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Are You Sleep-Deprived?

Learn More About Healthy Sleep

Is it difficult for you to fall asleep or stay asleep through the night? Do you wake up feeling tired? Do you feel sleepy during the day, even if you think you've had enough sleep? You might have a sleep disorder. There are many treatments for sleep disorders and ways to make sure you are getting enough healthy sleep.

A variety of conditions plague the sleep of Americans. These sleep disorders include:

- sleep apnea (a condition that causes pauses in breathing, shallow breaths, and occasionally snoring during sleep)
- insomnia (trouble falling or staying asleep)
- restless legs syndrome
- narcolepsy (extreme daytime sleepiness), and
- parasomnias (abnormal sleep behaviors).

Add to those challenges the demands of daily life that require many people to cut short the hours they spend sleeping each night, and the sleep problem becomes even greater, according to Michael J. Twery, Ph.D., director of the National Center on Sleep Disorders Research in NIH's National Heart, Lung, and Blood Institute (NHLBI).

The alarm bell for sleep disorders is that unlike many other medical conditions, your healthcare provider depends on you to explain the problem, which occurs in the privacy of your bedroom while you are sleeping. There is no pain associated with sleep disorders. Instead, people often have daytime symptoms, such as a morning headache or daytime sleepiness. There is no blood test to help diagnose a sleep

disorder. Instead, successful diagnosis depends on the patient. It is important to discuss your symptoms with your physician so he or she can help you determine if you have sleep apnea or another sleep disorder.

"As many as 30 percent or more of U.S. adults are not getting enough sleep," says Dr. Twery. Chronic sleep loss and sleep disorders are estimated to cost the nation as much as \$16 billion in healthcare expenses and \$50 billion in lost productivity.

The consequences can be severe. Drowsy driving, for example, is responsible for an estimated 1,500 fatalities and 40,000 nonfatal injuries each year.

"It's actually quite serious," says Daniel Chapman, Ph.D., MSc, at the Centers for Disease Control and Prevention (CDC). "Drowsy driving was implicated in about 16 percent of fatal crashes and about 13 percent of crashes resulting in hospitalization."

Dr. Chapman says sleep is as important to health as eating right and getting enough physical activity. And research has been finding that lack of sleep—like poor diet and lack of physical activity—has been associated with weight gain and diabetes.

Sleep Disorder Symptoms

Look over this list of common signs of a sleep disorder, and talk to your healthcare provider if you have any of these signs on three or more nights a week:

Photo: Dr. Michael Twery



Michael J. Twery, Ph.D.,
director of the National Center
on Sleep Disorders Research

- It typically takes you more than 30 minutes to fall asleep at night.
- You awaken frequently in the night and have trouble falling back to sleep.
- You awaken too early in the morning.
- You often don't feel well rested despite spending seven to eight hours or more asleep at night.
- You feel sleepy during the day and fall asleep within five minutes if you have an opportunity to nap, or you fall asleep unexpectedly or at inappropriate times during the day.
- Your bed partner reports that you snore loudly, snort, or make choking sounds while you sleep, or your partner notices your breathing stops for short periods.
- You have creeping, tingling feelings in your legs that are relieved by moving or massaging them, especially in the evening or when you try to fall asleep.
- You have vivid, dreamlike experiences while falling asleep or dozing.
- You have episodes of sudden muscle weakness when you are angry or fearful, or when you laugh.
- You feel as though you cannot move when you first wake up.
- Your bed partner notes that your legs or arms jerk often during sleep.
- You regularly depend on wake-promoting products, such as caffeinated beverages, to stay awake during the day.

Also keep in mind that the symptoms of a sleep problem in children can be complicated. Some children may show signs of excessive daytime sleepiness, while others may not do their best in school. Discuss such symptoms with a physician.

The need for sleep may be nine hours or more a night as a person goes through adolescence. At the same time, there is a natural biological tendency for young adults to show a preference for a later bedtime and a later wake time in the morning. This natural tendency to start sleeping later can conflict with daytime schedules, leading to insufficient sleep.

“We think that as many as 70 percent of adolescents are not obtaining enough sleep, according to survey data from the Centers for Disease Control and Prevention,” says Dr. Twery.

The Importance of Sleep

Many people view sleep as merely a “down time,” when their brains shut off and their bodies rest. People may cut back on sleep, thinking it won't be a problem, because other responsibilities seem much more important. But research shows that a number of vital tasks carried out during sleep help people stay healthy and function at their best.

While you sleep, your brain is hard at work forming the pathways necessary for learning and creating memories and new insights. Without enough sleep, you can't focus and pay attention or respond quickly. A lack of sleep may even cause mood problems. Growing evidence shows that a chronic lack of sleep can also increase your risk of obesity, diabetes, cardiovascular disease, and infections.

Despite growing support for the idea that adequate sleep, like adequate nutrition and physical activity, is vital to our well-being, people are sleeping less. The nonstop “24/7” nature of the

world today encourages longer or nighttime work hours and offers continual access to entertainment and other activities. To keep up, people cut back on sleep.

A common myth is that people can learn to get by on little sleep (such as less than six hours a night) with no negative effects. Research suggests, however, that adults need at least seven to eight hours of sleep each night to be well rested. Indeed, in 1910, most people slept nine hours a night. Recent national surveys show that 30 percent of U.S. adults sleep fewer than seven hours a night. As many as 30 percent of adults also report daytime sleepiness so severe that it interferes with work, driving, and social functioning at least a few days each month.

Evidence from other national surveys indicate that 70 percent of adolescents sleep less than the recommended 8 to 9 hours each night. Lack of sleep may have a direct effect on children's health, behavior, and development.



Diagnosing Sleep Disorders

Depending on your symptoms, it may help you to gather information on your sleep behaviors. Your healthcare provider will review this information and consider several possible tests when trying to diagnose a sleep disorder:

Sleep history and sleep log. If you believe you have a sleep problem, consider keeping a sleep diary and bringing it to your next medical appointment. Your physician will ask you how many hours you sleep each night, how often you awaken during the night and for how long, how long it takes you to fall asleep, how well rested you feel upon awakening, and how sleepy you feel during the day. If you don't already keep a sleep diary, your health professional may ask you to keep one for a few weeks. (See sample sleep diary on page 21.) Your provider also may ask you whether you have any symptoms of a sleep disorder, such as loud snoring, snorting or gasping, morning headaches, tingling or unpleasant sensations in the limbs that are relieved by moving them, and jerking of the limbs during sleep. You may want to ask your sleeping partner if you have these symptoms, since you may not be aware of them yourself.

Sleep recording in a sleep laboratory (polysomnogram). A sleep recording or polysomnogram (PSG) is usually done while you stay overnight at a sleep center or sleep laboratory. Electrodes and other monitors are placed on your scalp, face, chest, limbs, and finger. While you sleep, these devices measure your brain activity, eye movements, muscle activity, heart rate and rhythm, blood pressure, and how much air moves in and out of your lungs. This test also checks the amount of oxygen in your blood. A PSG test is painless. In certain circumstances, the PSG can be done at home. A home monitor can be used to record heart rate, how air moves in and out of your lungs, the amount of oxygen in your blood, and your breathing effort.

Multiple sleep latency test (MSLT). This daytime sleep study measures how sleepy you are and is particularly useful for diagnosing narcolepsy. The MSLT is conducted in a sleep laboratory and typically done after an overnight sleep recording (PSG). In this test, monitoring devices for sleep stage are placed on your scalp and face. You are asked to nap four or five times for 20 minutes every two hours during the day. Technicians note how quickly you fall asleep and how long it takes you to reach various stages of sleep, especially REM (rapid eye movement) sleep, during your naps. Normal individuals either do not fall asleep during these short designated naptimes or take a long time to fall asleep. People who fall asleep in less than five minutes are likely to require treatment for a sleep disorder, as are those who quickly reach REM sleep during their naps.



Photo: leopoldphotography.com

At a SleepMed diagnosis and therapy center in Maryland, a participant has his sleep patterns and possible problems diagnosed.

What Are Sleep Studies?

Sleep studies are tests that measure how well you sleep and how your body responds to sleep problems. These tests can help your healthcare provider find out whether you have a sleep disorder and how severe it is. Sleep studies are important because untreated sleep disorders can raise your risk for heart disease, high blood pressure, stroke, and other medical conditions. Sleep disorders also have been linked to an increased risk of injury, such as falling (in the elderly) and car accidents.

Research is helping to improve our understanding of the connection between sleep disorders and the impact of untreated sleep disorders on our physical, mental, and behavioral health. NIH supports a range of sleep-related research that focuses on:

- Better understanding of how a lack of sleep increases the risk for obesity, diabetes, heart disease, and stroke.
- Genetic, environmental, and social factors that lead to sleep disorders.
- The adverse effects from a lack of sleep on body and brain.

Globetrotting to a good night's sleep



A former National Basketball Association (NBA) player and member of the Harlem Globetrotters, David Nash knows the value of a good night's sleep.

That's why, when he began to be troubled by sleep apnea, he talked to his health provider about solutions right away.

Sleep apnea—a condition that causes sufferers to snore, repeatedly awaken, and take in too little oxygen while trying to sleep—affects an estimated 28 million Americans. It is one of the most common and troubling sleep disorders. At least 1 in 10 older adults, and as many as 1 in 5 older adults have sleep apnea.

Like many sleep apnea sufferers, Nash has gotten relief through the use of a continuous positive airway pressure (CPAP) machine, the most common device for treating this problem. With CPAP machines (above), a mask covers the mouth and nose, or sometimes just the nose. The mask is connected to a machine that gently blows air into the throat to keep the airways open. Your healthcare provider will suggest the appropriate treatment based on your individual needs.

When Nash travels as part of his education and outreach work for the National Library of Medicine, he takes the CPAP machine along to make sure he gets a good night's uninterrupted sleep.

To Find Out More

MedlinePlus Sleep Disorders

www.nlm.nih.gov/medlineplus/sleepdisorders.html

NHLBI Your Guide to Healthy Sleep

http://www.nhlbi.nih.gov/health/public/sleep/healthy_sleep.pdf

NHLBI Diseases and Conditions Index (DCI)

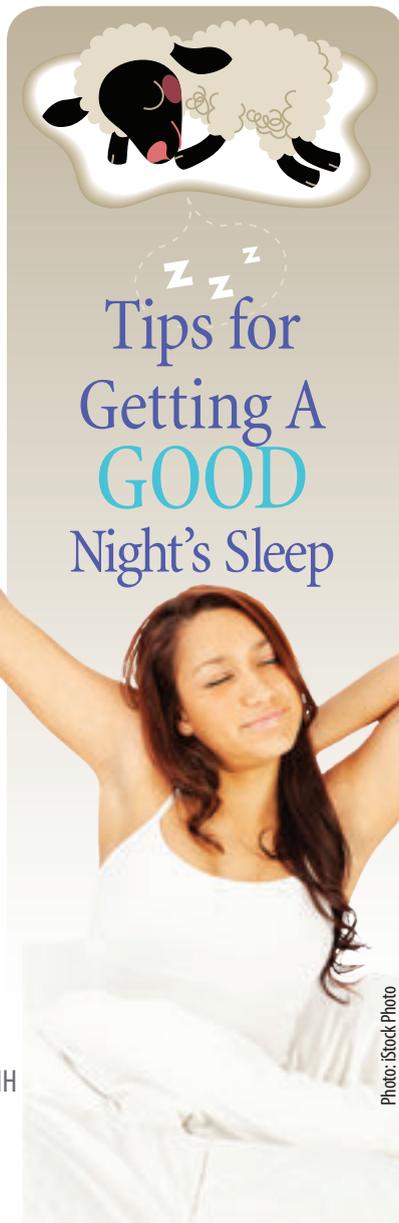
Includes articles on sleep disorders, tests, and procedures, along with videos, podcasts, and Spanish-language articles.

www.nhlbi.nih.gov/health/dci/index.html

NHLBI Health Topics pages for sleep conditions:

- **Sleep Studies:** www.nhlbi.nih.gov/health/health-topics/topics/slpst/
- **Insomnia:** www.nhlbi.nih.gov/health/health-topics/topics/inso/
- **Sleep Apnea:** www.nhlbi.nih.gov/health/health-topics/topics/sleepapnea/

- **Stick to a sleep schedule.** Go to bed and wake up at the same time each day. As creatures of habit, people have a hard time adjusting to changes in sleep patterns. Sleeping later on weekends won't fully make up for a lack of sleep during the week and will make it harder to wake up early on Monday morning.
- **Exercise is great, but not too late in the day.** Try to exercise at least 30 minutes on most days but not later than 2—3 hours before your bedtime.
- **Avoid caffeine and nicotine.** Coffee, colas, certain teas, and chocolate contain the stimulant caffeine, and its effects can take as long as 8 hours to wear off fully. Therefore, a cup of coffee in the late afternoon can make it hard for you to fall asleep at night. Nicotine is also a stimulant, often causing smokers to sleep only very lightly. In addition, smokers often wake up too early in the morning because of nicotine withdrawal.
- **Avoid alcoholic drinks before bed.** Having a "nightcap" or alcoholic beverage before sleep may help you relax, but heavy use robs you of deep sleep and REM sleep, keeping you in the lighter stages of sleep. Heavy alcohol ingestion also may contribute to impairment in breathing at night. You also tend to wake up in the middle of the night when the effects of the alcohol have worn off.
- **Avoid large meals and beverages late at night.** A light snack is okay, but a large meal can cause indigestion that interferes with sleep. Drinking too many fluids at night can cause frequent awakenings to urinate.
- **If possible, avoid medicines that delay or disrupt your sleep.** Some commonly prescribed heart, blood pressure, or asthma medications, as well as some over-the-counter and herbal remedies for coughs, colds, or allergies, can disrupt sleep patterns. If you have trouble sleeping, talk to your healthcare provider or pharmacist to see whether any drugs you're taking might be contributing to your insomnia and ask whether they can be taken at other times during the day or early in the evening.
- **Don't take naps after 3 p.m.** Naps can help make up for lost sleep, but late afternoon naps can make it harder to fall asleep at night.
- **Relax before bed.** Don't overschedule your day so that no time is left for unwinding. A relaxing activity, such as reading or listening to music, should be part of your bedtime ritual.
- **Take a hot bath before bed.** The drop in body temperature after getting out of the bath may help you feel sleepy, and the bath can help you relax and slow down so you're more ready to sleep.
- **Have a good sleeping environment.** Get rid of anything in your bedroom that might distract you from sleep, such as noises, bright lights, an uncomfortable bed, or warm temperatures. You sleep better if the temperature in the room is kept on the cool side. A TV, cell phone, or computer in the bedroom can be a distraction and deprive you of needed sleep. Having a comfortable mattress and pillow can help promote a good night's sleep. Individuals who have insomnia often watch the clock. Turn the clock's face out of view so you don't worry about the time while trying to fall asleep.
- **Have the right sunlight exposure.** Daylight is key to regulating daily sleep patterns. Try to get outside in natural sunlight for at least 30 minutes each day. If possible, wake up with the sun or use very bright lights in the morning. Sleep experts recommend that, if you have problems falling asleep, you should get an hour of exposure to morning sunlight and turn down the lights before bedtime.
- **Don't lie in bed awake.** If you find yourself still awake after staying in bed for more than 20 minutes or if you are starting to feel anxious or worried, get up and do some relaxing activity until you feel sleepy. The anxiety of not being able to sleep can make it harder to fall asleep.
- **See a health professional if you continue to have trouble sleeping.** If you consistently find it difficult to fall or stay asleep and/or feel tired or not well rested during the day despite spending enough time in bed at night, you may have a sleep disorder. Your family healthcare provider or a sleep specialist should be able to help you, and it is important to rule out other health or emotional problems that may be disturbing your sleep.



—Source: *Your Guide to Healthy Sleep*,
National Heart, Lung, and Blood Institute, NIH

One of the best ways you can tell if you are getting enough good quality sleep, and whether you have signs of a sleep disorder, is by keeping a sleep diary. Use this sample diary to get started. —Source: NHLBI



Cut and Carry

Sample Sleep Diary								
Name								
Complete in the Morning	Today's date (include month/day/year):	Mon*	Tues	Wed	Thurs	Fri	Sat	Sun
	Time I went to bed last night:	11 p.m.						
	Time I woke up this morning:	7 a.m.						
	No. of hours slept last night:	8						
	Number of awakenings and total time awake last night:	5 times 2 hours						
	How long I took to fall asleep last night:	30 mins.						
	How awake did I feel when I got up this morning? 1—Wide awake 2—Awake but a little tired 3—Sleepy	2						
Complete in the Evening	Number of caffeinated drinks (coffee, tea, cola) and time when I had them today:	1 drink at 8 p.m.						
	Number of alcoholic drinks (beer, wine, liquor) and time when I had them today:	2 drinks 9 p.m.						
	Nap times and lengths today:	3:30 p.m. 45 mins.						
	Exercise times and lengths today:	None						
	How sleepy did I feel during the day today? 1—So sleepy had to struggle to stay awake during much of the day 2—Somewhat tired 3—Fairly alert 4—Wide awake	1						
* This column shows example diary entries—use as a model for your own diary notes								

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