

Healthy Sleep In Adults

Sleep is a reversible state of decreased responsiveness and activity defined by changes in a person's brain wave activity. Sleep is actually a very active process that involves a number of physiologic changes in organs of the body. Research has shown that sleep is needed for many important functions, including formation of memories, release of important hormones such as those for growth and appetite, and muscle repair, but the main purpose of sleep is currently unknown.



Why is sleep important?

Getting enough sleep is vital for your mental and physical health, safety, and quality of life. It is estimated that more than 25% of the U.S. population does not get enough sleep. Adequate sleep amount and quality help us concentrate, learn, react quickly, make decisions, create memories, and function optimally. Reducing your sleep time by even just 1 hour can negatively affect your thinking and reaction time the following day. Lack of sleep can be associated with several medical conditions, including depression, diabetes, heart disease, stroke, weight gain, high blood pressure, and kidney disease. It can make these and other chronic illnesses worse. Not getting enough sleep also can make it harder to fight off infections. People who do not get enough sleep are more likely to feel hungry and eat more fatty and sugary foods. Sleep deficiency is also associated with an increased risk of injury and accidents, including motor vehicle accidents, which could result in death.

How much sleep is enough?

Most adults need about 7-9 hours of sleep each day while teenagers need 8-10 hours. When you wake up on your own feeling refreshed and able to function well, you likely have had enough sleep. Very few healthy people appear to need less than 6 hours of sleep (called "short sleepers") and this sleep trait has been associated with a genetic predisposition. Most people cannot expect to function well with so little sleep.

You may be sleep deficient if you have a high likelihood of falling asleep in several of the following situations:

- Sitting and reading, sitting inactive in public place, sitting and talking to someone, or sitting quietly after lunch
- Watching TV
- Riding in a car for an hour without stopping or while

stopped for a few minutes in traffic in a car

- Lying down to rest in the afternoon

What can I do to get better sleep?

Following these sleep hygiene tips can help improve your sleep quality. Good sleep hygiene includes the following:

- **Get enough sleep.** Allow yourself enough time to sleep (at least 7-9 consecutive hours).
- **Have a sleep schedule.** Go to bed and wake up the same time every day (regardless if it is the weekend or a weekday).
- **Create a bedtime routine.** Engage in relaxing activities before you go to bed. A warm shower or bath, listening to relaxing music or breathing exercises prior to bedtime may help.
- **Have a good sleep environment.** Make sure your bedroom is cool, quiet, dark, and relaxing. Minimize environmental factors that can disrupt your sleep like noise, pets, and allergens.
- **Use your bed for sleeping.** Your bed should be used only for sleep or intimacy and not for other activities, such as watching TV, reading, or listening to music.
- **Go to bed only when you are tired.** If you do not fall asleep within 20-30 minutes, get up and do something relaxing outside of the bedroom and return to bed when you feel tired. Avoid watching the clock when you are struggling to sleep
- **Daily exercise.** Exercise at least 30 minutes during the day most days of the week.

What should I avoid prior to bedtime so I can sleep better at night?

- Avoid **electronics** (computers, smartphones, tablets, video games) and **bright light** at least 60 minutes before bedtime.

- Avoid **naps** at least 6 hours before bedtime.
- Avoid **large meals** before bedtime, but if you are hungry, a small snack can help. Avoid foods that may upset your stomach close to bedtime, such as fatty, spicy, or fried foods. High protein, high fiber, low fat, and low carbohydrate foods tend to promote better sleep.
- Avoid **drinking too much liquid** close to bedtime so that you can decrease the urge to urinate throughout the night.
- Avoid **nicotine and alcohol** in the evening. Alcohol may help you feel drowsy but it can disrupt your sleep, cause nightmares/vivid dreams, and cause you to sleep less deeply and less continuously throughout the night. Smoking and alcohol may also cause snoring and worsen sleep apnea.
- Avoid **caffeine** (coffee, soft drinks, tea, chocolate, energy drinks) in the afternoon and evening, as the effects of caffeine can last for up to 8 hours or more.
- Avoid **vigorous exercise** 2-3 hours before going to bed.
- Consider **removing pets** from the bedroom while you sleep if you have pets and your sleep is disrupted.
- Avoid **medications** that can disrupt your sleep if possible. Talk to your healthcare provider if you suspect your medications are disrupting your ability to sleep.

What if I am sleepy during the day?

Feeling sleepy during the day can be due to many causes. Not getting enough sleep is a very common cause. Sleep disorders that contribute to daytime sleepiness include obstructive sleep apnea, narcolepsy, and idiopathic hypersomnia. Many medical conditions (such as hypothyroidism, certain vitamin deficiencies, depression, and anxiety) can make you feel tired or negatively affect your sleep. Certain medications (such as some painkillers, antidepressants, anti-anxiety medications, and medications used to treat colds and allergies) can also cause you to be tired during the day. Having a variable schedule from rotating shift work or traveling across multiple time zones can contribute to sleepiness as well. Think about what things may play a role in your daytime sleepiness and talk to your healthcare provider.

What if I have a problem sleeping?

You may be referred for a sleep study or to see a sleep specialist who is trained to evaluate people for sleep disorders. Keep a sleep diary for a couple of weeks, noting when you get into and out of bed each day, when you sleep (including naps), and if you have any caffeine, alcohol, or nicotine throughout the day. This will help you look at your sleep pattern and what may affect it. You can share this diary with your healthcare provider. Your healthcare provider will want to know what medications

you take, including any over-the-counter medications, herbals, and supplements. Other medical conditions that can cause sleep problems need to be addressed and may require further evaluation. If you have/are diagnosed with a sleep disorder, it is important to get treatment, because sleep disorders are generally long lasting and may cause or worsen other health problems, such as diabetes and high blood pressure.

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Action Steps

- ✓ Get 7-9 hours of sleep each day or enough sleep so you wake up feeling refreshed.
- ✓ Follow good sleep habits.
- ✓ Talk to your healthcare provider if you think you have a sleep problem.
- ✓ Never drive or operate heavy machinery if you are sleepy.

Healthcare Provider's Contact Number:

Resources:

American Thoracic Society

- www.thoracic.org/patients/
 - Drowsiness & Sleep
 - Insomnia
 - Narcolepsy
 - OSA
 - Performance & Sleep

Centers for Disease Control and Prevention

- <http://www.cdc.gov/sleep/>

National Heart, Lung, and Blood Institute

- <http://www.nhlbi.nih.gov/health/health-topics/topics/sdd>

National Sleep Foundation

- <http://sleepfoundation.org>
- <http://drowsydriving.org>

Sleep education—American Academy of Sleep Medicine

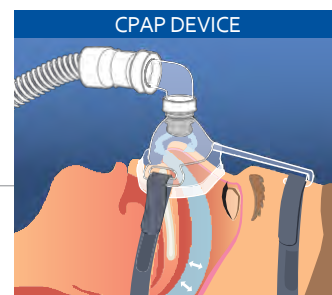
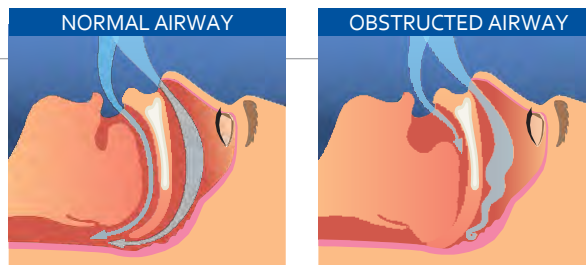
- www.sleepeducation.com/

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What Is Obstructive Sleep Apnea in Adults?

Obstructive sleep apnea (OSA) is a common problem that affects a person's breathing during sleep. A person with OSA has times during sleep in which air cannot flow normally into the lungs. The block in airflow (obstruction) is usually caused by the collapse of the soft tissues in the back of the throat (upper airway) and tongue during sleep.



Apnea means not breathing. In OSA, you may stop breathing for short periods of time. Even when you are trying to breathe, there may be little or no airflow into the lungs. These pauses in airflow (obstructive apneas) can occur off and on during sleep, and cause you to wake up from a sound sleep. Frequent apneas can cause many problems. With time, if not treated, serious health problems may develop.

OSA is more common in men, women after menopause and people who are over the age of 65. OSA can also occur in children. Also see ATS Patient Information Series fact sheet on OSA in Children. People who are at higher risk of developing sleep apnea include those with:

- enlarged tonsils and/or adenoids
- a family history of OSA
- excessive weight—obesity
- jaw problems such as micrognathia (small jaw) or retrognathia (a pulled back jaw)

What are the symptoms of obstructive sleep apnea?

There are many clues that can make one suspect that you may have OSA. You may not be aware that you have OSA, but these symptoms may be more obvious to a spouse, other family member, or close friend.

Common symptoms you may have during sleep:

- Snoring that is usually loud and bothers other people trying to sleep near you. Snoring can come and go through the night.

- Gasping or choking sounds.
- Breathing pauses observed by someone watching you sleep.
- Sudden or jerky body movements.
- Restless tossing and turning.
- Frequent awakenings from sleep.

Common symptoms you may have while awake:

- Wake up feeling like you have not had enough sleep, even after sleeping many hours.
- Morning headache.
- Dry or sore throat in the morning from breathing through your mouth during sleep.
- Sleepiness during the day.
- Fatigue or tiredness through the day.
- Personality changes, such as mood swings and difficulty getting along with others.
- Problems with poor memory or inability to concentrate.

Can OSA be dangerous?

Lack of sleep can cause you to fall asleep while driving and result in car accidents. OSA can, with time, cause high blood pressure (hypertension), heart disease, stroke, diabetes mellitus, or early death.

How do I know I have OSA?

If you have symptoms of OSA, you need to talk with your healthcare provider. Your healthcare provider can help



you decide if you need a sleep study and whether you should be evaluated further at a sleep center.

OSA is diagnosed by a sleep study (polysomnogram). A sleep study is often done at a sleep center where you will be scheduled to test sleep overnight. Alternatively, a home sleep apnea test may also be used to diagnose OSA. During a sleep study, your breathing, heart rate, and oxygen levels will be monitored. Also see ATS Patient Information Series fact sheet on Sleep Studies.

How is obstructive sleep apnea treated?

Sleep apnea can be effectively treated, and there are a number of ways to do so. The choice of treatment will depend on the reason for and severity of the sleep apnea. If your OSA is from being overweight, weight loss may cause the apnea to go away completely. Additional information about weight loss and OSA will be available soon at www.thoracic.org/patients. As alcohol can suppress breathing and make OSA worse, avoid alcohol for at least 4 hours before going to bed. Sleep apnea is often worse when a person sleeps on his or her back. If you sleep on your back, you can use a pillow or some other strategy to force yourself to sleep on your side. Some people sew a tennis ball into their pajama bottoms to remind them not to turn on their back.

Continuous Positive Airway Pressure (CPAP) is a device commonly ordered to treat OSA. CPAP is a machine that works like a compressor to blow air into a mask that is worn snugly over the nose and/or mouth or in the nostrils (nasal pillows) during sleep. The flow of air acts like a splint to keep the upper airway from collapsing. This helps prevent obstruction and the apnea from occurring. The air pressure is adjusted to a setting that best controls the apnea. Often a person will also notice much less snoring when wearing CPAP. Also see ATS Patient Information Series fact sheet on CPAP in OSA.

There are other devices that can work for some people. For some, a surgery can be done to treat OSA. The type of device or surgery will depend on what has caused the apnea. Some oral appliances or devices that are worn in the mouth during sleep may keep your airway open. Most oral devices work by either bringing the jaw forward or keeping the tongue from blocking the throat. Oral appliances are most likely to help a person who has mild sleep apnea and who is not overweight. These devices are usually custom-made and fitted under the supervision of a specialized dentist or oral surgeon who works with these problems. Also see ATS Patient Information Series fact sheet on Oral Appliances for OSA.

When the tonsils or adenoids are causing the throat to be blocked, surgery can be done to take out the tonsils (tonsillectomy) and/or adenoids (adenoidectomy). Surgery may also be helpful for people with jaw problems. Other surgeries for OSA either clear out tissue from the back of the throat, reposition the tongue forward, or implant a nerve stimulator to cause the tongue to move forward during sleep. These surgeries are not, however, as effective as CPAP to control OSA and are usually reserved for people who fail CPAP.

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Action Steps

- ✓ Talk with your healthcare provider if you have symptoms of obstructive sleep apnea
- ✓ Ask people who are around you when you sleep if they have heard loud snoring or have seen you have apnea spells
- ✓ Ask your healthcare provider if you need a sleep study
- ✓ Exercise regularly and work to lose weight if you are overweight
- ✓ Avoid alcohol, particularly just prior to sleep

Doctor's Office Telephone:

For More Information:

American Thoracic Society

- www.thoracic.org/patients/
 - OSA in Children
 - Sleep Studies
 - CPAP in OSA
 - Oral Appliances
 - PAP Troubleshooting

American Academy of Sleep Medicine

<https://sleepfoundation.org/sleep-disorders-problems/sleep-apnea>

American Sleep Apnea Association

<https://www.sleepapnea.org/learn/sleep-apnea/obstructive-sleep-apnea/>

National Heart Lung and Blood Institute

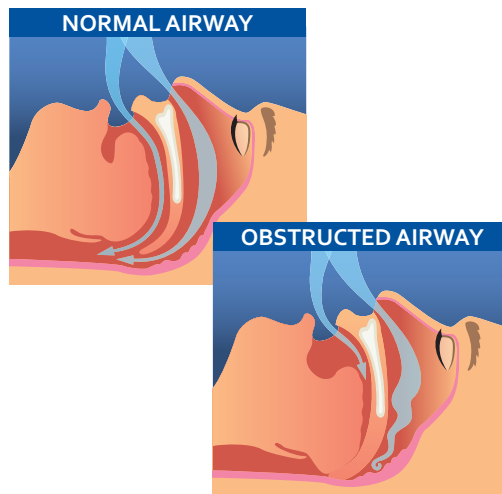
<http://www.nhlbi.nih.gov/health/health-topics/topics/sleepapnea/>

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Obstructive Sleep Apnea and Heart Disease

Obstructive sleep apnea (OSA) is a condition in which you stop breathing during sleep because of a narrowed or closed breathing passage (airway). For people who have OSA and heart disease, heart problems can get worse if OSA is not recognized and treated. Untreated OSA can also put a dangerous strain on your heart and blood vessels (cardiovascular system). Common symptoms of obstructive sleep apnea include snoring, stopping breathing during sleep, frequent awakenings during the night and difficulty staying asleep throughout the night.



It is also common for people who have obstructive sleep apnea to be tired and sleepy during the day. This sleepiness can cause accidents at work, poor work performance, and car crashes. Obstructive sleep apnea can also have bad effects on your heart and your blood vessels (arteries, veins and capillaries).

What kinds of cardiovascular problems can I get with obstructive sleep apnea?

Several cardiovascular conditions can happen with untreated obstructive sleep apnea. For example, if you have obstructive sleep apnea, you are more likely to have high blood pressure (hypertension) or it may be difficult to control your high blood pressure. Of all people with hypertension, about 30% have obstructive sleep apnea. If you have obstructive sleep apnea, there is a 50% chance you also have hypertension.

Problems with the rhythm of your heart may occur with OSA such as atrial fibrillation (a type of irregular heart beat) and bradycardia (slow heart rate). People with severe obstructive sleep apnea are four times more likely to have atrial fibrillation compared to those without OSA. Not receiving treatment for your sleep apnea may make your atrial fibrillation difficult to control. For example,

in people who have atrial fibrillation treated with catheter ablation (a special procedure done to the heart), those with untreated obstructive sleep apnea are 25% more likely to have their atrial fibrillation return.

People with obstructive sleep apnea are also more likely to have coronary artery disease. Coronary artery disease (also known as the hardening of the arteries) happens when the small blood vessels that supply blood and oxygen to your heart become narrow. Narrowed coronary arteries can lead to heart attacks and heart damage. If you have severe OSA that is untreated, you are twice as likely to develop a heart attack in the future as those without OSA. In addition, research shows that up to 70% of people admitted to the hospital because of coronary artery disease were found to have obstructive sleep apnea. If you have heart failure, obstructive sleep apnea can also make it worse. Also, people with untreated obstructive sleep apnea can develop heart failure. In addition, the chance of having obstructive sleep apnea if you have heart failure is quite high.

How does obstructive sleep apnea cause heart disease?

The reason why people with obstructive sleep apnea develop heart disease is not exactly known. Obstructive sleep apnea causes you to have frequent pauses in your breathing; these pauses mean that you actually stop breathing. Sometimes this will cause you to wake up at night but you may not be aware of them. When these breathing pauses happen, the oxygen level in your blood gets low. It is thought that the frequent drops in low oxygen levels during sleep damages the blood vessels that supply the heart. Also each time the oxygen level drops, your body tells your heart to beat faster and your blood pressure to go up. Stress on the heart from severe OSA can also cause the heart to get enlarged. An enlarged heart does not pump as well and the heart and body gets even less oxygen.

Will treating my obstructive sleep apnea treat my heart disease?

Yes, treating OSA can help prevent and/or improve heart problems. The most common way of treating obstructive sleep apnea is with a mechanical device known as continuous positive airway pressure (CPAP). The CPAP machine blows air through a hose into a mask worn snugly over your nose or mouth. This air helps keep your airway from closing during sleep. This corrects your sleep apnea, prevents your blood oxygen levels from falling during sleep, and allows you to get a more restful sleep. Using CPAP regularly at night as prescribed by your healthcare provider also helps lower the stress on your heart. If you have atrial fibrillation, CPAP use may control your irregular heartbeat. If you have both severe sleep apnea and hypertension, CPAP may help control your blood pressure.

People can become comfortable with wearing the CPAP device over time. Those who wear CPAP at night often say that they are getting the best sleep that they have gotten in a long time. Some people though may have trouble getting used to sleeping with the CPAP device. If you are having difficulty, speak with a sleep specialist to be sure you have the right nasal or full-face mask and the right setting for you. There are very good reasons to try

and use the CPAP every night. CPAP therapy can help you control the symptoms of your sleep apnea and prevent or control the heart-related problems associated with sleep apnea, which are often severe and life limiting.

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Rx Action Steps

- ✓ If you have a cardiovascular disease such as heart failure, irregular heartbeats and/or hypertension and have trouble breathing at night (or your bed partner tells you that you snore, gasp or stop breathing at night), speak with your healthcare provider about referring you for a sleep study.
- ✓ If you have been given a CPAP machine for sleep apnea, use it every night.
- ✓ If you are having difficulty sleeping because of the CPAP machine, speak to the sleep specialist for help; don't just stop using the machine.

Healthcare Provider's Contact Number:

References:

American Thoracic Society
www.thoracic.org/patients

- CPAP
- OSA
- PAP Troubleshooting

American Heart Association

- http://www.heart.org/HEARTORG/Conditions/More/MyHeartandStrokeNews/Sleep-Apnea-and-Heart-Disease-Stroke_UCM_441857_Article.jsp

Harvard Healthy Sleep

- <http://healthysleep.med.harvard.edu/railroad-sleep/problems/apnea>

Sleep Foundation

- <https://sleepfoundation.org/ask-the-expert/sleep-apnea-and-heart-disease>

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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 modem 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 air leaks. Many insurance companies require proof from this data that you are using the PAP device regularly. This data is also helpful for your health-care 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 BiPAP, 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 Trouble-shooting".

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 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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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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Types of masks

There are three common types of CPAP masks. No matter what type of mask you use, it is important that it fits well and is comfortable.



Nasal mask

This mask only covers your nose. This is the most common type of CPAP mask.



Full face mask

This mask may cover your nose and mouth or may sit under your nose and cover your mouth. This type of mask may help if you have air leaks when using a nasal mask.



Nasal pillows

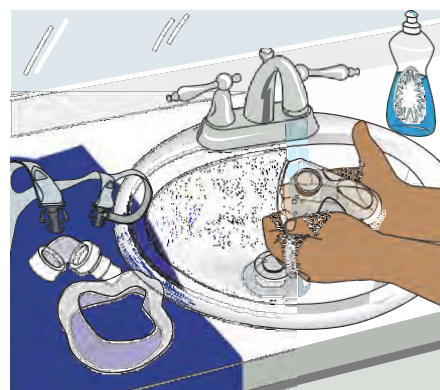
This mask uses soft silicone tubes that fit directly in your nose. This may help if you have air leaks or don't like the feeling of a mask over your nose and face.

Humidifiers

Humidifiers for CPAP can help reduce side effects from the treatment and make it easier for you to breathe through your mask. Some people may have nasal irritation or drainage from using CPAP. A humidifier can reduce these side effects by providing cool or heated moisture to the air coming from the CPAP unit. Many CPAP units come with a humidifier connected to the machine.

The Care and Cleaning of your PAP Device

Positive airway pressure therapy (PAP) is used during sleep to treat obstructive sleep apnea (OSA). These devices work by blowing pressurized air through a mask or nasal pillows into the air passages. This helps to keep the air passages from collapsing, allowing for better breathing during sleep. Many people have a humidifier attached to the device to help keep the air moist and avoid drying out the nose passages. Since air is being blown directly into your air passages, it is important to keep the PAP device and its supplies clean.



The purpose of this fact sheet is to offer tips on the care and cleaning of your PAP device and supplies. (For more information on OSA and PAP therapy, go to the ATS patient information series at www.thoracic.org/patients.)

What parts do I need to clean?

You will need to clean the PAP device, humidifier chamber, tubing, and mask or nasal pillows. Air filters for the PAP device may need to be replaced and/or cleaned on a regular basis as well.

When and how do I clean my PAP device and supplies?

The PAP device and supplies should be cleaned with warm soapy water using mild dish detergent or baby shampoo or a mixture of equal parts white vinegar and water. After washing, rinse thoroughly with fresh warm water and allow to air dry away from direct sunlight or heat. Additional care instructions are listed in the Table below.

PAP device—After unplugging the power cord, wipe the outside of the device with a soft cloth on a weekly basis to remove any dirt or dust. Some manufacturers recommend a damp cloth while others recommend a dry cloth. Do not place the device in water.

Humidifier chamber—Every day, empty the distilled water from the humidifier chamber. Have a routine. Empty it when you wake up from sleep and refill

the chamber with fresh distilled water before you go to sleep again. Always use distilled water in the chamber to avoid any mineral deposits or build-up in the chamber or PAP device. Once a week, wash the humidifier chamber. Do not place the chamber in direct sunlight or expose it to a lot of heat to dry it, as the chamber could warp or crack. Some chambers are top rack dishwasher safe, but you must check the manufacturer's cleaning instructions carefully first.

Tubing—Once a week you should wash and rinse the tubing. After cleaning, hang the tubing over a towel rack or shower curtain rod to thoroughly air dry.

Mask—Every day, wipe the cushion or nasal pillows with a damp cloth and a mild detergent to remove any body oil, sweat, or debris that may have built up while you were wearing it. There are mask cleaning wipes you can buy that are designed for use with PAP masks and nasal pillows and are safe to use. Baby wipes or household cleaning wipes are not recommended to use on your cushion or pillows. Once a week, you should take the whole mask or nasal pillows apart and wash, rinse, and air dry the mask before putting it back together.

Headgear—Once a week, remove the headgear from the PAP mask or nasal pillows and hand wash it. Do not wash your headgear in a washing machine. You should then rinse and air dry the headgear before putting it back on the mask.



Part	Frequency of Care and Cleaning			How to Clean	Rinse	Air Dry
	Daily	Weekly	Monthly			
Humidifier Chamber	Empty and refill chamber with distilled water	Clean		Warm soapy water or equal parts vinegar and water	Fresh warm water	Yes- out of direct sunlight and/or heat
Cushion/Pillows	Clean with damp cloth and mild detergent; may use mask wipes	Clean		Warm soapy water or equal parts vinegar and water	Fresh warm water	Yes- out of direct sunlight and/or heat
Mask		Clean		Warm soapy water or equal parts vinegar and water	Fresh warm water	Yes- out of direct sunlight and/or heat
Headgear		Clean		Warm soapy water	Fresh warm water	Yes- out of direct sunlight and/or heat
Tubing		Clean		Warm soapy water or equal parts vinegar and water	Fresh warm water	Yes- hang over towel rack or shower curtain rod
Sponge Filter		Clean		Warm soapy water	Fresh warm water; squeeze out excess water	Yes
Disposable (paper) Filter			Replace	Not needed	Not needed	Not needed
PAP Device		Clean		Wipe outside with soft (or damp) cloth	No	Yes (if needed)

Filters—Some older PAP devices have a reusable pollen filter that looks like a small foam sponge. This should be washed once a week. After rinsing, excess water should be squeezed out of the filter, it should be allowed to air dry. The ultrafine white paper filter should not be washed. This filter is disposable and should be replaced monthly or more often if it looks dusty or dirty.

How do the commercially available PAP sanitizing devices work?

There are PAP sanitizing devices you can buy to help clean your equipment. These work by using ozone or ultraviolet (UV) light to clean the PAP supplies. Although these devices are convenient, they are not necessarily medically superior to the cleaning methods described above. It is very important to carefully follow the manufacturer’s instructions for proper use.

What happens if I don’t clean my PAP device?

If you do not clean your PAP device and supplies, bacteria and mold may begin to grow. This may put you at higher risk for getting sick. Your device and supplies may be more likely to break down earlier if not kept clean. You may notice the device or mask starting to smell bad as well.

Author: Helena Schotland, MD

Reviewers: Marianna Sockrider MD, DrPH, Iris Perez, MD

R Action Steps

- ✓ Check the manufacturer’s instructions for cleaning recommendations.
- ✓ Do not use bleach, rubbing alcohol, or harsh chemicals to clean your PAP device or supplies.
- ✓ Always use distilled water in your PAP humidifier chamber.
- ✓ Consider having a back-up mask and tubing set so you can rotate while one is drying.

Healthcare Provider’s Contact Number:

Resources

American Thoracic Society
 • www.thoracic.org/patients

American Academy of Sleep Medicine
 • <http://sleepeducation.org/>

National Sleep Foundation
 • <https://www.sleepfoundation.org/sleep-disorders>

This information is a public service of the American Thoracic Society. The content is for educational purposes only. It should not be used as a substitute for the medical advice of one’s healthcare provider.





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Supplies Replacement Recommendations

Regular replacement of supplies is recommended to prevent deterioration and contamination of equipment.

Full Face Mask Hardware	1 per 3 months
Replacement Full face cushion	1 per 1 month
Replacement Nasal Cushion	2 per 1 month
Replacement Mask pillows	2 per 1 month
Nasal Mask/Pillow Hardware	1 per 3 months
Headgear	1 per 6 months
Chin Strap	1 per 6 months
Tubing	1 per 3 months
Heppa Filters	2 per 1 month
Non-Disposable Foam Filter	1 per 6 months
Humidifier Chamber	1 per 6 months

****This is a replacement guide followed by some insurance companies. This may be subject to change and may not reflect your insurance plans' replacement policies.

Please contact your DME to clarify your schedule.

SkyLink Medical
Kiesha Trahan, RRT, RPSGT
Chief Operating Officer

CPAP/BiPAP Troubleshooting Guide



Headaches (after start of PAP treatment)	Initial adjustment to PAP Chronic sinus congestion Headgear or chin strap too tight	Irrigate nose & sinuses Experiment with heat & humidity settings Adjust gear
Chest pressure Abdominal Bloating GI Gas	Aerophagia (swallowing air) Initial adjustment to PAP High PAP pressures Mouth breathing	Activate or decrease the exhalation resistance (ie change Cflex setting) Use Ramp feature, try chin strap, try side position for sleep Try Digel®, Gas-X, Mylicon®, etc @ bedtime & in am Contact SDC staff for adjustments to PAP
Difficulty exhaling	Initial adjustment period (Anxiety) High PAP levels Blocked exhalation port (vent)	Contact SDC staff Use the Ramp feature/ Change Cflex level Contact DME provider
Bed partner intolerance Noisy PAP unit	Multiple factors Noise sensitive or light sleeper Malfunction	Place unit on folded towel (to muffle sound) Increase hose length & place unit farther from bed Use small fan for white noise or try ear plugs Contact DME provider
Insomnia (related to PAP)	Anxiety Claustrophobia Acclimation period Prior history of Insomnia	Practice with PAP during the daytime (ie read, watch TV, listen to music with mask on) Use the Ramp feature Consider different mask style Contact SDC staff
Water in hose or mask	Condensation from temperature differences Heat set too high or room too cold PAP device placement is too high (above the bed) Overfilling water chamber	Lower CPAP heat level or turn off Insulate hose and/or adjust room temperature (ie. Warmer) Lower PAP device below level of bed
Removing mask in sleep (without awareness)	Normal during initial adjustment period, or Possible mouth breathing Sinus congestion during the night Pressure too high or too low Mask discomfort	Experiment with options related to possible cause Contact the SDC staff
Cold Nose	Room temperature too cold (A/C setting vs. Winter months)	Activate heat on humidifier or increase heater setting Insulate hose Place hose under bedding (body heat will help warm air)
Foreign Travel Camping	Alternative power sources may be needed	Contact DME provider for options

CPAP/BiPAP Troubleshooting Guide



Problem	Possible Cause/Reason	Solutions to Try
Mask leaks (air noise)	Headgear is too loose Mask is not a good fit Mask is too old and seal is worn out Facial hair (ie. mustache, beard, etc) Hose gets twisted, tangled, pulls on mask	Readjust headgear straps (tighten bottom strap first) Contact DME provider for assistance Replace mask or mask parts Consider nasal pillow-style mask Anchor hose to PJs, headboard, pillow, etc
Pressure sores or blisters	Headgear is too tight Mask is too small or not a good fit	Loosen headgear straps and/or adjust forehead bumper Contact DME provider for assistance/replacement
Facial redness/irritation	Sensitivity to mask material (ie. Silicone, rubber or chemicals) Dirty mask Oily skin or residue from makeup (and friction) Incorrect mask size	Wash mask with hot, soapy water to remove “newness” Clean mask with warm soapy water Wash face before applying mask Consider change in mask size, style
Dry nose Nosebleeds Sores inside of nose	Dry PAP air (especially in winter with central heat use) Seasonal or environmental allergen exposure	Add humidity w/ heated humidifier or increase heater setting Use OTC saline nasal moisturizer (ie Ayr ®gel or spray) Ro-ez-it ® ointment (OTC)/ Neil Med nasal ointment(OTC) OTC antibiotic ointment to speed healing (ie. Neosporin ®)
Dry mouth/throat Mouth breathing	Mouth opens in deep sleep... either due to Occasional occurrence (ie allergy/sinus congestion) or Chronic occurrence (nasal restriction, habit) Not enough humidity	Try a chin strap Consider Full Face style mask (covers nose & mouth) Activate heat option or increase current heat setting
Eye irritation, dryness Puffy eyes	Air seeping into eyes during sleep (mask leaks) Mask is too loose Mask too tight Chin strap too tight	Readjust or replace mask or seal Change mask style... consider nasal pillows Wear sleep mask to protect eyes Try full face mask in place of chin strap
Nasal congestion (stuffy nose) Runny nose Post nasal drip Sneezing	May be initial adjustment or Allergy response from exposure to... Grass, pollen, smoke, dust, animals, etc PAP air too dry or too humid Dirty mask, water chamber and/or filters Too much or not enough humidity	Clean out nose & sinuses (ie. Sinus Rinse® Kit) Try more or less heat, no heat or no water at all Clean or change pollen filters in PAP unit OTC hypertonic saline spray (ie ENTSOL® spray) Nasal crom ® spray (OTC) NeilMed Sinus Rinse(OTC)

Other Therapies for Sleep Apnea

Treatment is needed for obstructive sleep apnea (OSA) because untreated OSA can result in serious health problems. Continuous positive airway pressure (CPAP) therapy is the most common treatment used for obstructive sleep apnea (OSA). For those who cannot use CPAP or want to try another option, there are other therapies that can work for people with OSA.



For many people with moderate to severe OSA, CPAP is the main treatment. CPAP improves the symptoms of OSA like sleepiness, poor concentration, lack of energy and may improve blood pressure and other heart related problems. However, some people find it difficult to use CPAP, so other therapies may be prescribed. These same therapies are often the treatment of choice for those with mild OSA.

What are non-CPAP therapies for sleep apnea?

While CPAP therapy is often the preferred treatment, some patients will not or are not able to use this device. Other treatments that may help improve breathing during sleep and reduce the risk of complications from OSA include: oral appliances, weight loss, positional therapy, surgery, implantable nerve stimulator, nasal expiratory resistance, oral negative pressure devices, and mouth and throat exercises. There are currently no medications that are recommended or approved for the treatment of OSA.

What are oral appliances?

There are a number of different oral appliances used for OSA. These include tongue retaining devices and mandibular advance devices. The purpose of an oral appliance is to keep your airway open while you sleep, by positioning your lower jaw forward. This prevents blockage of your airway when your tongue relaxes during sleep. You may need a sleep study with the device in place to check that your OSA is completely controlled. Some of the devices appear to be as good as CPAP in improving breathing during sleep and preventing daytime symptoms in people with OSA. The devices do not work in everyone. There may be one device that works better for you than others.

How does weight loss work to help OSA?

Your healthcare provider can discuss if weight loss might help improve your sleep apnea. Obesity is one of the major risks

for OSA. Losing weight, especially reducing fat deposits in the neck and tongue, can improve sleep apnea. Even though weight loss may not get rid of sleep apnea completely, there are many other health benefits from having a normal weight. Safe weight loss also takes time, so you may decide to use weight loss along with other therapies that act more quickly. You may need a follow up sleep study to show that your weight loss has improved your OSA.

How does positional therapy work?

How your sleeping position affects your breathing can be evaluated with a sleep study. Some people only have OSA when they sleep on their back. For others, OSA may be much worse when they sleep on their back. In these cases, trying to get a person to only sleep on his or her side can be a useful treatment. This can be done in several ways.

- Pillows supporting the back usually do not provide enough support or are easily tossed on the floor during sleep.
- Devices that provide an alert, such as a vibration, so that the user shifts position.
- Devices, such as specialized belts or shirts that make it uncomfortable to sleep on one's back, so the user will tend to sleep in another position.

For some people, the OSA and snoring go away completely when they sleep on their sides, but as with all treatments, not everyone gets the same benefit from positional therapy. Some people are not able to stay in these positions each night for long periods because of other conditions which make it uncomfortable such as arthritis or hip pain. You can talk with your healthcare provider about how well positional therapy works for you. You might need a sleep study to check that positional therapy is working well.

What kind of surgery can I have for OSA?

Surgery is not frequently used to treat OSA in adults because it doesn't work very well for most adults. However, in some cases upper airway or throat surgery may be helpful to improve airflow into your windpipe. For example, if you have large tonsils or adenoids, it may help to take them out as they can block air flow in the nose and throat. This is more commonly done in children with OSA than adults. If you have any nasal blockage, an operation may help clear the blockage in your nasal passages. Other surgical approaches may be helpful in rare cases. Your healthcare provider can discuss if surgery may help you. You might need a sleep study 8-12 weeks after surgery to check to see that your OSA is improved.

What is hypoglossal nerve stimulation?

A more recent surgical procedure implants a small battery pack into the upper chest that connects to a wire that attaches to the nerve controlling the tongue muscles (such as brand Inspire). During sleep, gentle electrical pulses stimulate the tongue muscles to contract and pull forward, keeping the airway open. This may be used by itself or in combination with other therapies.

What are other therapy options?

Other options have been developed for patients with OSA.

- Nasal expiratory resistive devices (such as brand Provent®) are disposable adhesive devices placed over the nostrils. This device limits a full exhale during sleep. This results in air staying in your airway and keeping your airway open. Studies show mixed results, with the best results usually seen in people with milder (less severe) disease. These devices typically will not fully cure your OSA.
- Another option is a device placed in your mouth, connected to a machine called an oral negative pressure device (such as brand Winx®). This device works by causing negative pressure in the mouth area. This keeps your tongue and soft palate at the front of your mouth so they don't relax and block your airway. Studies over a short time have shown this device to be helpful for some people. It typically will not fully cure your OSA and may be uncomfortable to use.
- Muscle training exercises (oropharyngeal exercises and myofunctional therapy) may also be used in combination with other therapies to improve your OSA. Working to strengthen the muscles of your tongue, face and throat may reduce airway narrowing or closing during sleep. They typically will not be fully successful on their own.
- Regular exercise and avoiding alcohol, tobacco, and opioid medications ("painkillers") is also recommended.

How can I get these therapies?

Your healthcare provider can refer you to a sleep specialist. The sleep specialist will evaluate if any of these approaches will be useful in treating your sleep problem. They will usually

begin by finding out how bad your sleep apnea is by doing an overnight sleep study. After the sleep study, you will have a follow up appointment with your sleep specialist to talk about the results of the sleep study and to discuss possible treatment options.

How do I know if my therapy is working?

When a therapy is working well, you should have little or no snoring. You may notice you sleep more restfully. You may see improvement in daytime sleepiness and fatigue. A good way to find out if you are getting full control of your OSA is to have a repeat overnight sleep study with the device in place, after weight loss or the surgical procedure. If symptoms of snoring or sleep apnea return (for example, your tiredness returns during the day), it is important to have a follow up appointment with your healthcare provider or sleep specialist. Sometimes a therapy may seem to work at first but does not continue working over time. You should always pay attention to your sleep quality and watch for symptoms.

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Reviewer: Suzanne C. Lareau RN, MS, Marianna Sockrider MD, DrPH, Helena M. Schotland, MD

Rx Action Steps

Other therapies besides CPAP are available for sleep apnea and may be helpful in treating OSA in some people.

- ✓ Speak with a sleep specialist or your healthcare provider to find out if any of these therapies may help you
- ✓ If you are obese or overweight, consider a safe weight loss program even if you are using other therapies.
- ✓ If you still have symptoms despite using the therapy, see your sleep specialist.
- ✓ Keep follow-up appointments and discuss if and when you need a repeat sleep study.

Healthcare Provider's Contact Number:

Resources

WebMD

- <http://www.webmd.com/sleep-disorders/sleep-apnea/tc/sleep-apnea-oral-devices-topic-overview>

American Thoracic Society

www.thoracic.org/patients/

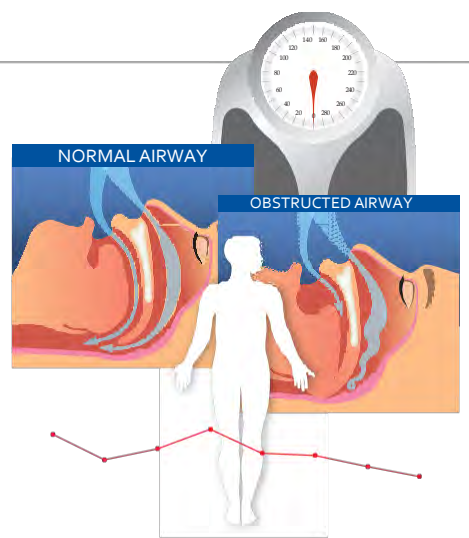
- CPAP
- Oral Appliances
- Sleep Studies

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Weight Loss and Sleep Apnea

Obstructive sleep apnea (OSA) is a common problem that affects a person's breathing during sleep. A person with OSA has times when air flow to the lungs is blocked due to the collapse of the soft tissues in the air passages during sleep. Treatment of OSA depends on what is causing it. If you have problems with OSA from being obese or overweight, weight loss can be an option to help manage your OSA. Losing as little as 5-10% of your body weight can improve or resolve OSA. This fact sheet discusses how managing your weight could help treat OSA. (For more information about OSA and other treatments go to the ATS Patient Information Series at www.thoracic.org/patients.)



What type of program can help me lose weight?

Research shows that people lose the most weight if they take part in a complete lifestyle intervention program that has all of the following: 1) a restricted calorie diet, 2) increased physical activity and 3) behavioral therapy. Behavioral therapy involves working with a weight loss specialist to learn how to track your calories, activity levels and weight, as well as identifying your specific weight loss challenges and strategies to overcome them.

A number of effective (hospital or clinic-based) commercial weight loss and behavioral therapy programs are available. A weight loss program that offers you frequent visits with a weight loss specialist (such as a counselor) and provides long-term follow-up is associated with the greatest success. To further increase your chances of success, choose a program that best matches your preferences and lifestyle. For example, some people may prefer a "self-directed" weight loss program or an online program that includes the three components noted above.

Talk to your healthcare provider before you plan to start any weight loss program. This is especially true if you have a chronic disease, such as diabetes mellitus, heart disease, or are considering a very aggressive or extreme weight loss program.

What type of diet should I follow to lose weight?

Decreasing your calorie intake while maintaining a nutritious, well-balanced diet can help you lose weight. In general, total calorie intake should be limited to 1200-1500 kcal per day for women and 1500-1800 kcal per day for men. You will need to continue for at least 6 months in order to lose weight safely. Choose the type of diet plan that you think you would be most likely to follow. Studies show that weight loss occurs because

of the calorie restriction, not because of the particular type of diet or program offered. Your weight loss specialist can teach you how to count and track your calorie intake. There are also computer programs and cell phone apps that you can use.

Tracking your food intake (food diary) for 2 weeks can give you clues as to changes you may need to make. Your food diary should include all meals, snacks and beverages that you eat/drink, as well as the type of food, total calories for each, time you ate, and why you ate.

Review your food diary with a dietician or other weight loss specialist to get advice for how best to change your diet.

Common diet goals:

- Set a healthy weight loss goal of 1-2 pounds per week.
- Eat least three meals per day. Eating frequent smaller meals has not been proven to cause more rapid weight loss. Do not skip meals.

Common dietary mistakes include:

- skipping meals
- underestimating your daily calorie intake
- eating a lot of refined, processed, and/or sugary foods
- not eating enough fresh fruits, vegetables, protein and/or fiber
- not drinking enough water to stay well hydrated
- drinking alcohol, fruit juices or sugary soda
- frequent snacking between meals
- adding high calorie condiments, dressings, and/or sauces to your food

General strategies to promote healthy eating:

- Control your portions. Portion control is an important factor in controlling your calories. Read food labels to better understand portion sizes and calories. Some people also find eating from smaller plates or bowls to be helpful.
- Plan ahead. Cooking your own meals allows you to control the number of ingredients and avoid hidden calories. Plan snacks ahead of time so you will not be caught hungry without a healthy option.
- Drink water to keep hydrated. Limit caloric beverages, such as juices, sodas, shakes, and alcohol.
- Avoid late evening meals. Eating late at night may contribute to weight gain, possibly due to the body's lower metabolic rate at night.
- Avoid distractions, such as watching TV, during meals. This can lead to overeating.
- Choose meals that are high in fiber, complex carbohydrates, and are low in sugar. Complex carbohydrates such as brown rice, quinoa, whole grains, sweet potatoes, and oatmeal are healthier options than processed, simple carbohydrates such as white bread, cereals, crackers, white potatoes, and white rice.
- Strive to make every meal and snack well balanced, with protein, fat, and carbohydrates.
- Limit high fat foods. Choose grilled or baked foods over fried foods, "clear", low calorie dressings (vinaigrette) over creamy, high calorie dressings (ranch) and clear broth-based soups instead of creamy thick soups.

Address any special dietary concerns due to diabetes, high blood pressure, food allergies, etc. as part of your overall healthy eating plan.

After you lose the weight, you will want to follow up with a program to maintain your new healthier state and have a repeat sleep study to see how much improvement you have in your OSA.

Physical Activity and Exercise

Increasing your levels of everyday physical activity and exercise are positive goals for everyone. Exercise can help you maintain a healthy weight and benefit your health in many other ways. However, exercise must be combined with a healthy diet to achieve weight loss. Studies have shown that in people with OSA, exercise alone results in little to no improvement in weight or OSA severity.

Here are some ways to increase your day-to-day activity:

- take the stairs instead of the elevator
- park at the end of parking lots to encourage more walking
- carry your grocery bags
- take breaks from sitting at your desk and stand or walk throughout the day
- get an exercise buddy! You can keep each other going and enjoy the time together.

Ask your healthcare provider about exercises that are safe for you. Walking is generally a safe and effective exercise for most people. Walking 30 minutes a day, 5 days a week can improve

high blood pressure, help reduce stress, and possibly improve sleep quality.

Additional weight loss measures

For some people who are very overweight, a healthcare provider may recommend adding a weight loss medication and/or weight loss surgery. These may be considered for a person who has failed to lose weight despite carefully following a good weight loss program.

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R Action Steps

Adopt and stick to a healthy diet and regular exercise to lose excess weight and improve your health and OSA.

- ✓ Ask your healthcare provider how you can get started.
- ✓ Select a weight loss program that includes a weight loss specialist or counselor who can offer advice and support with frequent meetings over time.
- ✓ Increase your levels of physical activity and exercise.
- ✓ Maintain a positive attitude. You have the power to eat healthfully, lose weight, and feel better. Change is possible!
- ✓ Work with your healthcare provider to treat OSA and decide when to repeat a sleep study when you lose weight.

Healthcare Provider's Contact Number:

Online Resources for Weight Loss

American Thoracic Society

- <https://www.thoracic.org/patients>
- <https://www.thoracic.org/statements/resources/sleep-medicine/weight-mgmt-in-osa-treatment-exec-summ.pdf>

National Heart, Lung, and Brain Institute

- <https://www.nhlbi.nih.gov>

American Heart Association

- <https://www.heart.org>

Academy of Nutrition and Dietetics

- www.eatright.org

American Diabetes Association

- www.diabetes.org

American Society for Metabolic and Bariatric Weight Loss

- <https://asmbs.org/>

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