

B R E A T H E

the lung association



Sleep Apnea

A guide to living with sleep apnea

lung.ca

ANY QUESTIONS? Call The Lung Association Health Information Line at 1-866-717-2673 to speak to a Certified Respiratory Educator, email info@lung.ca or visit www.lung.ca

Foreword

The first version was a wonderful resource for patients and the revised version builds on that solid foundation. This new booklet is full of excellent practical advice for patients with sleep apnea, including trouble-shooting tips for CPAP users and simple ways that patients with sleep apnea can reduce their cardiovascular risk. I wholeheartedly endorse this excellent booklet and will be directing my patients to obtain a copy.

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This handbook is designed to meet the educational needs of those newly diagnosed with sleep apnea. Sleep apnea is a common disorder which requires accurate diagnosis and effective treatment. The recent Canadian Thoracic Society Sleep Apnea guidelines recognise the importance of providing education to people with sleep apnea. This handbook provides people living with sleep apnea and their families a good base of information to help them understand and manage their disease.

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This handbook has been developed by the Lung Association to provide educational support for adults with sleep apnea and their families.

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What is Sleep Apnea?

The word apnea means no breathing. Sleep apnea refers to pauses in breathing that occur while you sleep. These pauses in breathing last for 10 to 30 seconds, possibly longer, until the body reacts with a bigger breathing effort to overcome the problem. These pauses are termed events by sleep specialists. This cycle happens over and over throughout the night, interfering with the normal sleep pattern. People with sleep apnea do not feel rested and refreshed in the morning.

There are four main types of sleep apnea.

1. **Obstructive sleep apnea (OSA)** occurs when the upper airway collapses; even though you are still trying to breathe, there is very little or no air getting into your lungs. OSA is the most common form of sleep apnea.
2. **Central sleep apnea** happens when the brain fails to signal the muscles needed to breathe. It is not as common as obstructive sleep apnea.
3. **Mixed or complex sleep apnea** is a blend of both central and obstructive sleep apnea. Each episode usually begins with no breathing effort (central sleep apnea). The breathing effort then starts, but the airway is blocked (obstructive sleep apnea).
4. **Sleep Hypoventilation** is linked to obesity. Low blood oxygen levels and high carbon dioxide levels during sleep, as well as during the day, distinguish this type of sleep disordered breathing from others.

Is Sleep Apnea Common? Yes!

- 1 of every 5 adults has at least mild sleep apnea (20%).
- 1 of every 15 adults has at least moderate sleep apnea (6.6%).
- 1 - 4 % of children are likely to have sleep apnea.
- Over 1 in 4 (26%) Canadian adults have a high risk of having or developing obstructive sleep apnea.

What is Meant by Mild, Moderate or Severe Sleep Apnea?

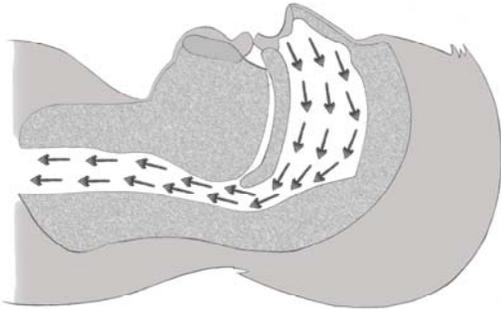
Sleep specialists categorize sleep apnea by the number of events per hour:

- Mild sleep apnea – 5 to 15 events per hour
- Moderate sleep apnea – 15 to 30 events per hour
- Severe sleep apnea – over 30 events per hour

Other important factors are:

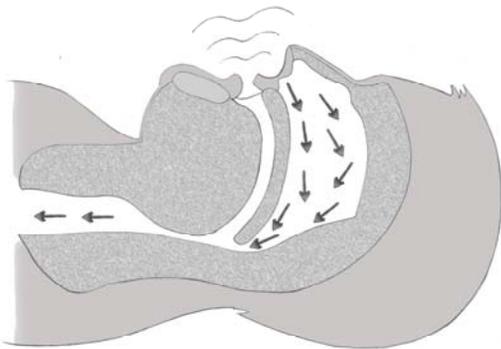
- How sleepy you feel
- How low the oxygen level dips
- How long the oxygen level stays below 90%
- Other medical conditions you may have, such as heart disease

The Obstructive Sleep Apnea Cycle



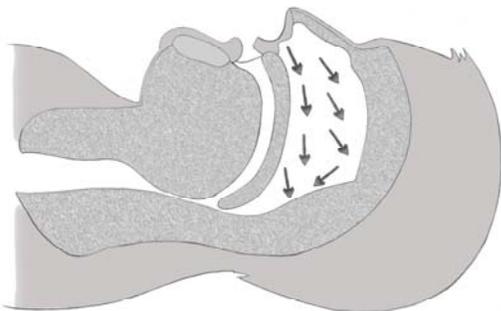
Quiet Breathing

- air moves in and out easily



Snoring

- partly collapsed airway
- air moves less easily



Silence - Apnea

- completely collapsed airway
- no air movement

This cycle is repeated over and over, robbing you of restful sleep.

Signs and Symptoms of Sleep Apnea

You may have sleep apnea without knowing it. Sleep apnea develops over many years.

The two main symptoms are:

1. Excessive daytime sleepiness that cannot be explained
2. Snoring with pauses in breathing

Other frequent symptoms include:

- High blood pressure
- Irritability
- Gasping or choking during sleep
- Fatigue
- Depression
- Lack of concentration
- Morning headaches
- Memory loss
- Impotence



Any combination of the following may increase your risk of having sleep apnea:

- Obesity
- Large, thick neck (greater than 17 inches for men, greater than 16 inches for women)
- Family history of obstructive sleep apnea
- Male
- Older than 40 years of age
- Recessed chin or large tonsils



What is Excessive Daytime Sleepiness?

Excessive daytime sleepiness is the most important symptom of sleep apnea. The following questionnaire is a widely used tool to measure just how sleepy you are. Your doctor may have already asked you to answer these questions.

The Epworth Sleepiness Scale

Today's Date _____

Name _____

Your age _____ Male _____ Female _____

If you are now being treated for sleep apnea, try filling this out again to see how much better you feel.

How likely are you to doze off or fall asleep in the following situations, in contrast to feeling just tired? This refers to your usual way of life in recent times. Even if you have not done some of these things recently, try to work out how they would affect you.

Use the following scale to choose the most appropriate number for each situation:

- 0 = would never doze
- 1 = *slight* chance of dozing
- 2 = *moderate* chance of dozing
- 3 = *high* chance of dozing

Situation	Chance of Dozing
Sitting and reading.....	_____
Watching TV.....	_____
Sitting, inactive in a public place (e.g. theatre or meeting).....	_____
As a passenger in a car for an hour without a break.....	_____
Lying down to rest in the afternoon when circumstances permit.....	_____
Sitting and talking to someone.....	_____
Sitting quietly after a lunch without alcohol.....	_____
In a car, while stopped for a few minutes in traffic.....	_____
	Total _____

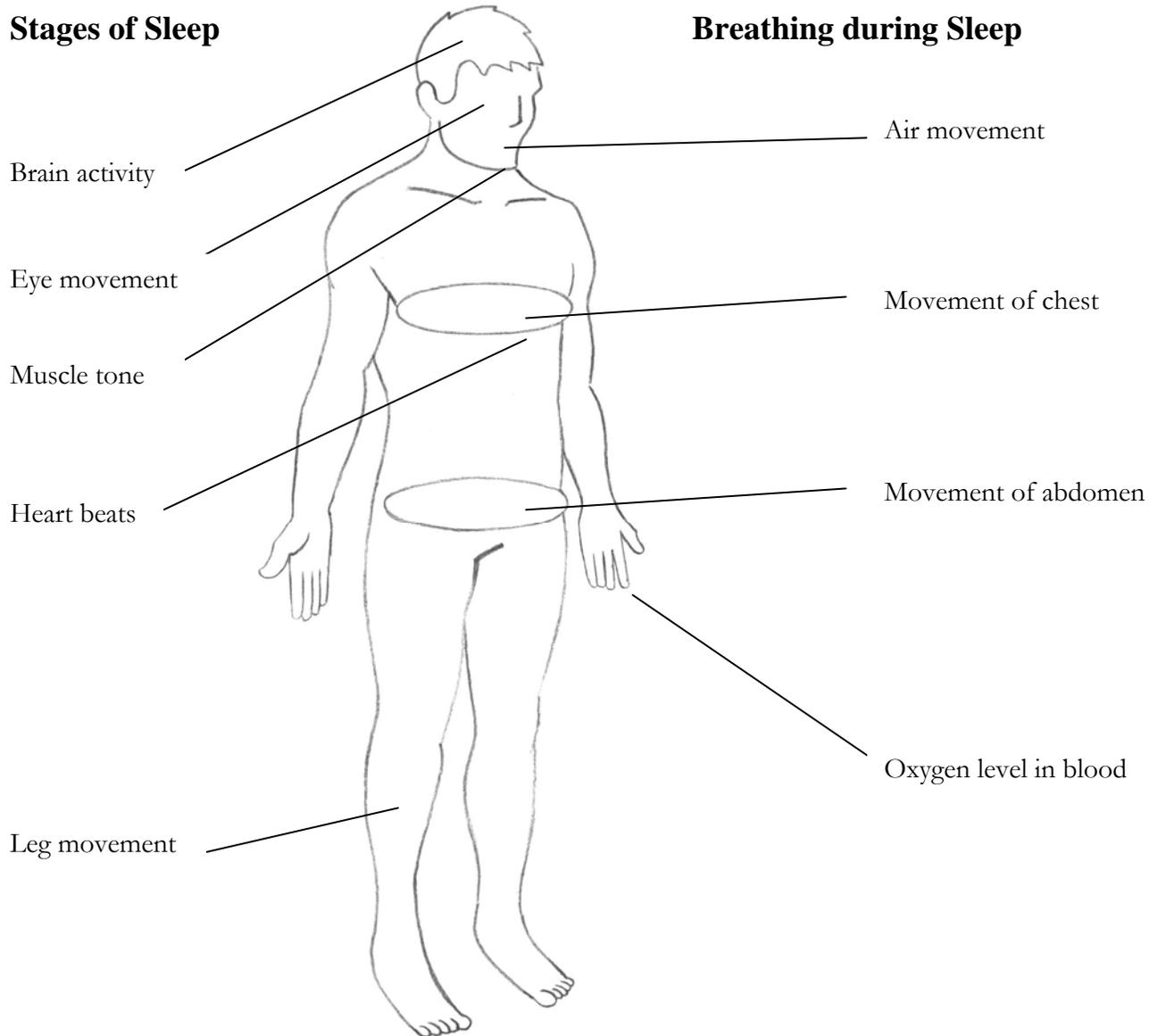
If your score on this test is greater than 10, please discuss it with your doctor.

How is Sleep Apnea Diagnosed?

The best method of diagnosing sleep apnea and other sleep problems is an overnight test in a sleep laboratory. This test is called **polysomnography (PSG)**. You will be connected to wires that monitor breathing and sleeping. A sleep doctor will explain the results and suggest treatment.

Stages of Sleep

Breathing during Sleep

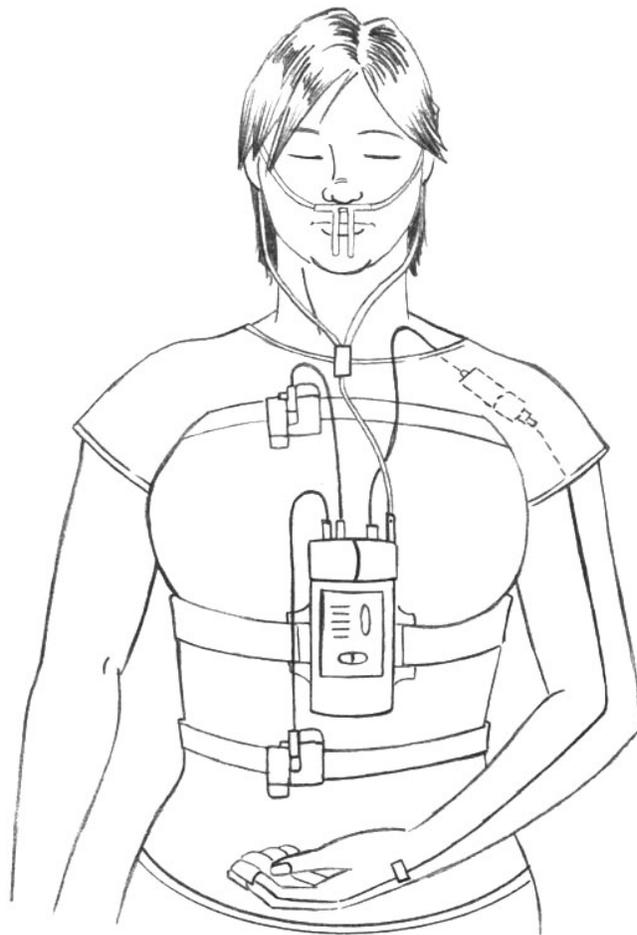


Polysomnography: an overnight test in the sleep laboratory.

Portable Monitors

As public awareness of sleep apnea grows, so does the demand to be tested. In some areas the waiting time for sleep laboratory testing is very long.

If your doctor believes that your symptoms suggest that you very likely have sleep apnea, and you have no other serious illnesses, portable machines may be used. Portable machines can be used at home and can provide information about oxygen levels, airflow through the nose and mouth, breathing patterns, and snoring. You will be shown how to hook up to the machine so you can do it at home. Testing should be done under the supervision of a physician with training in sleep medicine. If it is discovered that you have sleep apnea, follow-up is needed to decide the best treatment for you.



Portable monitors record information about you while you are sleeping at home in your own bed.

How is Sleep Apnea Treated?

The goal of any treatment for sleep apnea is to prevent airway collapse during sleep.

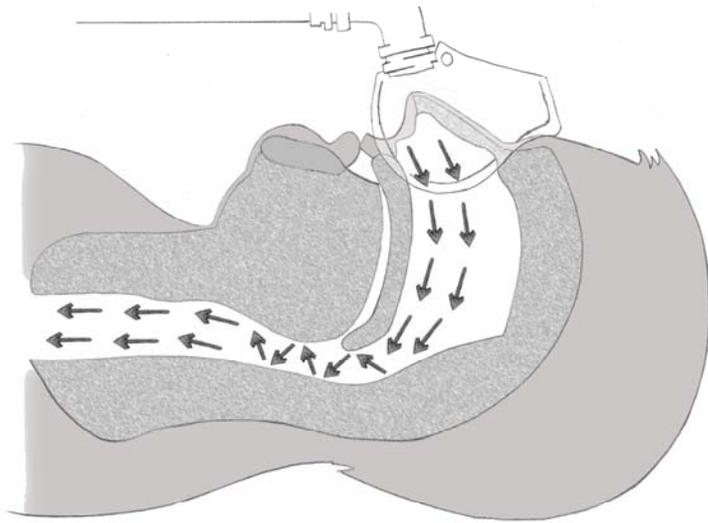
Over 25 years ago Dr. Collin Sullivan successfully treated a sleep apnea patient with the use of continuous positive airway pressure (CPAP). This was delivered through a mask glued to his nose! Years later, CPAP is still the best treatment for obstructive sleep apnea.



The best treatment for obstructive sleep apnea is continuous positive airway pressure (CPAP) produced by a CPAP machine (also called a flow generator). This pressure is then delivered through tubing and a mask to your airway. The mask is held in place by a headgear.

How Does CPAP Work?

The CPAP machine delivers a constant flow of air through tubing and a mask to the airway. This creates a 'splint' that supports the tissues at the back of the throat, preventing collapse. The amount of pressure developed in the airway by the CPAP machine is prescribed by your sleep specialist, usually after monitoring the effects of treatment during testing at the sleep laboratory. Once your airway is open, the obstructive apnea events and snoring are prevented from happening.



Flow of air from CPAP machine splints the airway.

This prevents collapse.

Your snoring and apnea stop.

CPAP is a treatment, not a cure.

You will feel better only as long as you use it.

If you stop using the CPAP, your symptoms will return. We understand that wearing CPAP can be difficult, especially if you still feel tired or cannot sleep with a mask on your face. It is important to work with your doctor and equipment supplier to solve any problems you may have.

CPAP equipment has improved over the years. Smaller, quieter machines, heated humidity, pressure relief and automatic CPAP machines are all newer options. Machines now record information about how the therapy is working.

CPAP Masks

CPAP equipment is usually purchased through a home oxygen company. When you try on a mask it should feel comfortable right away. Keep in mind that it may take some time to get used to wearing any type of mask. The following are only some of the masks that are available on the market. Please work with your supplier to find the best fit for you. Masks can also be purchased through many on-line sites.

Nasal Masks

Resmed Airfit N10¹



Respironics Wisp²



Fisher & Paykel Eson



Nasal Pillows or Cushions

ResMed Airfit P10¹



Respironics Nuance²



Fisher & Paykel Opus 360³



Full Face Masks

ResMed Quattro Air¹



Respironics Amara²



Fisher & Paykel Simplus³



Obstructive Sleep Apnea in Children

The first treatment choice for children with sleep apnea is the surgical removal of the adenoids and tonsils. This is the most successful in children under the age of 7 years old. Older children and children who are obese can be successfully treated with CPAP.

The American Academy of Pediatrics has published diagnosis and management guidelines which can be accessed at:

<http://pediatrics.aappublications.org/content/130/3/576>

ResMed Mirage Micro for Kids¹



CPAP Machines

These are a few examples of the many machines available today.

Fisher&Paykel ICON™³



ResMed S9¹



Respironics System One Remstar Plus²



1. ©ResMed 2014. Used with permission
2. Used with permission of Philips Respironics, Murrysville, PA
3. ©2014 Fisher & Paykel Healthcare Limited. Used with permission

CPAP Mask Fitting

The key to using CPAP therapy successfully is a good mask fit. Your mask needs to be comfortable.

What is a good fit?

- The top of the mask should be at the bridge of your nose.
- The bottom of the mask should be about halfway between the bottom of your nose and the top of your upper lip.
- The edge of the mask should be close to the sides of your nose without actually touching it.
- The smallest mask that fits is usually best.
- A small leak is acceptable unless air is blowing into your eyes.
- The headgear should not need to be pulled tightly to control leaks.

Picking the right mask is very important.

Ask yourself these questions:

- Can I breathe through my nose or do I breathe through my mouth? If you breathe through your mouth, a full face mask or a nasal mask with a chin strap may be better.
- Am I claustrophobic? If so, nasal pillows may suit you better.
- Can I handle something inside my nose? If not, a nasal mask might be better.

Do not be in a rush at the CPAP store.

- Be sure to lay back and also on each side to see how it will feel when you are in bed.
- Try the mask with a CPAP machine attached.
- Make sure the headgear is easy for you to use.
- Ask about a trial period for a new mask or a trade-in policy in case the mask does not work out.
- Take your time when choosing a system that is right for you.

Common Problems with CPAP

Dry Nose

- A humidifier that can be attached to the CPAP machine will often help with dryness. A heated humidifier will deliver more moisture.
- Placing a room humidifier in your bedroom is not recommended as it may damage the CPAP machine. Moisture drawn into the machine can affect the motor.

Nasal Stuffiness

- Nasal stuffiness can happen when you begin CPAP therapy. Try adding a heated humidifier to your system.
- Nasal stuffiness may also be caused by sinusitis, allergies or rhinitis. Contact your doctor to determine the cause and an effective treatment. It is important that your nose is as clear as possible to make wearing your CPAP mask more comfortable.
- Nasal blockages can happen because of polyps or old fractures. Blockages can interfere with CPAP treatment. These problems should be treated by an ear, nose and throat specialist.
- A full face mask may be the best mask for you.

Sore or Red Areas

- Any marks should disappear very shortly after removing the mask.
- Sore or red areas on the bridge of the nose are caused by either a poorly fitted mask or by over-tightening the headgear.
- Adjust your headgear until it is just tight enough to make a seal without large leaks. A small air leak that does not blow into your eyes is acceptable.
- Consider trying a different style of mask.

Skin Irritation

- Wash your mask with warm, soapy water and air dry every day.
- Wash your face and dry well before putting the mask on.
- Contact your doctor if a rash develops; a prescription cream may be needed to treat the problem.
- Try a different style of mask.

Mouth Leaks (nasal mask users)

- Usually the pressure of the CPAP will cause you to keep your mouth closed.
- If you do open your mouth at night, you will wake up with a dry mouth. You also may not be getting the most benefit from your treatment.
- A chin strap may help to keep your mouth closed, but it does not work for everyone.
- A full face mask may be a solution; please discuss this with your sleep doctor.
- A prescription from your doctor is required for a full face mask.

Dry Mouth (full face mask users)

- A heated humidifier will make a difference to the dryness of your mouth.
- Ask your pharmacist about artificial saliva or oral lubricant products that can help with a dry mouth.

Removing the Mask during the Night

- It is normal to sometimes remove the mask in your sleep. Keep in mind that the goal of treatment is to wear it all night.
- If you move around a lot in your sleep adding a chin strap may keep the mask on your face.
- You may pull the mask off because of nasal congestion. Try adding a heated humidifier.
- Talk to your sleep specialist if you cannot use your CPAP equipment, he/she may be able to suggest some hints or test for other problems.

Treating sleep apnea is very important for your overall health. If you have experienced problems getting used to your CPAP equipment, please do not give up. It may take a few weeks, or even months to be comfortable wearing a mask. Be patient. Return to your supplier to look for ways to deal with any problems you have. Talk to your sleep doctor about any medical concerns. Do not give up.

Why Does Adding a Humidifier Help?

Your lungs need air that is moist and warm to work properly. It is the job of your nose and throat (upper airway) to add warmth and moisture to the air you breathe in. If you breathe dry air for too long, it can become too much for the nose and throat to handle. The result can be a dry or stuffy nose, a dry throat or even a bleeding nose. Using a heated humidifier with your CPAP will help prevent these problems from happening.

CPAP Equipment Care

1. CPAP Mask:

The best information about your specific mask can be found in the information pamphlet that comes with it. The following are general care instructions:

Daily

- Wipe your mask with a warm, damp, soapy cloth or with alcohol-free baby wipes or CPAP wipes.

Weekly

- Wash mask, headgear, and tubing with pure soap and warm water. Use a small amount of mild dish soap. Rinse with clear water.
- Remove excess water with towel and air dry.
- Do not use solutions containing bleach, chlorine, alcohol, moisturizers, scents or antibacterial agents.

After 6 months

- Replace mask, tubing and headgear as they become worn.

2. Humidifier:

Daily

- Rinse your humidifier chamber with water and let dry.
- Fill humidifier each night with fresh distilled water.

Weekly

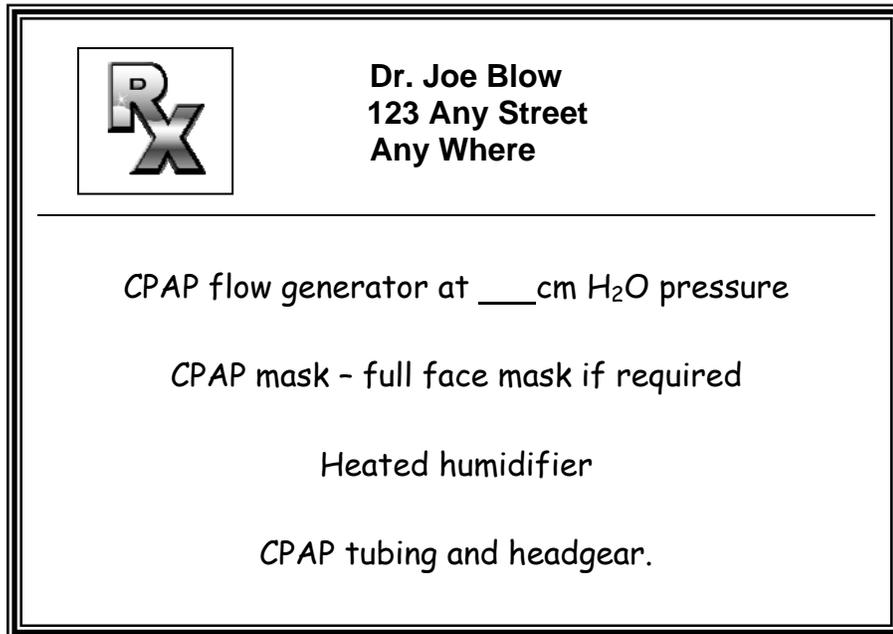
- Wash your humidifier chamber with mild soapy water. Rinse and let air dry.

3. CPAP Machine:

- Change or clean the filter every 2 months, or as needed.
- Be careful not to let water from the humidifier to spill into your machine. Always empty the humidifier before moving your CPAP machine.

Insurance Coverage for CPAP Equipment

Many insurance policies will cover CPAP equipment that has been prescribed by a sleep doctor. A copy of the prescription must be sent along with the claim. The following is an example of a complete prescription:



Traveling with CPAP Equipment

Sleep apnea does not take a vacation. You need to take your CPAP with you when you travel. If you are flying, the CPAP machine should be taken as carry-on luggage.

To make getting through security as smooth as possible it is wise to have a letter from your doctor.

The letter should state the following:

- The equipment is required for a medical condition.
- The model (e.g. ResMed S9) and the serial number.

Check about the type of electrical supply in the country where you are traveling. You may need a converter.

Other Sleep Apnea Treatments

CPAP is the first and the most effective treatment choice for sleep apnea. Other treatments include:

1. Lifestyle
2. Dental appliances
3. Surgery

1. Lifestyle

Some people with mild sleep apnea can be treated with lifestyle adjustments such as weight loss and avoiding alcohol and sedatives. You may only have episodes of obstructive sleep apnea while sleeping on your back. In that case, sleep position training may correct the problem. As you get older or if you gain weight, these simple solutions may no longer be effective.

2. Dental Appliances

Your doctor may suggest a dental appliance to treat mild or moderate sleep apnea. The dentist will then prescribe a dental appliance made to fit over your teeth. The appliance is worn at night to hold the tongue and jaw in a forward position. These are available in either a fixed or adjustable type. The adjustable appliance is the preferred choice because it allows for adjustments forward and back, customizing the treatment for you. Dental appliances may also be called oral appliances.

Remember: whether you use CPAP or a dental appliance, the treatment will only work if you use it every night.

Points to consider:

- Current models on the market cannot be used by people with dentures.
- Your sleep specialist and dentist should work together.
- There are over 80 dental appliances available.
- This treatment is **not recommended** for people with **severe sleep apnea**.
- Jaw pain and temporary chewing problems can occur.
- A follow up sleep study should be scheduled after you begin to use the appliance.

3. Surgery

If CPAP therapy has been ruled out as an option for you, there are several types of surgery that may decrease or eliminate the obstructive sleep apnea events. Surgery for sleep apnea is not ‘one size fits all’. The important first step is to determine exactly where the obstruction is occurring in your airway, remembering that several areas may be involved. An ear, nose and throat specialist has the ability to examine your nose, mouth and throat to pinpoint the problem. The following are a few types of surgery available:

Tonsillectomy

Large tonsils that are causing a problem with breathing can be surgically removed. Although there may be complications with any surgery, this is the most effective treatment for patients with sleep apnea who have enlarged tonsils. Children with sleep apnea often benefit from tonsillectomies.

Uvulopalatopharyngoplasty (UPPP)

In this procedure, which doctors call ‘u triple p’, the surgeon cuts away the uvula and part of the soft tissue at the back of the throat. Snoring might improve and sleep apnea events may be reduced. Nasal regurgitation (fluids going up the nose when you swallow), can be a complication. If your sleep apnea is not controlled you may have trouble using CPAP after this surgery.



Pillar Procedure

The surgeon freezes the roof of the mouth and inserts three implants into the soft palate. These implants work to stiffen that area making it less floppy so it does not vibrate and cause snoring. This may decrease sleep apnea events if you have mild OSA. This procedure is only recommended for people with a body mass index (BMI) of less than 30, for example, a 6 foot man weighing no more than 225 lbs. This procedure has not been proven, and is considered to be experimental.

You may hear of new procedures on the internet or in newspapers. They may have benefits if you have mild or possibly moderate sleep apnea. For people with severe sleep apnea, CPAP is still the best choice. Please keep in mind that no surgery is without risk. Surgery is generally not reversible and in some circumstances, surgery may actually worsen the apnea.

What if I Choose to do Nothing about My Sleep Apnea?

Sleep apnea is not just an annoying habit; it is a serious, possibly life-threatening condition.

Risks linked to untreated sleep apnea:

- You may develop high blood pressure.
- Your risk of heart attack or stroke increases.
- Your memory and concentration can be poor.
- You are at much greater risk of causing a motor vehicle crash.
- You may develop an irregular heart beat.



A Word to the Partner

Doctors, equipment suppliers and health educators work as a team to help people use their CPAP equipment successfully. You play a very important role as well.

The following are ways to help:

- Learn all you can about sleep apnea.
- Learn about the equipment and help your partner with problem solving.
- Encourage your partner to continue with the treatment.
- Reassure your partner that using CPAP does not affect how you feel about him/her.
- Support your partner's efforts to lose weight and exercise regularly.



Living with Sleep Apnea

You have no control over the shape of your face, or the size of your jaw or airway, but there are things that **you can control** that might help your sleep apnea.

Things you can control:

- Diet and weight
- Exercise
- Medications
- Alcohol and caffeine use
- Smoking

Eating healthy and losing weight

Many people with sleep apnea have problems with excess weight. Doctors often track your weight by a number called Body Mass Index (BMI). You can find your own BMI on many sites on the internet, (search using BMI calculator); or have your doctor's office do it for you on the next visit. A BMI of 18.5 – 24.9 is normal, 25 – 29.9 is overweight, and 30 and above is considered to be obese. Another measurement that can be important is your waist size. Men with waists bigger than 40 inches or women with waists bigger than 35 inches are at risk of heart attack or stroke.

Some people find it easier to lose weight once the sleep apnea is treated. You may snack more when you feel tired or sleepy. Ask your doctor to refer you to a dietitian to assist you with a weight loss program. There are also weight loss groups that have proven success. Most people need long-term support to maintain weight loss. A recent study showed that a 10% weight loss results in a 30% decrease in sleep apnea symptoms.

Small changes can make a big difference:

- Keep your food portions small.
- Learn to read labels for fat and calorie content, then you can make healthier choices.
- Cut back without cutting out – a single cheeseburger instead of a double cheeseburger can save 20 g fat and 200 calories.
- Snack on veggies with low fat dip or on air popped popcorn.
- Do not skip breakfast – skipping meals causes impulse eating.
- Make sure you drink 6 - 8 glasses of water each day.
- Choose foods from the four main food groups: bread and grains, fruit and vegetables, meat and alternatives and dairy products and alternatives.

Your CPAP pressure may need to be changed after a weight loss or gain of more than 30 pounds.

Surgery for Weight Loss

Bariatrics is the branch of medicine that deals with the causes, prevention and treatment of obesity. Bariatric surgery, or weight loss surgery, is performed to help people who are obese and do not seem to be able to lose weight with diet and exercise alone. It is usually only recommended for people with a BMI of 40 or more. For example, at least 100 pounds overweight for an average man and 80 pounds overweight for an average woman.

There are two general types of surgery that can be performed:

- Restrictive procedures - reduce the stomach size, so you are not able to eat as much.
- Restrictive and malabsorptive procedures - reduce the stomach size and allow food to pass quickly through the digestive system before all the fat and calories can be absorbed.

There are always risks with surgery; the best results usually come from specialized centres that perform many of these procedures.

Exercise

Regular exercise has many benefits for those with sleep apnea including:

- Improved endurance
- Improved muscle tone
- More energy
- Feel less tension, depression and anxiety
- Helps with weight control
- Lowered blood pressure
- Improved circulation
- Reduced risk for heart attack or stroke

Always speak to your doctor before starting an exercise program.

Small changes can make a difference:

- Walk daily (even short walks are helpful)
- Park a distance from the store and walk across the parking lot
- Join an exercise program
- Go biking with friends
- Check out community programs for activities that interest you (i.e. swimming pool, golf course)

Medications

Medications such as tranquilizers or muscle relaxants can make sleep apnea worse. Please discuss all your medications with your sleep doctor, including herbal and over-the-counter remedies.

If you will be given sedation for a procedure such as dental work or outpatient clinic tests, please inform all the people looking after you that you have sleep apnea.

A medic alert bracelet speaks for you when you can not. Sleep apnea is one of the conditions that can be listed on the bracelet.

Alcohol and Caffeine

Alcohol (a depressant) or caffeine (a stimulant) can cause problems with sleep if taken within four hours of bedtime.

- Caffeine is found in many items including coffee, tea, soft drinks and chocolate. Some soft drinks, coffee or teas are available without caffeine and may be a better choice.
- If you want to have a drink of alcohol or a drink with caffeine, consider having it with meals rather than later in the evening.

Smoking

People who smoke are at greater risk of developing sleep apnea. As well, smoking causes nasal congestion and irritation which can interfere with your CPAP therapy. Consider the pros and cons of smoking. Once you are ready to begin planning for the day you will be a non-smoker there is help – your doctor, medications, self-help information and help lines are available to help you succeed. It is never too late to quit smoking. For more information contact the Lung Association or your local smoker's help line.



Sleep Apnea and Driving

People with **untreated** sleep apnea are at greater risk of motor vehicle collisions. The collisions are often severe and result in serious injuries.

Some points to think about:

- Doctors have a duty to report sleepy patients who refuse to use CPAP therapy to their motor vehicle departments.
- Once you begin CPAP therapy, you can safely resume driving in 1-3 weeks. At that point, your risk of having a crash becomes the same as other drivers.
- You should check with your insurance company, or provincial driver's license issuer about medical conditions that need to be reported.
- Be aware that your insurance may be void if you are not using your CPAP and you become involved in a crash because of sleepiness.

Remember:

**CPAP should be worn all night, every night, to be completely effective.
If you are not using your CPAP, you will be a sleepy driver.**



Commonly Asked Questions

Q. Is there a cure for sleep apnea?

At this time there is no cure. People who have lost a large amount of weight may have their symptoms reduced to the point that they no longer need CPAP. A sleep specialist must make that determination.

Q. How long will it take to get used to CPAP?

Some people are able to use their equipment with no problems from the very first night. They wake up feeling much more rested. Others can have trouble getting used to the mask and the pressure. It may take up to 6 weeks to adjust. It is important to keep trying – do not give up.

Q. What happens if I stop treatment?

Your sleep apnea symptoms will return. CPAP treatment is effective only when you use it.

Q. Will the CPAP pressure ever need to be changed?

A weight loss or weight gain of more than 30 pounds may change the pressure that you need. Check with your doctor about a repeat sleep test or using an auto-titrating machine for a few days to determine the right pressure for you.

Q. Could I lose my driver's license?

Please do not delay getting help for your sleep apnea out of fear that you may lose your license. If you are diagnosed with sleep apnea, you may have your license restricted until you begin CPAP treatment. Once you begin treatment successfully, you should be fine to drive. If, however, you do not agree to treatment, your license may be taken away.

Q. I use my CPAP every night, but I'm still sleepy. What else can I do?

There are some people who are still sleepy even though they use their CPAP properly. The first step is to make sure that your equipment is working. You can take the CPAP machine back to the supplier to have it checked. Second step is to speak to your sleep doctor about other possible sleep problems. Further testing may be needed. Usually the problem can be solved.

Some people who are still sleepy might be prescribed a stimulant medication called Modafanil. Modafanil is not a replacement for your treatment. It is used along with CPAP to help you with daytime sleepiness. Always talk to your sleep doctor about any problems that you have.

Glossary

Airways: breathing passages to the lungs.

Apnea: “without breath”; a pause in airflow in and out of the body.

Apnea Index: number of apneas per hour of sleep.

Apnea-Hypopnea Index (AHI): number of apneas and hypopneas per hour of sleep.

Arterial Blood Gas (ABG): a blood test using blood taken from an artery; usually at the wrist. The amount of acid (pH), carbon dioxide (PCO₂), and oxygen (PO₂) is measured to check the function of the lungs and kidneys.

Auto CPAP: a CPAP machine that automatically adjusts the pressure it delivers according to the person’s need. A high and a low pressure limit are set. The machine varies the pressure between those two points. For example: the pressure required to keep an airway open may be greater when lying on your back. This may be more comfortable for some patients. These machines will also record the pressures used. This information can be downloaded to help the doctor decide the correct pressure to prescribe.

Bilevel Positive Airway Pressure (BiPAP): positive airway pressure therapy with two separate pressures, inspiration and a lower exhalation value. This may provide extra comfort. It is often used instead of very high CPAP pressures.

Body Mass Index (BMI): the ratio of a person’s weight to height. There are four categories: underweight, normal, overweight and obese. Programs to calculate BMI can be found on the internet.

Central Sleep Apnea (CSA): pauses in breathing that occur because the brain has not signalled the muscles needed for breathing. There is no effort to breathe during CSA events.

C-Flex (Respironics™): a form of positive airway pressure that reduces pressure as the person breathes out. Pressure then builds up again just before the next breath in. It may be more comfortable since the person breathes out against less pressure.

Cheyne-Stokes Respiration (CSR): an irregular breathing pattern with periods of increasingly deep breaths which then fade off. This is followed by a pause in breathing (apnea).

Continuous Positive Airway Pressure (CPAP): a machine, called a flow generator, delivers a flow of air to the airway through a mask. This creates a splint that keeps the airway from collapsing.

Excessive: beyond a normal or usual amount.

Expiratory Pressure Relief (EPR) (Resmed™): a form of positive airway pressure that reduces the pressure delivered when the person breathes out (exhalation). The pressure rises again to the prescribed CPAP during inspiration. This may be more comfortable than fixed CPAP therapy.

Hypopnea: a breathing event detected during a sleep test involving a drop in airflow and a drop in oxygen levels. Airflow does not stop completely, unlike an apnea event.

Impotence (erectile dysfunction): inability of a man to have or maintain an erection.

Maintenance of Wakefulness Test (MWT): measures a person's ability to stay awake. Usually performed during the daytime in a sleep lab.

Metabolic Syndrome/Syndrome X: a group of medical conditions that together warn of a person's increased risk of heart disease and diabetes. The conditions include: central or abdominal obesity (belly fat), high blood lipid levels, high blood pressure and high fasting blood sugar levels.

Multiple Sleep Latency Test (MSLT): a daytime test done in a sleep lab to measure sleepiness. It is a series of naps during the day. Brain waves and time to fall asleep are recorded.

Nocturia: the need to wake up during the night to urinate.

Obesity Hypoventilation Syndrome (OHS): a combination of obesity (BMI > 30 kg/m²), high levels of carbon dioxide and low levels of oxygen in the blood during the daytime.

Obstructive Sleep Apnea (OSA): pauses in breathing during sleep caused by a blockage in the airway.

Obstructive Sleep Apnea Hypopnea Syndrome (OSAHS): refers to the combination of both sleep apnea and daytime symptoms such as excessive sleepiness, high blood pressure and loss of concentration.

Oximeter: see pulse oximeter.

Oxygen Desaturation: a drop in the amount of hemoglobin that is saturated with oxygen. As a result, less oxygen is available to the body.

Positive Airway Pressure (PAP): a pressure in the airway created by a machine called a flow generator. Continuous and bilevel are two types of pressure that can be created.

Pulse Oximeter: a blood oxygen monitor that measures the percentage of hemoglobin that is carrying oxygen. Hemoglobin carrying oxygen is termed saturated. It uses a finger clip or ear probe that shines two red lights through the tissue onto a light detector. Normal oxygen saturation (S_pO_2) is 95 – 100 %.

Ramp Feature: on a CPAP machine; allows the positive airway pressure to build from a low starting pressure up to the prescribed pressure over 10, 15 or 20 minutes. This can help with the feeling of ‘too much pressure’ at the start of the night.

Rapid Eye Movement (REM) Sleep: a normal stage of sleep that occurs about 4 to 5 times per night. It occupies about 20 – 25% of total sleep. Most well remembered dreams occur during REM sleep.

Respiratory Effort Related Arousals (RERAs): an arousal (awakening) from sleep as a result of attempts to breathe.

Sleep Disordered Breathing (SDB): a general term for abnormal breathing during sleep.

Sleep Related Breathing Disorders (SRBD): a group of ailments causing abnormal breathing during sleep. This group includes obstructive sleep apnea, central sleep apnea, cheyne-stokes respiration, and obesity hypoventilation. More than one condition can affect the same person.

Supine: lying on back.

Titration: the process of gradually adjusting the dose of medication until it produces the effect wanted. In the case of sleep apnea, CPAP pressure would be adjusted (titrated) until the number of events is decreased or eliminated.

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CPAP Equipment Checklist

Time passes quickly and routine maintenance of your CPAP equipment can be forgotten. You can use this sheet for information about your unit.

CPAP unit: Model _____ Serial number _____

Date purchased/received _____

Supplier _____

CPAP pressure _____ cm H₂O

Date serviced _____

Clean/replace filter per manufacturer's instructions

(Suggestion: record date on piece of tape and attach directly on machine).

CPAP mask: Type and size _____

Date purchased _____

Replaced (recommend every 6 months)

1. _____

2. _____

3. _____

4. _____

Always take your CPAP equipment when being admitted to the hospital.

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We are pleased to offer you this complimentary copy of the Sleep Apnea Handbook.

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