THE RESPIRATORY SYSTEM
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It is normal to feel a wide range of emotions as your diagnosis is confirmed. You may feel relieved to finally know what has been causing your symptoms. Perhaps you feel angry, sad or anxious. These reactions are normal. Do not hesitate to discuss them with your health care team or to contact the Lung Association for information and support. Reading this guide should also help you to answer many questions.
INTRODUCTION

Sleep-related breathing disorders are very common. Often undiagnosed, they are frequently left untreated, causing significant health problems as well as personal and social consequences.

Because the most common form of disorder is obstructive sleep apnea, it will be the main topic of this guide.

One adult out of six suffers from mild sleep apnea and at least one out of fifteen suffers from moderate sleep apnea. This condition affects men, women and children, and is as widespread as diabetes, hypertension and asthma. However, once precisely diagnosed, sleep apnea is treatable.

If you think you might be suffering from sleep apnea, this guide will help you identify the symptoms and will provide information on the various treatments.

WHAT IS SLEEP APNEA?

Normally, during sleep, your throat muscles maintain the airway open (1). If these muscles relax, the airway narrows, thus partially blocking the passage of air (hypopnea), or (2) blocking it completely (apnea) (3). During inhalation, the relaxed muscles of the throat vibrate and can produce snoring noises. During episodes of apnea, the brain “wakes” the person briefly so that he or she starts breathing again, which leads to interrupted sleep of lesser quality.

Sleep apnea is a respiratory disease characterized by pauses in breathing while sleeping, of at least 10 seconds’ duration. These pauses can cause a reduction of the oxygen level in your blood. When there is an average of at least five sleep apnea or hypopnea episodes per hour of sleep, it is referred to as obstructive sleep apnea syndrome or simply sleep apnea.

Frequent hypopnea episodes have the same impact on your health as apnea, but they more often go unnoticed. For this reason, detecting it requires specialized equipment.
WHAT ARE THE CONSEQUENCES OF SLEEP APNEA?

Repetitive respiratory irregularities can make your sleep less restorative. In the long term, if untreated, this disorder can lead to serious health complications.

For example:
› Increased risk of cardiovascular diseases such as: hypertension (high blood pressure), angina (chest pain), arrhythmia (abnormal heart beat), myocardial infarction (heart attack), stroke.
› Increased risk of glucose intolerance, insulin resistance and diabetes. Non-restorative sleep
› Depression, anxiety.
› Increased risk of being involved in a driving accident.
› Increased risk of work related injuries.

TYPES OF RESPIRATORY ANOMALIES DURING SLEEP

Obstructive sleep apnea and hypopnea are the most frequent anomalies. They consist of a complete obstruction of the upper respiratory tract (apnea) or a partial one (hypopnea). They can affect children as well as adults.

Respiratory tract obstructions can be worsened by large tonsils, a receding chin, a wide neck or narrow jaws, and snoring is often observed.

However, it is important to know that it is possible to have apnea without snoring, or snoring without apnea. Snoring is one of the indicators, but cannot be used for a “diagnosis” in itself.

Central apnea and hypopnea (including Cheyne-Stokes respiration) are less frequent. They occur if there is an absence (or reduction) in the nerve impulses from the brain that stimulate breathing. When these anomalies exist, they lead to an absence (or reduction) of breathing, causing complete or partial interruptions which, in turn, can provoke micro-awakenings or a reduction of the oxygen level in the blood (without the presence of snoring). This form of apnea is more frequently encountered in individuals suffering from heart disease, advanced kidney disease or neurological disorder.

Mixed apneas combine the two preceding anomalies. The apnea starts at the nerve impulse level from the brain, followed by an obstructive apnea.
WHAT ARE THE SYMPTOMS OF SLEEP APNEA?

It is important to note that someone suffering from sleep apnea rarely has all of these symptoms, and can in fact present very few symptoms.

› Repetitive night awakenings
› Frequent trips to the bathroom during the night
› Non-restorative sleep
› Morning headaches
› Snoring
› Respiratory pauses observed by the spouse
› Fatigue, excessive sleepiness during daytime
› Reduced energy level
› Lack of concentration/alteration of judgement
› Decreased alertness
› Choking or gasping during sleep
› Excessive perspiration during sleep
› Loss of memory
› Irritability, mood swings and nervousness
› Depression/anxiety
› Hypertension (high blood pressure)
› Decreased sex drive – impotence

WHO SUFFERS FROM SLEEP APNEA?

› One adult out of six suffers from mild sleep apnea.
› At least one person out of fifteen suffers from moderate sleep apnea.
› At least one person out of twenty suffers from the consequences of sleep apnea during daytime.
› Men, women and children of all ages can have sleep apnea.
› Most people do not know they have sleep apnea, and as a result, are not treated.
› It is a serious problem, but easily recognizable and treatable.
IF YOU SUFFER FROM ONE OF THE FOLLOWING MEDICAL CONDITIONS, YOU ARE MORE AT RISK OF HAVING SLEEP APNEA:

› Hypertension (high blood pressure)
› Depression
› Myocardial infarction (heart attack)
› Atrial fibrillation (disorder affecting the heartbeat)
› Paralysis
› Diabetes
› High cholesterol level
› Hypothyroidism

WHAT ARE THE FACTORS FOSTERING THE DEVELOPMENT OF SLEEP APNEA?

› Shape of the face and neck: wide neck, receding chin, thin face
› Size of the upper respiratory tract
› Narrow pharynx – long soft palate
› Size of adenoids and tonsils
› Nasal obstruction/breathing by the mouth
› Age
› Sex (men being more at risk)
› Obesity
› Respiratory allergies
› Alcohol and/or medication consumption/use
› Smoking
EVALUATE YOUR SLEEPINESS LEVEL

Not everyone suffering from sleep apnea is sleepy during the day. However, if you wish to know your sleepiness level, answer this test.

<table>
<thead>
<tr>
<th>What is the likelihood that you will doze or fall asleep in each of the following situations?</th>
<th>Risk of dozing 0, 1, 2, 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epworth Scale</td>
<td></td>
</tr>
<tr>
<td>0 = no chance of dozing</td>
<td></td>
</tr>
<tr>
<td>1 = slight chance of dozing</td>
<td></td>
</tr>
<tr>
<td>2 = moderate chance of dozing</td>
<td></td>
</tr>
<tr>
<td>3 = high chance of dozing</td>
<td></td>
</tr>
<tr>
<td>Sitting and reading</td>
<td></td>
</tr>
<tr>
<td>Watching TV</td>
<td></td>
</tr>
<tr>
<td>Sitting inactive in a public place (e.g. a theatre or a meeting)</td>
<td></td>
</tr>
<tr>
<td>As a passenger in a car for at least an hour</td>
<td></td>
</tr>
<tr>
<td>Lying down to rest in the afternoon when circumstances permit</td>
<td></td>
</tr>
<tr>
<td>Sitting and talking to someone</td>
<td></td>
</tr>
<tr>
<td>Sitting quietly after a lunch without alcohol</td>
<td></td>
</tr>
<tr>
<td>In a car, while stopped for a few minutes in traffic</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
</tr>
</tbody>
</table>

**If your result is above 10**, you are sleepier than the average. Talk about it with your doctor.

**If your result is below 10** but you have some of the symptoms listed on page 7, or if you suffer from the conditions listed on page 8, it is a good idea to discuss it with your doctor.
DIAGNOSIS

Sleep apnea is diagnosed using a specialized test called polysomnography or overnight sleep study. This test is conducted under medical prescription only.

To determine the necessity for a polysomnography test, your doctor will question you about your sleep and awakenings, inquire about your medical history and conduct a physical examination to establish, among other things, the size of your adenoids and your tonsils.

He will also do a complete revision of all your medication. On occasion, certain drugs like tranquilizers/sedatives or muscle relaxants can worsen sleep apnea.

In children and teenagers, the diagnostic test is the same as that for adults. However, surgery is more often used for children than for adults.

POLYSOMNOGRAPHY (OVERNIGHT SLEEP STUDY)

According to the Canadian Thoracic Society\(^1\) as well as the American Academy of Sleep Medicine\(^2\), the polysomnography test is the benchmark for studying sleep disorders. This test can confirm the sleep disorder diagnosis, identify any associated conditions and orient therapeutic decisions.

This test is conducted in a sleep laboratory. It consists of recording various parameters during sleep. You will be required to sleep with many electrodes or sensors positioned on various body parts:

- Head, side of the face, chin: these sensors identify the various stages of sleep.
- Around the thorax and the abdomen, two elastic bands measure your breathing efforts.
- The level of oxygen in the blood is also measured by a small sensor installed on the tip of the finger.
- Wires on the legs measure the contractions of the muscles.
- A video-camera records the session to identify the position and abnormal movements during sleep.

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\(^1\) The Canadian Thoracic Society (CTS) includes specialists in respirology as well as other physicians and scientists from Canada, the US and abroad. Members work together to enhance the prevention and treatment of respiratory diseases through leadership, education, research, advocacy and the development and implementation of clinical practice guidelines. The CTS is the medical section of The Lung Association.

\(^2\) The American Academy of Sleep Medicine or AASM is a professional society dedicated exclusively to sleep medicine. The AASM sets standards and promotes excellence in health care, education and research.
Finally, all the collected data are compiled, treated by software, analyzed by a sleep technologist and then reviewed by a sleep specialist in order to establish the diagnosis.

**HOME SLEEP TEST (PORTABLE SLEEP TEST)**

A sleep technologist will explain how to install the device so that you can use it at home. There are various types of portable devices that can be used to identify respiratory anomalies and measure their severity, to adjust the treatment, or to check the treatment adjustment. Information related to your sleep will be recorded by one of these computerized devices that can be used at home for one night. When you bring the device back, an evaluation of your condition will be done. A sleep specialist will interpret the results.
Following the home monitoring test, the doctor might require a laboratory analysis in order to proceed with a more complete study of the data collected and to be able to give a more precise diagnosis, or to adjust the treatment more precisely.

**APNEA–HYPOPNEA INDEX**

The apnea index represents the number of apneas or hypopneas per hour of sleep, as demonstrated by a sleep study. The index is a framework for evaluating the degree and severity of the respiratory anomalies and thus helps determine the most appropriate treatment (also called AHI).

Mild: 5 to 15 respiratory anomalies/hour*
Moderate: 15 to 30 respiratory anomalies/hour*
Severe: more than 30 respiratory anomalies/hour*

*According to the criteria established by the AASM

**TREATMENTS FOR SLEEP APNEA**

Following the diagnosis of a chronic condition, such as sleep apnea, adopting a healthy lifestyle will be beneficial in the long term. The treatment will then depend on the severity of the symptoms and their causes.

**A. ADOPTING A HEALTHY LIFESTYLE**

It is recommended for everyone suffering from sleep apnea to:

**Stop smoking**
Smoking can worsen your sleep apnea symptoms. As a matter of fact, cigarette smoking increases the production of mucus, causes an inflammation of the respiratory tract, irritates your throat and makes you cough during the night. In addition to soothing your throat, quitting smoking will also give you more energy for your daily physical exercises and activities.

If you wish to stop smoking, the Quebec Lung Association can help. Call the toll-free helpline at 1-888-768-6669 extension 232.

**Maintain a healthy weight**
Being overweight is another risk factor of sleep apnea. Adopting healthy food habits and exercising regularly will help you maintain a healthy weight. Losing only 10% of your weight (for example, losing 20lbs for a man weighting 200lbs) will,
on average, reduce your apnea-hypopnea index by 30%. Likewise, gaining an additional 10% of your weight will, on average, increase your apnea-hypopnea index by 30%.

Tip:
› If you exercise at the end of the day, it is recommended to do so three hours before going to bed. An intense activity before going to bed could disturb your sleep.

Drink alcohol moderately and avoid taking sleeping pills or muscle relaxants
Alcohol, sleeping pills and some pain killers can make your throat muscles over-relax. In consequence, your respiratory tract can collapse and be obstructed more easily. They can also make it harder for your brain to “wake up” and detect a lack of oxygen in your body. This can cause longer and more serious respiratory pauses. Moreover, alcohol stimulates the brain and, in the long term, worsens insomnia and symptoms related to a lack of sleep.

Tips:
› Avoid drinking alcohol at least six hours before going to bed.
› Always inform your doctor of your condition, especially when he prescribes painkillers or sleeping pills.

Vigorously treat nasal congestion and allergies
Controlling the environment and taking antiallergy medication (in collaboration with your health care team) should lessen your symptoms and thus promote a better tolerance to CPAP.

And to promote better sleep:

Adopt a regular sleep schedule
Going to bed and waking up at about the same time everyday promotes better sleep. A regular sleep schedule also helps to prevent “over-tiredness” that can worsen your sleep apnea symptoms.

Reduce your caffeine consumption
Coffee, tea, colas and chocolate all contain caffeine, and thus are all likely to disturb your sleep. Caffeine prolongs the time needed to fall asleep and can interrupt sleep during the night.

Tips:
› Avoid consuming food containing caffeine six hours before going to bed.
› If you have trouble falling asleep, drink herbal tea or warm milk, try to read or take a warm bath.
Sleep on your side
Sleeping on your side will not cure sleep apnea. However, sleeping on your side rather than on your back can lessen the severity of your apnea since when you are on your back, gravity pulls your throat and neck tissues downwards, which can reduce your upper respiratory tract or block it completely.

Tips:
It is possible to train yourself to sleep on your side:
› By placing pillows in your back for support.
› By putting a tennis ball in the back of your pyjamas to prevent turning on your back, or wearing a backpack without frames filled with towels. If you start to roll on your back while you sleep, the pressure caused by the ball or the bag will make you roll back on your side.

If your sleep apnea is moderate to severe, a more intensive treatment will be necessary. This is usually done with the use of a CPAP device, i.e. a continuous positive air pressure device.

B. CONTINUOUS POSITIVE AIRWAY PRESSURE TREATMENT (CPAP)

In June 1980, Dr. Colin E. Sullivan, respirologist and research scientist from the University of Sydney in Australia, started testing the CPAP treatment. In February 1981, his first patient went home with a CPAP device. Since then, this treatment has become the main one used for treating obstructive sleep apnea.

The CPAP device is the best treatment for patients suffering from obstructive sleep apnea. Continuous positive air pressure or CPAP means that air is forced by a continuous positive pressure at the level of the respiratory tract so that it remains open. This pressure must be adjusted with a titration test.

Your doctor will prescribe the type of device that suits you the most according to your diagnosis, taking into account (if applicable) the other conditions from which you suffer.

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3 According to the CTS and the AASM
**Titration Test**

“Titration” is the adjustment of the patient’s CPAP unit so that it delivers the treatment pressure at an adequate level. Unlike medications having relatively standard doses, the CPAP treatment requires a patient-specific titration. The treatment pressure varies from one person to another as do the obstructions, and it can also change during a person’s life.

The titration test usually takes place in a sleep laboratory and usually involves being followed overnight by a sleep therapist who will adjust the CPAP level in response to the respiratory sleep disorders (snoring, hypopnea and obstructive apneas). The objective is to find the lowest pressure that prevents the obstruction/collapse of the respiratory tract at all sleep stages. It also enables correction of the apneas, reducing the number of micro-awakenings and regularizing the heartbeat and the oxygen level in the blood. The titration takes many hours to perform since the pressure needs of a patient vary during the night.

There are many types of CPAP devices.

**Fixed-pressure CPAP device:** this is the standard treatment, the most proven and the least expensive model. This device always delivers the air with the same pressure.

**Automatic CPAP device:** this is an alternative to the fixed CPAP device. It is as efficient, and some find it more comfortable since the pressure level adapts itself according to the respiratory events (apneas, hypopneas or snoring).

**Bi-level positive airway pressure device (also called BPAP):** the bi-level device works just like the fixed and automatic CPAP devices, except that it delivers pressure at two levels: one for inhaling and another for exhaling. The pressure when inhaling is lower in order to make it easier to breathe.
It is mostly used by people who need a higher positive pressure, providing them more comfort and tolerance of the treatment. New products are constantly being developed. For optimal comfort, do not hesitate to try the most recent ones. Be sure to inquire about prices, warranties and after-sales services when you are ready to purchase one.

**HOW DOES IT WORK?**

- A mask is installed and a strap holds it in place on the head.
- Flexible tubing connects the mask to the CPAP unit.
- The unit is plugged into an electrical outlet and delivers constant air pressure into the mask.

By keeping the upper respiratory track open at all stages of the respiratory cycle, snoring and apnea are under control. Remember, this is a treatment and not a cure. If you stop your CPAP treatment, you will start having apnea again.

Unfortunately, at the beginning, some people get discouraged and abandon the treatment if they do not see results quickly. It is important to remember that the time required for the benefits to appear can be from four to six weeks of continued use, i.e. using the device every night, all night long.

First, you have to get used to sleeping with a mask on your face, and then you have to deal with the minor discomfort and small problems associated with the treatment (for example, positioning the mask, nasal congestion). It is only after the adjustment period that patients begin to appreciate the benefits.

Patients say that they get used to the treatment and become increasingly comfortable with the equipment after three to six months of use. Be patient! An adaptation period is necessary. The best way to adapt yourself to this new situation is to be informed, to ask questions and to have the required follow-up with your health care team.

Problems or discomforts can arise during the treatment. It is important to talk about those issues to correct the situation. Once the problems are resolved, people are usually very happy to use their device, especially after seeing all the
### THE SECRET OF SUCCESS

An appropriate treatment pressure, a comfortable mask and device, good training and support from their loved ones will often make the difference between success and failure for many people using CPAP therapy.

Success means better quality sleep, and awakening feeling refreshed. It can also mean lower blood pressure and the absence of symptoms associated with sleep apnea. Moreover, the effects of using the device are cumulative. The more you use it, the greater the benefits!

When everything goes well, people using CPAP therapy say that they get benefits at several levels:

- More vitality
- More energy and a more satisfying sexual life
- Better mood
- Greater concentration while driving
- Better professional performance

A better quality of life in general!

### C. DENTAL DEVICE

Your doctor can prescribe a dental device (for example, mandibular advancement device) moulded by a dentist. This cap splint worn in the mouth during the night brings about by this type of treatment.

### HOW MUCH DOES THIS TYPE OF EQUIPMENT COST?

A CPAP unit and a mask, including the required coaching and training, can cost between $1,500 and $2,200. This is currently not reimbursed by the Quebec Health Insurance Plan, but the related costs for the treatment are eligible for the medical expense tax credit. Consult the Canada Revenue Agency, Revenu Québec or a tax consultant for more information. Check also with your private insurance plan to know if the purchase of such equipment is covered. Another option is to ask your distributor if a rental program with a purchase option or a financing plan is available.
maintains the lower jaw and the tongue in a forward position, which results in keeping the upper respiratory tract open. However, this type of device does not suit all patients, nor does it offer results as good as those with CPAP therapy. The dental device, used mostly for light to moderate apnea, can also cause jaw, teeth and gum problems. When it works, some patients prefer it to the CPAP.

This type of device is available in two models: a fixed one, or the more popular adjustable model. Some dentists have been specially trained to fix and adjust the dental devices.

For more information on dental devices, discuss your sleep issues with your sleep specialist so that he can arrange for consultation with a trained dental professional.

D. SURGERY

Before considering surgery, talk about it with your doctor. Here are the three types of surgery that could be offered to you:

1. CONVENTIONAL SURGERY

a) Uvulopalatopharyngoplasty (UPPP)

It is conducted in an operating room under general anesthesia by an otolaryngologist (ear-nose-and-throat specialist or ENT). Its main objective is to control snoring, but it is sometimes used for patients suffering from sleep apnea, those for whom CPAP therapy does not work.

The intervention consists in removing the uvula and part of the soft palate to clear the respiratory tract. If necessary, nasal polyps or the tonsils can also be removed. This ablation can modify or reduce loud snoring, but it has limited success in curing sleep apnea. The patient may feel some pain after the surgery, but it can be relieved with drugs.
It is possible that the symptom of having a dry throat may remain permanently.

**b) Tonsillectomy and Adenoidectomy**

In children, sleep apnea is often linked to large tonsils or adenoids. These can be removed surgically to control the problem. Usually, when the swelling due to the surgery subsides, snoring and respiratory pauses stop; the child sleeps better and feels more rested and energetic. If the apnea persists despite the surgery, or if surgery is deemed not appropriate, a treatment similar to that of adults is required, for example a CPAP treatment.

In some adults, either tonsillectomy or nasal surgery can be considered in order to help a patient better tolerate the positive pressure or, more rarely, in the hope of controlling sleep apnea.

**2. Radiofrequency Procedure**

This procedure consists in reducing the thickness of the throat and tongue tissues by cautery, i.e. by heating the subcutaneous tissues with a needle linked to a radiofrequency generator, thus leaving more space for the passage of air.

Because it is a new treatment, it is too early to know the long-term results.

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**SLEEP APNEA AND ANAESTHESIA**

The drugs administered during anaesthesia and the post-operative period can worsen sleep apnea. Be sure to discuss this with your health care team.

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**3. Laser Surgery**

This surgery, done under local anaesthesia in many sessions, consists of reducing the throat tissues. It is important to realize that this surgery is not recommended for sleep apnea, but rather for snoring.

**In conclusion,** be aware that all types of treatments, be it a CPAP device, a dental device or surgery, must be chosen with reference to your condition. Your health care team will help you determine the most appropriate treatment.
DRIVING AND SLEEPINESS

Most people recognize the dangers of driving under the influence of alcohol. However, few realize that driving while sleepy can have equally tragic consequences. Like alcohol, fatigue slows down a driver’s reflexes and response time, reducing his attention level, impairing his judgment and increasing the risk of accident.

A tired driver is a danger to himself and to others.

According to the SAAQ (Société de l’assurance automobile du Québec), fatigue is a factor in 23% of fatal accidents in Quebec and in 20% of all accidents that involve bodily injury on the roads in the province.

Driver fatigue is the causal factor in 30% to 40% of fatal accidents involving heavy vehicles.

Because of reduced attention and concentration, people suffering from untreated sleep apnea have two times more risk of being involved in a road accident. This excess risk is corrected by the regular use of a CPAP device.

You must inform the SAAQ of your sleep apnea diagnosis and the related treatment. By doing so, you make sure that they have all the required information should an accident occur.
Exercise is beneficial to people suffering from sleep apnea. If you engage in physical activity regularly, you will see improvements in your quality of life in many ways, such as:

- Physical endurance
- Improved muscle tone
- Improved weight control
- Reduction of anxiety and nervousness
- Improved energy during daytime
- Improved circulation
- Reduction of risk of heart attacks or strokes
- Improved sleep

Your doctor can suggest an exercise program adapted to your needs. Research demonstrates that those who exercise feel better and are less stressed, depressed and anxious. Even small changes like taking a daily walk can make a big difference.
TIPS AND OTHER USEFUL INFORMATION

MAIN COMPONENTS OF THE DEVICE:

› Air compressor
› Tubing
› Humidifier
› Mask

AIR COMPRESSOR

An air generator/compressor sends the air at a pre-programmed pressure through a filter and via tubing and a mask.

Most CPAP devices can be easily placed on a bedside table. Their appearance varies from one manufacturer to the other. Here are some models:

Note: The pictures are for guidance only. Other models are available. Ask your supplier to show you the one that would suit you best.

Tip:
› Filters must be replaced every three months to ensure the best operation of your unit and to prolong its useful life.

TUBING

The tubing is a long plastic tube connecting the unit to the mask.

Tips:
› The tubing must be cleaned once a week.
› If you need longer tubing to permit easier movement or if you wish to install the CPAP device at a greater distance because of the noise it produces, you can connect two lengths of tubing together. However, the total length recommended by the manufacturer should not exceed 3.65 meters (12 feet). A tubing connector is necessary to connect the two tubes.
Always replace the tubing as soon as there is a sign of wear and tear.

**Humidifier**

Humidifiers seem to have an important impact on the user’s comfort and willingness to continue the treatment. Humidifiers soothe the irritation and nasal dryness that can occur when using a constant air flow, particularly at high treatment pressures.

Two types of humidifiers are available on the market:

- **Heated humidifiers** give better results because they heat the water enough to produce steam.

- **Passive humidifying devices (non heating)** bring the air through a water tank containing water at room temperature.

**Tips:**

- Never use tap water to fill the humidifier tank. Use demineralised or distilled water.

- The humidifier tank should be emptied and rinsed daily.

- Once a week, it should be cleaned with warm soapy water, then soaked during 30 minutes in a solution made of one part of vinegar and three parts of water. It is important to rinse it thoroughly before filling it up again.

**Mask**

The masks are used in conjunction with all types of positive pressure devices. Choosing a mask that suits you well is a crucial component of success with this type of treatment. To ensure your comfort, there is a wide range of models on the market in different sizes. Your health care team and your CPAP equipment supplier will guide you in your choice, but the final decision is yours! Only you can choose the mask that suits you best.

Before choosing, it is important to know that there are four main categories of mask available on the market.
Nasal pillows mask: The nostril cushions are placed directly in the nostrils. The mask does not cover the surface of the nose. Because it is small, it does not block the vision of the wearer. It is most appropriate for those who might feel claustrophobic when wearing a mask that covers a greater area of the face.

However, it may cause more irritation in the nostrils, especially if the air pressure is high. Therefore, it is often used in alternation with a nasal mask.

Nasal mask: It covers only the nose. This mask is used by 90% of patients because in general, it is the most comfortable and has fewer leaks than others.

However, it is more difficult to use if the nose is either very small or broken. It can also irritate the skin if it is not well fitted. People suffering from nasal congestion may find it difficult to become accustomed to this mask.

Full-Face mask: This model covers the nose and mouth. It is ideal when the nose is completely blocked because it permits breathing by the mouth. However, it is less comfortable, hotter, and harder to adjust properly; as a result, it leaks more than the others. The use of headgear improves its stability by reducing the mask movements on the face.

This type of mask should be considered only as a temporary solution in case of nasal congestion.

Oral mask: It covers only the mouth. It is mainly used by people who breathe by the mouth and those suffering from chronic nasal congestion.
Tips:
› The mask and headgear should always be clean to ensure the leak-tightness of the mask.
› Wash your face every night in order to remove excess sebum and to avoid the accumulation of oil on the mask.

ADJUSTING THE MASK

Respiratory health professionals as well as CPAP equipment suppliers can give you some advice for adjusting the masks and CPAP device. They will help you choose the equipment that suits you best.

When you try a mask on, you should feel relatively comfortable right away, without having to suffer to get used to it. Look for comfort and a good fit.

The smallest mask with which you are comfortable would be the best choice for you. To avoid having dry and irritated eyes, make sure that any small leaks are not directed towards your eyes.

After a while, your mask and headgear will be damaged by wear and tear since you use them every night. Cleaning them regularly can prolong the useful life of your equipment. However, manufacturers recommend replacing the mask and headgear once per year. Many insurance companies cover the cost for replacing components.

USING A CHIN STRAP

Chin straps are designed to help those who cannot sleep with their mouth closed. When using a nasal or nasal pillows mask, if you sleep with your mouth open, the dryness in your mouth and nose could bring about some discomfort and reduce the efficacy of your treatment. Wearing a chin strap could help. It is tied to your main headgear, goes around your chin and links up to the headgear on the other side with a Velcro strip, to maintain your mouth closed.

Before using a chin strap, it is important to check first if the reason why you cannot sleep with your mouth closed is because you suffer from nasal congestion. If this is the case, discuss it with your doctor to correct the situation.
**MASK AND TUBING MAINTENANCE**

› Using vinegar and soft water will reduce odours and germ proliferation. The solution should be made of one part of vinegar and three parts of water.  
› Do not use bleach, corrosive cleaning products, oil or chlorine-containing substances because they will damage the mask, tubing and main headgear.  
› Clean the mask daily, rinse it then let it air dry. Never leave it to dry directly in the sun.  
› Clean the tubing and the main headgear weekly.

**SOLUTIONS FOR MINOR DISCOMFORT**

**DRY NOSE**  
To prevent nasal dryness, readjust the level of the heated humidifier, use a nasal spray or a water soluble nasal gel (over the counter at the pharmacy).

**NASAL CONGESTION**  
Your health care team could recommend:

› Adding a heated humidifier or modifying the level of your humidifier.  
› Nasal hygiene using over-the-counter products such as Sinus Rinse, Saline, or Hydrasense.  
› Using Breathe Right strips.  
› Trying, for at least four to six weeks of continuous use, a steroid nasal spray (for example: Beclomethasone, Nasonex, Rhinocort, Nasacort, Flo-nase).  
› Being evaluated by a medical specialist for the ears, nose, and throat (ENT).  
› Being evaluated by an allergist.

**Note:** Decongestants with pseudoephedrine (like Otrivin, Dristan) can help when you have a cold. However, they are not recommended if you suffer from hypertension, heart or vascular problems. Moreover, they can increase nasal congestion problem if they are used for more than one week. Consult your pharmacist before using them.

**DRY MOUTH**  
Having a dry mouth when waking up suggests that you might be sleeping with your mouth open. Make sure that you do not have nasal congestion. If this is not the case, using a chin strap could help.
AIR LEAKS
It is not recommended to tighten the strap of the CPAP mask too tightly. A small air leak is acceptable, but it must constantly be oriented downwards. A leak oriented towards the eyes can cause dryness and irritation. Make sure that your mask is the right size for you and that it is fitted to the shape of your face.

If you suffer from nasal congestion, breathing by the mouth could also cause leaks.

SORES AND REDNESS
Sores on the bridge of the nose are caused by a mask that is not the right size or shape or one that is too tight. The mask must be tight enough to maintain a seal, without leaving permanent red marks on your face.

Using headgear, if available for the mask used, could improve its stability by reducing mask movements, better distributing the pressure and hence reducing redness.

BLOATING – AIR IN THE STOMACH
It is possible to feel gas in the stomach or in the intestine when waking up. This situation is most likely due to the fact that you “swallow” excess air coming from your device. One of the ways to reduce this annoyance is to practise breathing slowly and deeply when using it. This problem most often occurs during the first few nights of treatment. It is important to discuss this with your health care team if the problem persists for over a month or if it is very uncomfortable.

Remember:

› It may take three to six months to adapt to the equipment, and to see evidence of its benefits.
› It is normal to have some difficulty falling asleep with the mask for the first few nights.
› At first, you may feel more tired than before the treatment began. Adapting to CPAP therapy requires time and energy.
› The pressure level of your device has been adjusted for you – it must not be modified unless under medical prescription.
› Do not stop your CPAP treatment without discussing it first with your doctor.
› Sometimes, you might wake up at night without your mask, especially the first few times. Do not worry. Simply put it back on and try to fall back asleep.
› If you have trouble keeping your mask on at first, gradually increase the time of use until you can wear it all night long.
› Wearing the mask during the day or at night, while awake, will help you
adapt gradually to its use.
› Use your equipment even for a quick nap.
› Contact your supplier if you encounter problems with your mask.
› Always bring your CPAP equipment with you when travelling or if you are hospitalized.
› When asked about the list of your medications, do not forget to mention that you use a CPAP device.
› Make sure that your loved ones know that you are using CPAP therapy so that they can give this information for you, in case you cannot do so yourself.
› In the event of a power failure, your equipment will not work. Ask your supplier about back-up power sources. To save the back-up power source’s energy, it is recommended that you stop the humidifier during the power failure.

Communicate with your health care team if:

› You are having some problems with the CPAP treatment.
› You have gained or lost more than 13 kg (30 lbs) since you started CPAP therapy.
› You feel that the CPAP equipment does not help.

To locate a centre specialized in the diagnosis and treatment of sleep apnea or an equipment supplier, contact the Quebec Lung Association’s Info-Apnea helpline at 1 800 295-8111, extension 232.
For their contribution in revising this guide, the Quebec Lung Association would like to thank:

**Dr. Katéri Champagne**, respirologist and epidemiologist, McGill University Health Centre, Certified by the American Board of Sleep Medicine;

**Dr. Frédéric Séries**, respirologist, Laval Hospital, member of the Canadian Thoracic Society’s Sleep Disordered Breathing Committee;

**Julie Dallaire**, M.Sc. N. clinical nurse specialist, respirology, McGill University Health Centre.
AHI: apnea-hypopnea index or number of apnea or hypopnea episodes per hour of sleep.

Allergist: medical specialist in the diagnosis and treatment of allergies.

American Academy of Sleep Medicine (or AASM): the American Academy of Sleep Medicine is a professional society for clinical practitioners, researchers and other health care providers in the field of sleep medicine. As a national accreditation agency (US) for sleep disorders centers and laboratories, the AASM establishes the standards and promotes excellence in health care, education and research in the field of sleep medicine.

American Board of Sleep Medicine: organization recognizing the training and the expertise level of doctors trained in sleep medicine.

BPAP (Bi-level Positive Airway Pressure): device that delivers pressure at two levels, with the pressure being lower when exhaling.

Breathe Right strips: nasal strips available at the pharmacy without a prescription. Worn on the nose, it will gently open the nasal airways to facilitate breathing.

Canadian Thoracic Society: The Canadian Thoracic Society (CTS) include specialists in respirology as well as other physicians and scientists from Canada, the US and abroad. Members work together to enhance the prevention and treatment of respiratory diseases through leadership, education, research, advocacy and the development and implementation of clinical practice guidelines. The CTS is the medical section of The Lung Association.

Cautery: medical technique based on the use of heat or chemicals to destroy abnormal cells or to seal blood vessels.

Chin strap: fabric strip worn under the chin to keep the mouth closed.

CPAP (Continuous Positive Airway Pressure): device delivering air at a continuous positive pressure. Air is pushed by positive pressure into the respiratory tract to keep it open.

ENT (Otorhinolaryngology): medical specialty for the treatment of problems related to the ears, nose, and throat.

Hypopnea: diminution of the respiratory movement due to a partial obstruction
of the respiratory tract.

**Micro-awakenings:** awakenings of short periods (3 to 14 seconds). Micro-awakenings often escape observation and alter the quality of sleep.

**Polysomnography (or overnight sleep study):** test conducted in a sleep laboratory whose objective is to establish a sleep apnea diagnosis. It is also used for the titration test.

**Respirologist:** medical specialist in lung diseases and other respiratory problems.

**Sleep apnea:** respiratory disease characterized by respiratory arrests during sleep where the passage of air in the respiratory tract is completely blocked.

**Sleep debt:** lack of sleep. If you do not sleep enough, you accumulate a "sleep debt." It is the difference between the quantity of sleep that your body needs and the actual sleep you are getting.

**Sleep laboratory:** medical clinic specialized in the diagnosis of various respiratory sleep disorders. There are private and public sleep laboratories.

**Titration test:** test made in the sleep laboratory, used to determine the optimal pressure of the CPAP device. This test should be done over again when someone using a CPAP device gains or loses a lot of weight.

**UPPP:** uvulopalatopharyngoplasty. Surgical procedure that consists of removing the uvula and part of the soft palate.

References
Quebec Lung Association:

Founded in 1938, the Quebec Lung Association is the only non-profit organization committed in promoting respiratory health and fighting lung disease through research, education and services. We strongly believe in helping those affected by lung disease as well as the general population.

The Lung Association has a toll-free helpline available to the public:

Info-Apnea at 1 800 295-8111, extension 232

Respiratory health specialists are there to help you. The service is available Monday through Friday, from 8:30 AM to 4:30 PM.

Supported by unrestricted educational grants from the following partners: