagnosed and recommended CPAP therapy is that they will be forever tied to their home and beds. Traveling and even camping is still possible with a CPAP. Today's models have accessories for battery power options, extension cords, car adapters and more. If your concern is lack of power or not wanting to use electricity from those you are visiting, there are solutions out there. You can still live a full life with CPAP.

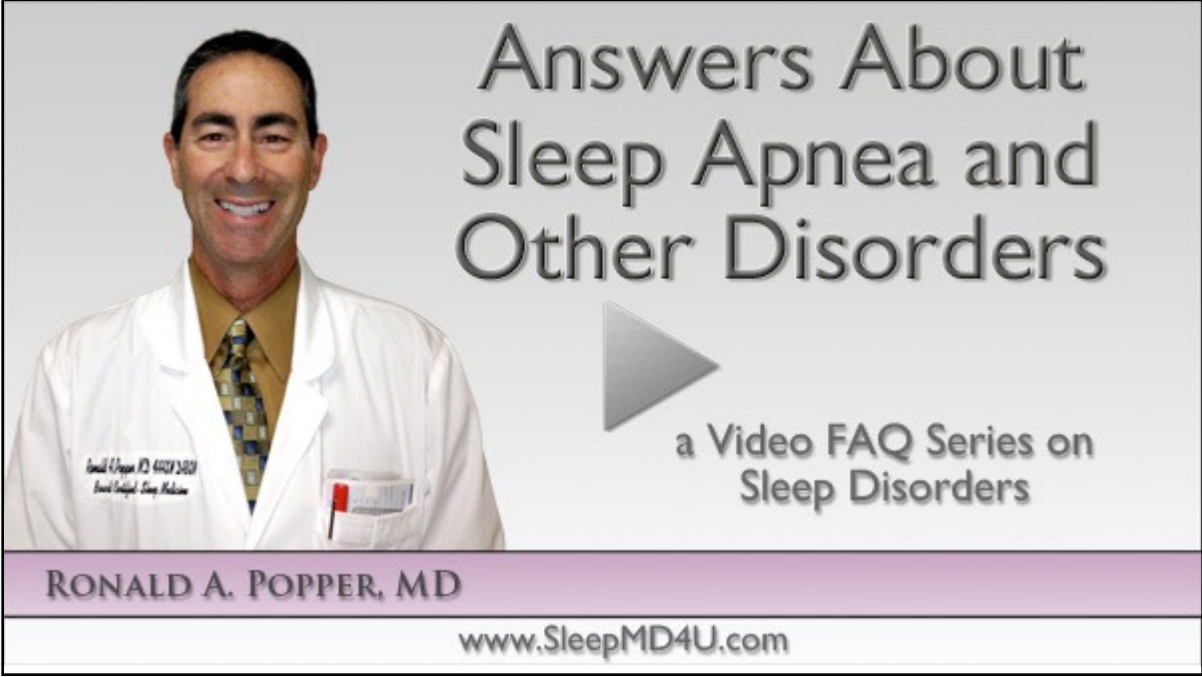
The Wrap Up

OSA is a Serious Medical Condition

Obstructive sleep apnea is a serious medical condition that can have devastating consequences if left untreated. If you suspect you may have OSA, obtain appropriate diagnosis and treatment by a board certified sleep medicine specialist at an accredited sleep disorders center. Through simple lifestyle changes, proper medical treatment and consistent follow-through, you can begin to experience a life feeling more refreshed, more alert and without the complications that come with obstructive sleep apnea.

We hope this white paper has given you a better understanding of obstructive sleep apnea, its risks, its consequences and its solutions. If you have specific questions or would like to schedule a consultation, we are always available at the contact addresses below.

In the meantime, you may learn more by watching our video series on sleep apnea and other sleep disorders on our [website](#) or our [YouTube](#) channel. Click the play button below to get started.



A promotional graphic for a video series. On the left is a portrait of Dr. Ronald A. Popper, a man in a white lab coat over a yellow shirt and patterned tie. To his right, the text 'Answers About Sleep Apnea and Other Disorders' is displayed in a large, bold, sans-serif font. Below this text is a large, grey, right-pointing triangle, resembling a play button. Underneath the triangle, the text 'a Video FAQ Series on Sleep Disorders' is written in a smaller font. At the bottom of the graphic, a purple horizontal bar contains the text 'RONALD A. POPPER, MD' in white. Below this bar, a white horizontal bar contains the website address 'www.SleepMD4U.com' in black.

Answers About
Sleep Apnea and
Other Disorders

a Video FAQ Series on
Sleep Disorders

RONALD A. POPPER, MD

www.SleepMD4U.com

This paper has been presented by

**Southern California Pulmonary
& Sleep Disorders Medical Center**

Thank you for reading

**Diagnosing, Treating, and Learning to
Live with Obstructive Sleep Apnea**

a White Paper by
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