HARVARD MEDICAL SCHOOL

Harvard Women's Health Watch

VOLUME 13 • NUMBER 5 | JANUARY 2006

Six for 2006: Six reasons not to scrimp on sleep

For good health, you need adequate sleep as much as you need regular exercise and a sensible diet. Here's why.

For several years, the National Sleep Foundation and other health organizations have been reminding us that we don't get as much sleep as we used to—or as much as we should—and we're paying the price in drowsiness and fatigue that affect our physical and mental health and threaten public safety. Despite such warnings, not much has changed.

The National Sleep Foundation's most recent survey found that, compared with 1998, more people are sleeping less than six hours a night. Average sleep on work nights is 6.8 hours—still short of a good night's rest. And sleep difficulties, the poll indicates, visit 75% of us at least a few nights per week. Women are especially affected: They report more trouble sleeping than men do, and they are more likely to feel sleepy during the day.

How serious is the problem? Evidence from the relatively new field of sleep medicine suggests that truncated sleep may contribute to various ills, including memory lapses, trouble learning and paying attention, heart disease, obesity, mood problems, and impaired immunity. Some research suggests a cancer connection.

A sleepless night or two or a short-lived bout of insomnia is generally nothing to worry about. The bigger concern is chronic partial sleep loss—that is, failing to get enough sleep night after night. That can happen because you have a medical condition that interferes with sleep, or perhaps you've given up sleep time to accommodate life's demands. Whatever the case, routine sleep loss can take a toll. Researchers have found that after two weeks, people sleeping four to six hours a night are as cognitively impaired as those who have been awake for two or three days.

How much sleep do we need? Some of us seem to do well with six hours a night, while others need nine or more to feel their best. Judging by clinical impressions, experiments, and research in which subjects are allowed to find their "natural" amount of sleep, experts believe that seven to nine hours is about right. The goal is to wake up feeling refreshed and to stay awake and alert throughout the day without relying on stimulants or other pick-me-ups.

Though more research is needed to explore the links between chronic sleep loss and specific health consequences, it's safe to say that sleep is too important to shortchange. So in case you haven't already resolved to make 2006 the year you get better sleep, here are six reasons to consider doing so.

1 Learning and memory

Sleep helps the brain commit new information to memory by way of a process called memory consolidation. This process came to light largely through experiments in which subjects were trained to complete a cognitive task and later tested. Those who "slept on it" before the test usually did better. In some studies, subjects discovered more insightful or creative ways to problem-solve after a night's sleep. Research at Harvard has shown that performance on some mental tasks is correlated with the amount of REM (rapid eye movement) or dreaming sleep a subject gets. Other experiments suggest a special role for early-night, non-REM sleep in consolidating memory for facts. ▸▸

IN THIS ISSUE

Ways to get better sleep

- Get regular exercise, but not within three hours of bedtime.
- Don't use alcohol as a sleep aid.
- Avoid caffeine from noon or midafternoon onward.
- Be careful about taking medications that contain ingredients that could keep you awake at night or make you sleepy during the day.
- Establish regular times for going to bed and getting up, and avoid napping.
- Keep your bedroom temperature comfortable (cool is better than warm).
- If you have a chronic sleep problem, talk to your clinician or other professional.

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P.O. Box 9308
Big Sandy, TX 75755-9308
Subscriptions $32 per year (U.S.)
Bulk subscriptions
Consumer Health Publishing Group
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Stamford, CT 06901
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Published by Harvard Health Publications, a division of Harvard Medical School
Editor in Chief Anthony L. Komaroff, M.D.
Publishing Director Edward Coburn

(ISSN 1070-910X) Proceeds support the research efforts of Harvard Medical School.
Harvard Health Publications
10 Shattuck St., Suite 612, Boston, MA 02115

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2 Metabolism and weight

It's well known that excess weight can cause sleep disorders such as apnea. But sleep lab studies also suggest the reverse possibility: Chronic sleep deprivation may cause weight gain. How? By altering metabolic functions, such as processing and storage of carbohydrates, and by stimulating the release of excess cortisol, a stress hormone. Excess cortisol has been linked to increased abdominal fat. Loss of sleep also reduces levels of leptin, a hormone that suppresses appetite, and increases levels of ghrelin (GRELL-in), an appetite-stimulating hormone—a combination that can encourage eating.

3 Safety

There's no evidence that we ever really adapt to chronic sleep deficits. Sleep debt only contributes to a greater tendency to fall asleep, including "microsleeps"—seconds-long daytime dips into sleep that occur when sleep-type brain-wave activity impinges on the waking kind. These lapses may cause falls and mistakes such as medical errors, air traffic mishaps, and road accidents. The National Highway Traffic Safety Administration estimates that each year, drowsiness causes 100,000 vehicle crashes, resulting in 76,000 injuries and 1,500 deaths.

How sleepy are you?

Clinicians and researchers often use the questionnaire below, called the Epworth Sleepiness Scale, to measure sleep deprivation. It asks, How likely are you to doze off or fall asleep in the following situations? Score yourself with the following values:

0 = no chance
1 = slight chance
2 = moderate chance
3 = high chance

Situation	Score
Sitting and reading	
Watching television	
Sitting inactive in a public place	
Passenger in a car for an hour without a break	
Lying down to rest in the afternoon	
Sitting and talking to someone	
Sitting quietly after lunch without alcohol	
Stopped in a car for a few minutes in traffic	
Total	

A score of 9 or more suggests that you have a sleep problem. Consult your clinician or a sleep specialist.

4 Mood/quality of life

Sleep loss, whether long- or short-term, may result in symptoms—irritability, impatience, inability to concentrate, and moodiness—that suggest psychological problems such as anxiety and depression. Too little sleep can leave you so tired that you don't want to spend time with your children, enjoy the company of your friends, or have sex with a partner. Poor sleep also affects the ability to work. Sleep disorders such as insomnia and obstructive sleep apnea are associated with depression, although the relationship is complex, and cause and effect are not always clear. One study found that people with obstructive sleep apnea got relief from symptoms of depression when they were treated with a continuous positive airway pressure (CPAP) device, which keeps the airway open and improves breathing during sleep.

5 Cardiovascular health

We don't know much yet about the effect of chronic partial sleep loss on cardiovascular health. But serious sleep disorders such as insomnia and sleep apnea have been linked to hypertension, increased stress hormone levels, cardiac arrhythmias, and increased inflammation. Sleep apnea is also associated with difficulty metabolizing glucose, which may lead to type 2 diabetes, another significant risk factor for heart disease. In the Nurses' Health Study, women who slept less than five (or more than nine) hours per night were more likely to develop heart disease than those who slept seven to eight hours.

6 Immunity/cancer prevention

Though all the mechanisms aren't clear, scientists have found that sleep deprivation alters immune function, including the activity of the body's killer cells. For example, sleep loss around the time of vaccination for influenza has been shown to reduce the pro-

duction of flu-fighting antibodies. Keeping up with sleep may also help fight cancer. Harvard researchers have shown that women who work at night are at increased risk for breast and colon cancer. The connection may be through melatonin, a hormone that's made by the brain's pineal gland when darkness falls and helps put us to sleep; light at night cuts melatonin production. The Harvard scientists also found that women with low morning levels of melatonin had a higher risk of breast cancer. Other research has shown that melatonin slows ovarian production of estrogen, a hormone that spurs cancer cell growth.

Recommended reading

Say Goodnight to Insomnia: The Six-week, Drug-free Program Developed at Harvard Medical School, by Gregg D. Jacobs, Ph.D. (Henry Holt and Co., 1998).

IN BRIEF

Experts issue new immunization guidelines

Immunization is not just for children and travelers—and it's not just about getting a flu shot. Adults are vulnerable to complications caused by many diseases vaccines can prevent. Women, in particular, benefit from vaccinations. They live longer than men, so they have a greater chance of being exposed to infectious disease in later life. They're also more likely to work in health care, education, and child care, where they're at risk for whooping cough (pertussis), hepatitis B, measles, mumps, rubella, and chickenpox (varicella), as well as influenza.

In October 2005, the Advisory Committee on Immunization Practices (ACIP), which makes recommendations to the Centers for Disease Control and Prevention, issued an updated schedule of adult immunizations (see below). It also voted to recommend routine vaccination of adults against whooping cough, which is on the rise in the United States. Adults ages 19–64 would be vaccinated with a newly formulated tetanus-diphtheria-pertussis (Tdap) vaccine. (Tdap would replace the current tetanus-diphtheria, or Td, vaccine.)

Recommended adult immunization schedule 2005–2006

Vaccine	Indications/comments
Tetanus, diphtheria (Td)*	All adults. Booster every 10 years. Adults with uncertain vaccination histories should receive a primary series of 3 doses (first 2 doses at least 4 weeks apart and a third dose 6–12 months later).
Measles, mumps, rubella (MMR)	Adults born after 1956 who are uncertain of their immune status. Usually 1 dose; 2 doses for college students, health care workers, adults recently exposed to measles, and international travelers. MMR should not be given to pregnant women and women who might become pregnant within the next month.
Varicella	Adults ages 19–49 who have not had chickenpox or have not been determined to have antibodies to varicella. Two doses 4–8 weeks apart. Age 50 and over, only necessary in those with medical, occupational, or lifestyle risk factors. Do not take if allergic to gelatin or neomycin. Should not be given to pregnant women, women who might become pregnant within the next month, or people infected with HIV.
Influenza	Adults ages 50 and over; younger adults with chronic cardiovascular, pulmonary, kidney, liver, or immunosuppressive disease or diabetes; health care workers; and women who are pregnant during flu season. One dose annually. Should not be given to anyone who is allergic to chicken eggs. Healthy adults under age 50 (and not pregnant) may opt for intranasal vaccine (FluMist).
Pneumococcal (polysaccharide)	Adults ages 65 and over; younger adults with chronic cardiovascular, pulmonary, kidney, liver, or immunosuppressive disease or diabetes. Usually 1 dose. For at-risk adults, 1 dose followed by a second dose 5 years later.
Additional vaccinations for special risk groups	
Hepatitis A	Adults with chronic liver disease or blood clotting disorders; health care workers; laboratory workers who work with hepatitis A; travelers to certain countries.** Two doses 6–12 months apart.
Hepatitis B	Adults who are on hemodialysis or who have blood clotting disorders; health care workers; travelers to certain countries.** Three doses (second dose 1–2 months after the first dose and a third dose 2–4 months later). Not recommended for people highly allergic to baker's yeast.
Meningococcal	College freshmen living in dormitories; adults with no functioning spleen or with hereditary terminal complement component deficiency; military recruits; travelers to certain countries.** One dose; revaccinate after 5 years if risk of disease continues.

* After the 2005–2006 adult immunization schedule was released, the ACIP issued a recommendation that adults ages 19–64 receive the newly licensed tetanus-diphtheria-pertussis (Tdap) vaccine, rather than Td.

** Information about diseases related to travel is available at www.cdc.gov/travel/diseases.htm.

Source: Adapted from the Recommended Adult Immunization Schedule—United States, October 2005–September 2006, Centers for Disease Control and Prevention, available at www.cdc.gov/nip/recs/adult-schedule.htm.

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