

Family Health

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Snoring

WHEN IT'S MORE THAN JUST ANNOYING

Snoring can be more than just a nuisance to you and your family. Sometimes it signals a serious problem, sleep apnea. This is a breathing disorder that happens while you sleep. It can threaten your health.

What is snoring?

Snoring is noisy airflow created during sleep by vibrating nose and throat tissues. Muscle tone relaxes during the REM stage of sleep (see sidebar on page 27), when snoring usually occurs. People of any body type, small or large, can snore. About 30 per cent of women and 45 per cent of men snore.

Alcohol, smoking, and drugs that cause sleepiness or relaxation (such as sleeping pills, antihistamines and opioids) can all make snoring worse. Weight gain, allergies, sinus infection, large tonsils and adenoids, a cold and sleep apnea are also related. Severe snoring can be embarrassing and cause problems within a family.

About sleep apnea

The most common type of sleep apnea is obstructive sleep apnea (OSA), which happens when the airway becomes blocked during sleep. Most often, soft tissue in the back of the throat significantly collapses or closes during sleep, blocking the airway. Relaxed throat muscles, a narrow airway, a large tongue, or extra fatty tissue in the throat can also do this (see diagram on page 25).

About 25 per cent of men and 10 per cent of women under the age of 60 in the United States are thought to have OSA.



- finding sleep does not refresh
- feeling overly sleepy during the day (not caused, for instance, by going to bed too late the previous night)
- feeling irritable or having mood changes
- poor concentration or memory loss
- less interest in sex
- falling asleep when driving
- high blood pressure that does not respond to treatment
- atrial fibrillation (abnormal heart rhythm involving the two upper chambers of the heart).

Untreated sleep apnea is linked to health issues including excessive sleepiness, trouble thinking well, acid reflux, depression, high

blood pressure, heart attack and stroke. Those with OSA are also at more risk of being involved in traffic and work accidents.

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Who is at risk?

Men, women and children of all ages and any body type can have sleep apnea. However, your risk is higher if you:

Signs and symptoms

Many people with sleep apnea do not know they snore or gasp for breath at night. Often, a family member or bed partner has the first concerns. Sleep is disrupted in OSA when breath completely stops (apnea), or is partially blocked (hypopnea).

The following symptoms may be cause for concern and should be discussed with your family doctor or dentist:

- loud snoring followed by silent pauses
- needing to pass urine several times a night
- being wakened by gasping or choking
- waking with a headache

- are male
- are a woman after menopause
- are older (apnea is more common over 60)
- are overweight
- have a large neck (more than 17 inches for a man, 16 inches for a woman)
- smoke
- use alcohol
- take sedatives
- have a large tongue
- have a narrow (small) throat
- have an obstruction in your nasal area

The Scoop on Sleep

Sleep is the time when we disengage from our environment. Most healthy individuals need six to nine hours of sleep every 24 hours.

Sleep involves four stages which follow a depth of sleep. The first, non-rapid eye movement (NonREM) sleep, is followed by rapid eye movement (REM) sleep. These two sleep periods cycle every 70 to 120 minutes, three to five times per night.

NonREM sleep has four stages which follow a depth of sleep. Stages 1 and 2 are our lightest sleep times (when we can easily be awakened by a sudden noise). Stages 3 and 4 are our deepest sleep time (when we don't wake easily even with loud sounds). REM sleep usually takes about a quarter of total sleep time. It is characterized by rapid eye movements, rapid heart rate and relaxed muscle tone (hypotonia). The brain's electroencephalographic (EEG) activity also shows a particular pattern. (An EEG exam can record electrical activity along the scalp caused by firing of nerves in the brain.)

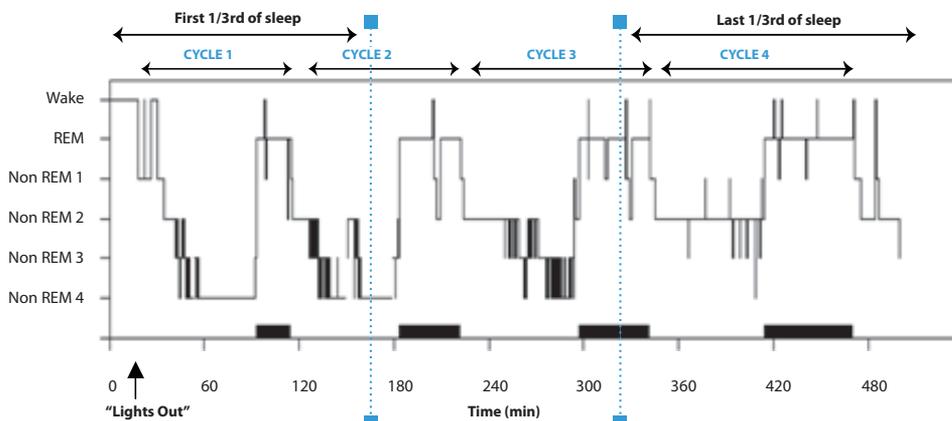


Figure 1. Sleep histogram of a healthy person with 4 sleep cycles and sleep initiating after 'lights out'. REM (dream) sleep is generally 20-25% of a total night's sleep, NonREM generally 75-80% of sleep. Note a predominance of NonREM stages 3 and 4 (deep sleep) in the first third of sleep and REM dominance (thick horizontal bars on time axis) in the last third of sleep.

- have cerebrovascular or coronary artery disease
- have large adenoids and tonsils (in children).

How can I tell whether I have sleep apnea or just snore?

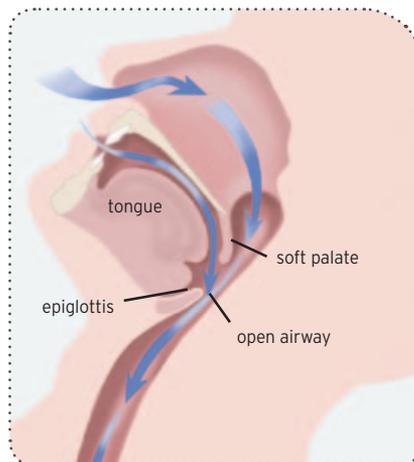
If you suspect sleep apnea, have your airway examined and neck circumference measured. Testing can check whether symptoms are due to a hypothyroid (low thyroid) condition.

A sleep study can establish the level of sleep breathing disturbance at night. Treatment is guided by the results. Never begin treatment for snoring or sleep apnea without first doing a sleep study. Treatment should include consultation with a sleep doctor. Sleep assessment (polysomnography or PSG) may be done in a sleep laboratory or at home.

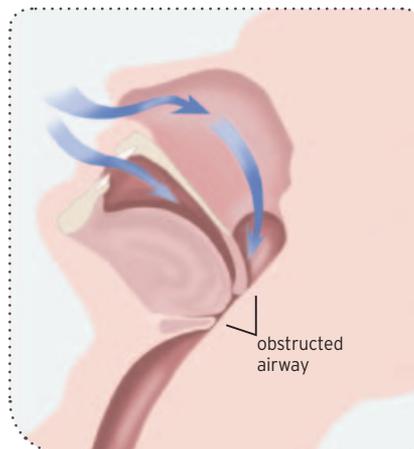
Laboratory Testing

An overnight stay in a fully attended laboratory is the norm. A sleep technologist can see and hear you, providing safety and support. Sleep studies typically include the following tests:

- **Electroencephalogram (EEG)** monitors brain activity to document various sleep stages.



Normal inhalation while sleeping



Person with sleep apnea

- **Electrooculogram (EOG)** measures eye movement during sleep (most notable during dream sleep).
- **Electromyogram (EMG)** measures muscle activity, and body and limb movement during sleep.
- **Electrocardiogram (EKG)** monitors heart activity.
- **Body position** monitors the effect of body position (back or side) on sleep and breathing.

Obstructive sleep disorders are measured using an apnea/hypopnea index (AHI)

Mild sleep apnea

AHI of five to 15 events per hour

Moderate sleep apnea

AHI of 16 to 30 events per hour

Severe sleep apnea

AHI of more than 30 events per hour

- **Respiratory airflow** measures airflow from the nose and mouth to document respiratory disturbances.
- **Respiratory effort** monitors chest and abdominal movements.
- **Pulse oximetry** measures the level of oxygen in the blood to note changes during respiratory events.
- **Snoring measure** monitors vibration of the throat.

Home Testing

Tests in your home are usually done with a portable, unattended sleep apnea monitor. It assesses:

- level of oxygen in the blood
- heart rate
- air flow
- breathing effort
- snoring and
- body position.

Snoring solutions

Lifestyle and behaviour changes can greatly reduce or end snoring. Weight loss, changing medications, avoiding alcohol, and stopping smoking may help. Other options include nasal strips and treating allergies with nasal sprays containing saline, decongestants or steroids.

Sometimes surgery is required to improve airflow through the nasal passages. Surgery can correct a deviated nasal septum. In this case, the thin wall inside the nose, which should be in the centre, is off to one side. Growths in the lining of the nose (nasal polyps) can also be removed.

Oral surgery can either remove or stiffen tissues in the back of the throat. Oral surgery options include:

- uvulectomy - removal of the uvula (the small piece of tissue dangling down from the soft part of the roof of the mouth, over the tongue)
- surgery to the roof of the mouth (palate)
- implants for the roof of the mouth, made from Dacron™ (long used for hernia and heart valve surgery).

Using dental devices used to treat sleep apnea (see next section) are another option.

Treating sleep apnea

Usually, treatment for sleep apnea involves a portable machine that humidifies and prevents the airway from narrowing during breathing. Known as nasal CPAP (continuous positive airway pressure), it is considered the gold standard of treatment for sleep apnea. It also eliminates snoring. However, effectively treating sleep apnea may also include interventions used for snoring.

Dental devices can help with snoring and mild to moderate sleep apnea. Often called mandibular advancement devices (MAD), they affect the mandible or lower jaw. If you are unable to use a CPAP machine, this is a good option.



Example of dental device for sleep apnea

A dentist can make and fit a dental device. At night, it will hold the lower jaw and tongue in place or pushed forward. Once the appliance is fitted and adjusted, another sleep test is needed to check the effect. Dental devices seem to work best for those diagnosed with snoring or mild to moderate OSA.

Wearing a dental device can have short-term side effects. You may have trouble with too much saliva, swallowing with the appliance in place, or having sore jaws, sore teeth, jaw joint pain, dry mouth, gum pain, loosening of teeth or bite changes. Most side effects are minor and resolve quickly



Nasal CPAP mask for sleep apnea

on their own or with minor appliance adjustments. Long-term complications, although rare, include permanent bite changes.

Snoring and sleep apnea tends to be progressive, so continual checks of the device are needed. Follow-up visits ensure that it fits properly. The health of the mouth is also checked.

Treatments used for snoring may be used with the dental device to ensure proper airflow through the nose.

Surgery for sleep apnea

Surgery for sleep apnea is often not as effective as CPAP. However, in difficult cases it is an important option.

Removal of the tonsils and adenoids often help treat OSA in children. Some children will continue to have problems even after surgery. However, research in this area is ongoing. Continuing to learn about how the head and face grow is vital to improving treatment for children.

Snoring can be embarrassing and troubling to those living with you. Untreated sleep apnea can lead to many health care concerns. Testing is needed to correctly diagnose and treat problems. A variety of treatments are available. If your snoring or sleep patterns concern you, talk with your doctor or dentist.

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