Obstructive Sleep Apnea
Kathryn H. Melamed, MD; Samuel Z. Goldhaber, MD

Obstructive sleep apnea (OSA) is a common sleep disorder that affects 2% to 7% of the population. It is a serious medical condition that has many effects on health, happiness, and survival, beyond simple snoring and poor sleep. OSA often goes undiagnosed, and many patients with risk factors for OSA should be evaluated for the disease.

OSA is initiated by inappropriate closure of the upper airway during sleep, leading to a cessation in breathing that is often terminated by a gasp and awakening (see Figure). Patients with OSA are prone to airway closure for a number of reasons. First, they have a smaller airway opening than those without OSA. They also have changes in the muscles surrounding the airway that make it more collapsible than normal. People who are obese or have a large neck circumference are at particular risk of airway closure because of the excess tissue that may compress the airway opening further. When awake, patients with OSA are able to keep the collapsible airway open, but when they are asleep, the airway muscles relax, putting the patient at risk of airway closure.

Once the airway is closed, breathing stops. After a certain period of breathlessness, the patient is stimulated to take a deep breath, resulting in snoring or gasping and awakening. After a few recovery breaths, the patient returns to sleep, and the cycle begins again.

Obstructive Sleep Apnea: Recognition and Diagnosis
OSA should be suspected in anyone who is excessively fatigued during the day and is known to snore, gasp, or choke while sleeping. There are many sleep disorders that can manifest with similar symptoms, and, therefore, snoring and fatigue alone do not diagnose OSA.

If OSA is suspected, evaluation by healthcare professionals, specifically a primary care physician and a sleep specialist, is necessary for consideration of further testing. Traditionally, a sleep study, called polysomnography, is required for diagnosis. This test involves an overnight stay in the laboratory, during which time a patient’s brain waves, eye movements, muscle movements, heart rhythm, and blood oxygen levels are monitored while he or she sleeping. This test can detect particular breathing patterns and changes in brain waves that are required to make the diagnosis. In addition to these documented episodes, the patient must also have symptoms of OSA, for example, as indicated by a high score on the Epworth sleepiness scale (http://epworthsleepinessscale.com/1997-version-ess/).

Recently, there has been development of home sleep study kits. The benefit of portable diagnostic kits is convenience, because the test can be performed in the comfort of one’s home and does not require an overnight stay in the laboratory. However, these kits are not as accurate as and do not include all of the measurements taken in the sleep laboratory. They also do not provide an opportunity to guide treatment.

Obstructive Sleep Apnea: More Than Snoring
OSA has many negative health outcomes on multiple parts of the body. There is a strong link between OSA and cardiovascular disease, specifically hypertension (high blood pressure), coronary artery disease (heart attacks), and many other health issues.
stroke, irregular heart rhythms, and even aortic aneurysms or dissection. In addition, there is an association between OSA and insulin resistance, which causes diabetes mellitus, and itself leads to many negative health outcomes. Last, there are many important neurological and psychological changes that occur with OSA and adversely affect performance, safety, and quality of life. People with OSA may have decreased attention, concentration, and vigilance. They also have impaired motor skills and memory, which increases the risk of motor vehicle accidents. These consequences of OSA make it a significant and important chronic medical condition that deserves attention by both patients and physicians.

Obstructive Sleep Apnea: What You and Your Doctor Can Do

There are a number of risk factors that predispose to the development of OSA, many of which are amenable to modification (see Table). Those risk factors that cannot be modified should still be recognized, so that those at high risk can be evaluated for OSA. For example, research shows that OSA is more common among men and Hispanics. Older age increases the risk of OSA, but the risk remains constant once age 60 years is reached.

Other risk factors, such as obesity, smoking, and alcohol use, are amenable to behavioral modifications and demand additional attention. Along with obesity, bigger neck circumference portends a much higher risk of OSA (≤20 times) in comparison with those with a neck circumference <43 cm. Weight loss, either medical or surgical, can have powerful effects on OSA. A 10% weight loss can decrease the incidence of breathless episodes by ≈25%, and even more importantly can combat many of the adverse outcomes of OSA. For example, weight loss can decrease blood pressure, insulin resistance, and cholesterol levels. Smoking cessation, refraining from alcohol or sedatives (particularly at night), and sleeping on one’s side (rather than on one’s back) can also help with some of the symptoms of mild OSA.

Table. Lifestyle Modifications for OSA

<table>
<thead>
<tr>
<th>Modification</th>
<th>Modifiable action</th>
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</thead>
<tbody>
<tr>
<td>Obesity and increased neck circumference</td>
<td>Strategies to lose weight: Exercise: at least 30 minutes per day for 6 days per week Dietary changes: eg, low-carbohydrate, low-fat, portion control Weight loss and diet program: eg, Weight Watcher’s, Jenny Craig, South Beach Advice from a nutritionist or dietician Individual or group therapy Prescription medications*: orlistat, lorcaserin Weight reduction surgery (often called gastric bypass surgery)†</td>
</tr>
<tr>
<td>Cigarette smoking</td>
<td>Tools to quit: Smoking cessation groups or group therapy Telephone quit lines (eg, 1-800-QUIT-NOW) Text message or Web-based computer assistance programs (eg, SmokefreeTXT, QuitSTART App, Smokefree.gov) Over-the-counter nicotine replacement therapy: gum, patch, lozenges, sublingual tablet, inhaler, nasal spray, mouth spray Prescription medications*: bupropion, varenicline Electronic cigarettes (highly controversial)</td>
</tr>
<tr>
<td>Excessive alcohol or sedative use, particularly at night</td>
<td>Tools to quit: Alcoholics Anonymous or other 12 step programs Behavioral therapy Detoxification programs‡ Rehabilitation programs (inpatient or outpatient)‡ Prescription medications*: naltrexone, acamprosate, disulfiram</td>
</tr>
<tr>
<td>Sleeping supine (on the back)</td>
<td>Sleep in the lateral (side) or prone (stomach) position</td>
</tr>
</tbody>
</table>

OSA indicates obstructive sleep apnea.

*The use of prescription medications should be decided on by your primary care physician or other healthcare providers.
†Gastric bypass surgery requires consultation from a multidisciplinary team to determine whether a patient qualifies and would benefit from weight loss surgery.
‡If addicted to alcohol, complete cessation should be done in an observed medical setting because of the risks of alcohol withdrawal. If concerned, please contact your doctor.
machine. This device consists of a facemask or nosepiece that continually blows air through the nose or mouth to tent open the airways and prevent collapse. Some patients find this machine uncomfortable, but there are several different types of facial appliances that may improve comfort.

The benefits of CPAP are vast, and therefore, finding a machine that is tolerable is important. CPAP has been shown to reverse the breathless episodes immediately. It can also decrease daytime sleepiness and improve mood, alertness, and quality of life, in addition to improving blood pressure and blood sugar levels. Determining the proper settings for the CPAP machine typically requires a sleep study in the sleep laboratory, but there are also CPAP machines that are able to automatically determine the appropriate pressure, removing the need for a sleep laboratory evaluation. Treatment with a CPAP machine has become the cornerstone of OSA management and is considered primary therapy for patients with OSA.

There are other treatment options that may also be considered, particularly for those who cannot tolerate CPAP machines. There are a number of oral appliances prescribed by dentists that can reposition the jaw to minimize airway collapse, and these devices can be used in mild to moderate OSA. The Provent device is a nasal piece that uses the patient’s breath to provide positive pressure to keep the airway open. It works in a fashion similar to the CPAP machine but does not require a mask or a machine and is available by prescription. Last, there are several surgical options that require consultation from a head and neck surgeon. These procedures are more invasive than the CPAP machine and have varying degrees of success.

OSA is a common, serious, and chronic disease that remains underdiagnosed. Given the multiple negative health outcomes from OSA, diagnosis and subsequent treatment are increasingly important.

Disclosures
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Additional Resources
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