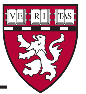

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Harvard Men's Health Watch

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Chocolate and your health: Guilty pleasure or terrific treat?

It's an old story, very old, in fact. Forbidden fruits taste the best. The apple in Eden may have started it all, but there are many modern equivalents, ranging from juicy burgers and crispy fries to salty snacks and fine cigars. But science and experience can also move things from column A to column B. Far from being a guilty pleasure, alcohol, for example, can actually promote health if the dose is right (low) and the drinker is responsible. The same is true for nuts. On the other side of the coin, many people who think of exercise as a painful duty actually can come to experience it as pleasurable (see *Harvard Men's Health Watch*, May 2007).

What about chocolate? Does it deserve its bad rap, or is it the latest thing in health foods? As for many complex questions, the answer is both, since the consequences of eating chocolate depend largely on the type of chocolate and the amount you consume.

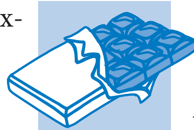
A taste of history

It all begins with the cacao tree, which originated in Central America more than 4,000 years ago and has been cultivated by humans for more than 1,000 years. The Aztecs and the Mayans were fond of the tree, believing that the seeds were a divine gift from paradise. Both groups used the cacao in religion and commerce; as currency, 100 beans had the value of one slave.

Chocolate was among the earliest American exports. Cortéz brought cacao beans to Spain in the early 16th century. The Spaniards added sugar and cinnamon to the bitter Indian drink, and the rest is history. The cacao tree is now grown in equatorial regions of Africa and Asia as well as in the Americas, which still produce some of the world's cacao beans.

Beans to bars

Chocolate doesn't grow on trees, but cacao beans do. After harvesting, the beans are dried for several days and then roasted. Next, the beans are opened, the shells are discarded, and the nibs are ground and separated into cocoa butter and cocoa powder. The powder is low in fat and is used for baking or to make hot chocolate, while the cocoa butter is the heart of the chocolate we eat.



Cocoa butter is dark and rich, but it tends to be bitter. To increase its appeal, confectioners process it further. One popular method is called Dutch processing; it makes the color lighter, but it also removes many of the ingredients that appear beneficial. To make chocolate sweeter, manufacturers add sugar, which also adds calories. And to make milk chocolate, candy makers really do add milk solids, which include saturated fats. According to FDA standards, American milk chocolate can contain as little as 10% cocoa, and the agency is debating a proposal to allow candy makers to substitute vegetable oil for cocoa butter. Bottom line: processing may make chocolate look lighter and taste sweeter, but it also removes healthy ingredients and adds harmful ones.

A bite of chemistry

The cacao bean is devilishly complex, containing more than 400 chemicals. Many of them can affect human biology and health.

Fats. Cocoa butter is high in fat. It's what gives chocolate its tempting texture and "mouth feel"—but it's also what gives chocolate its bad name. Although it's true that the fat packs in a lot of calories, it's not guilty of the charge that it boosts blood cholesterol levels. ▸▸

Inside

Insomnia: Restoring restful sleep
Are you getting enough sleep? If not, you can take steps to remedy the problem. 4

On call
Selenium and vitamin E for prostate cancer: From hope to nope. 8

In future issues

Lifestyle prevention: Does it work? And why?

Climate change and your health

Genetic screening for prostate cancer

Sexuality and seniority

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EDITORIAL CORRESPONDENCE

E-mail: mens_health@hms.harvard.edu
Letters: *Harvard Men's Health Watch*, 10 Shattuck St., 2nd Floor, Boston, MA 02115

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About a third of the fat in cocoa butter is *oleic acid*, the very same monounsaturated fat that gives olive oil its good name. Another third is *stearic acid*; it is a saturated fat, but unlike the three other saturated fats in the human diet, stearic acid does not raise cholesterol levels because the body can metabolize it to oleic acid. And while chocolate also contains some *palmitic acid*, a saturated fat that does boost cholesterol, careful studies show that eating chocolate does not raise blood cholesterol levels.

Flavonoids. The humble cacao bean contains a number of chemicals in the flavonoid family. *Polyphenols* protect chocolate from turning rancid, even without refrigeration. Even more important are the *flavanols*, a group of chemicals that are responsible for many of the protective actions of chocolate. Flavanols are present in many healthful foods—but dark chocolate is the richest source (see table).

Amino acids. Chocolate is high in *tryptophan, phenylalanine,* and *tyrosine*. Like other amino acids, these nitrogen-rich compounds are the building blocks of all the body's proteins. But two of these amino acids have a unique property: they are precursors of *adrenaline*, a "stress hormone," and *dopamine*, a neurotransmitter that relays signals between nerve cells in the brain. Scientists postulate that dopamine induces feelings of pleasure; if so, the passionate craving of the true chocoholic may have a neurochemical basis. But these chemicals may also explain some of the adverse effects of chocolate, including its ability to trigger headaches in some migraine sufferers, its ability to raise blood pressure to dangerous levels in some patients taking *monoamine oxidase inhibitors* for depression, and its ability to instigate diarrhea, wheezing, and flushing in patients with *carcinoid tumors*, which are rare.

Methylxanthine. Chocolate contains two members of this group of chemicals. One is obscure, the other notorious—but both *theobromine* and *caffeine* have similar effects on the body. They may explain why chocolate makes some hearts beat faster—and why it gives many people heartburn by relaxing the muscle between the stomach and the esophagus, thus allowing acid to reflux up from the stomach into the sensitive "food pipe."

Flavanol content of select foods

Food	Flavanol content
Dark chocolate	510 mg/100 g
Apples	111 mg/100 g
Cherries	96 mg/100 g
Black tea	65 mg/100 ml
Red wine	63 mg/100 ml

Source: Hannum, SM, et al. *Nutrition Today* 2002;37:104.

Blooming chocolate

Roses and chocolate are typical tokens of love. Romantics expect their flowers to bloom, but they may be surprised that chocolate can bloom, too.

The problem is most common with milk chocolate. A typical milk chocolate bar contains about 30% cocoa and cocoa butter, 20% milk solids, and 50% sugar. It's a heady mix, and over time the components can shift. If the cocoa butter migrates to the surface, it produces a whitish coating, which confectioners call a bloom. The odd appearance has no effect on flavor or health—but it confirms nutritionists' belief that milk chocolate is a blooming shame.

Sweet science

The flavonoids have many properties that might improve health. To see if they really work, researchers have studied foods ranging from apples to onions, and from tea to wine. And it's no surprise that chocolate has attracted the interest of scientists from around the world, giving the research an international flavor. Most studies concentrate on aspects of cardiovascular health; here are some representative findings:

Antioxidant activity. Antioxidants protect many of the body's tissues from

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damage by oxygen free radicals. Among other beneficial actions, flavonoids protect LDL cholesterol from oxidation, which puts the "bad" into "bad cholesterol." Here are two examples. Scientists from Italy and Scotland fed dark chocolate, milk chocolate, or dark chocolate and whole milk to healthy volunteers. Dark chocolate boosted the volunteers' blood antioxidant activity, but milk, either in the chocolate or a glass, prevented the effect. Similarly, researchers in Finland and Japan found that dark chocolate reduces LDL oxidation while actually increasing levels of HDL ("good") cholesterol, but white chocolate lacks both benefits.

Endothelial function. The endothelium is the thin inner layer of arteries. It's responsible for producing *nitric oxide*, a tiny chemical that widens blood vessels and keeps their linings smooth. Can chocolate help? Doctors in Greece think it may. They fed 100 grams (about 3½ oz) of dark chocolate to 17 healthy volunteers and observed rapid improvement in endothelial function. Swiss investigators found similar effects from dark chocolate but no benefit from white chocolate. German scientists reported that flavanol-rich cocoa can reverse the endothelial dysfunction produced by smoking, and European doctors reported that dark chocolate appears to improve coronary artery function in heart transplant patients. There's good news for nonsmoking, original-heart men, too, since Harvard researchers found that cocoa can blunt the endothelial dysfunction associated with aging.

Blood pressure. Because good endothelial function widens blood vessels, it's logical that chocolate might help lower blood pressure. Studies from Italy, Argentina, Germany, and the U.S. show that dark chocolate can lower blood pressure in healthy adults and in patients with hypertension. A 2007 meta-analysis of five trials that included 173 subjects found that the effect is modest, however, lowering systolic pressure (the higher number recorded, when the heart is pumping blood) and diastolic blood pressure (the lower number, recorded while the heart is resting between beats) by just under 5 millimeters of mercury (mm Hg). The benefit wears off within a few days of stopping "treatment" with a daily "dose" of dark chocolate. And another reality check comes from a six-week 2008 study of 101 healthy adults that did not find any benefit for blood pressure.

Insulin sensitivity. Chocolate is a food that diabetics love to hate, and the sugar and calories give them good reason to eschew it. But an Italian study in nondiabetics suggested that dark, but not white, chocolate can improve insulin sensitivity. However, a small 2008 investigation of flavanol-enriched cocoa in diabetics found no improvement in blood sugar control or blood pressure.

Blood clotting. Most heart attacks and many strokes are caused by blood clots that form on cholesterol-laden plaques in critical arteries. These clots are triggered by platelets; the antiplatelet activity of aspirin explains its important role in patients with coronary artery disease. Researchers in Switzerland and the U.S. found that dark chocolate reduces platelet activation.

From lab to life

International experiments show that dark chocolate has an impressive array of activities: it is an antioxidant that may improve your cholesterol; it improves endothelial function and may lower your blood pressure; it is a sweet that may lower your blood sugar; and its antiplatelet activities could reduce your chances of developing an artery-blocking clot. Taken together, these properties could reduce the risk of heart attack and stroke. But all of these hopeful results are based on short-term experiments in a small number of volunteers. Do these bits and pieces of data apply to real life?

Perhaps.

Two large Harvard studies reported opposite results, but neither focused in on dark chocolate itself. The Harvard Alumni Study, which was limited to men, found that sweets seem to strengthen survival; during a five-year observation period, men who ate candy once or twice a week enjoyed a 27% lower mortality rate than candy abstainers. But even if candy is dandy, the study did not distinguish chocolate from other confections, so it's not possible to ascribe benefit to any particular type of sweet. In contrast, the Nurses' Health Study of women found no link between chocolate consumption and coronary artery disease—but since the study did not distinguish between dark chocolate and other varieties, it could have missed a significant benefit.

The most robust support for chocolate as an asset to health comes from a 2006 report from the widely respected Zutphen Elderly Study. Researchers evaluated 470 Dutch men between the ages of 65 and 84; all were free of diabetes, cardiovascular disease, and cancer when the study began in 1985. Each

The dark side of chocolate

Perhaps because it's so enjoyable, chocolate is blamed for many ills. Indeed, it can trigger migraines or gastroesophageal reflux in susceptible individuals. By increasing the urinary excretion of calcium and oxalate, it can also increase the risk of kidney stones, at least for certain folks. And a 2005 study of 1,460 older women linked daily chocolate consumption to reduced bone density and strength.

On the other hand, there is little scientific support for the widespread belief that chocolate causes acne. But how about another common indictment, tooth decay? In this case, chocolate may be guilty as charged. A study of workers in a Danish chocolate factory provides some indirect support. Although the workers brushed regularly and had regular dental care, only 25% had good oral health.

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volunteer provided comprehensive dietary information, and each underwent a detailed evaluation of his blood pressure, cholesterol, body fat, and other cardiovascular risk factors.

Researchers tracked the men for 15 years. They found that the men who ate the most cocoa-containing products had lower blood pressures than those who ate the least; the average difference was 3.7 mm Hg in systolic pressure and 2.1 mm Hg in diastolic. Those differences may not seen substantial—but even after taking other risk factors into account, the chocolate lovers also enjoyed a 47% lower mortality rate; most of the benefit was explained by a sharply decreased risk of cardiovascular disease. And the largest single source of cocoa was dark chocolate.

Raising the bar

To the ancient Mayans, chocolate was the food of the gods. Many modern Americans agree—but others fear death by chocolate, assuming that anything tasting so good must be bad for you. Is chocolate a divine food or a devilish temptation?

New research suggests that chocolate may indeed have a role in promoting vascular health, but the devil is in the details. The first consideration is the type of chocolate. Dark chocolate appears beneficial, but milk chocolate, white chocolate, and other varieties do not. The second issue is calories. Most trials have used 100 grams of dark chocolate, the equivalent of eating about one-and-a-half chocolate bars of typical size. If you ate that much every day, you'd pack in more than 500 extra calories, enough to gain a pound a week. And if that's not bad enough, remember that chocolate can trigger migraines, heartburn, or kidney stones in susceptible people.

If you're a chocolate lover, choose dark chocolate; the first listed ingredient should be cocoa or chocolate liquor, not sugar. Limit yourself to a few ounces a day, and cut calories elsewhere to keep your weight in line. And don't rely on chocolate to make up for a bad diet or insufficient exercise. But if you make dark chocolate part of a healthy lifestyle, you can have the pleasure without the guilt.

In the past few years, modern science has learned a lot about this ancient food. Even so, more chocolate research is needed. Any volunteers?

Insomnia: Restoring restful sleep

Nearly everyone has spent at least one night lying in bed wishing for sleep. But for many men, it's a nightly struggle. A lucky few get relief from counting sheep, watching late-night movies, or sipping warm milk (or something stronger)—but most people with insomnia need more assistance. Fortunately, lifestyle changes and behavioral treatment can help many sufferers, and medication is available for those who need it.

Normal sleep

Sleep is essential for health, providing rest and restoration for mind and body. But although it's restful, sleep is actually quite complex and busy in its own right.

Sleep is divided into two major phases, rapid eye movement (REM) sleep and non-rapid eye movement (non-REM) sleep. Good sleepers fall asleep quickly, usually in less than 15 minutes. They enter non-REM sleep first, moving gradually from light sleep (Stage 1) to deep sleep (Stage 4). During non-REM sleep, the mind slows down. The circulation slows, too, as the heart rate and blood pressure fall. Breathing is slow and steady. The muscles are relaxed, but body movements do occur.

After about 45 to 60 minutes, sleep shifts into its REM phase. Although the eyes remain closed, they move rapidly in all directions. In contrast, the limb muscles are completely limp and immobile. Breathing is very slow and may even pause briefly. But the brain is turned on; dreaming occurs only during REM sleep. Although the body is entirely relaxed, the heart rate and blood pressure fluctuate from low to high; the heart pumps less blood to the body but more to the brain. The sympathetic nervous system is active, stimulating production of adrenaline, the "stress hormone." Most men develop penile erections during REM sleep.

Sleep deprivation

Insomnia deprives men of restorative sleep, but there are many other causes of sleep deprivation. Shift work is one example of a situation in which people who are capable of sleeping well are unable to get the sleep they need. Whatever the cause, sleep deprivation has predictable consequences, including daytime somnolence, depression and irritability, impaired concentration and judgment, and diminished performance both on the job and off.

Medical interns and residents work long hours; they have reduced time to sleep, and what sleep they get is often interrupted by medical calls. Does it matter? It sure does. Several studies suggest that sleep deprivation is linked to impaired clinical performance, though others show that young doctors can rise to the occasion and solve clinical problems. But even if overworked interns are not hazardous to their patients, they are hazardous to themselves: a 2005 Harvard study found that extended work shifts are linked to falling asleep at the wheel and having car crashes and near-crashes.

Rest assured, whether you are a patient or on the roads, that corrective action has been taken. Work hours for medical trainees are now strictly limited.

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Table 1: Causes of insomnia

- Psychological conditions, including depression, anxiety, stress, and over-stimulation or overload
- Sleep disorders, including obstructive sleep apnea, periodic limb movement disorder, and restless legs syndrome
- Medical illnesses, including gastroesophageal reflux, chronic obstructive lung disease and asthma, congestive heart failure, hot flashes, arthritis and other causes of chronic pain, benign prostatic hyperplasia (BPH) and other urinary conditions, and overactive thyroid
- Neurological disorders, including Parkinson's disease, strokes, and dementia
- Stimulants such as caffeine and nicotine

- Medications, including decongestants, bronchodilators, certain antidepressants, steroids, beta blockers, and diuretics. Improper use of sleeping pills can cause rebound insomnia.

After about 30 to 45 minutes, sleep shifts back from REM to the non-REM pattern. The two states continue to alternate, with four to six 90- to 110-minute cycles occurring during the course of a typical night's sleep.

There is no "normal" amount of sleep; what matters is how well, not how long you sleep. Still, most middle-aged people function best on seven to nine hours of sleep, while others need up to 11 hours. Sleep requirements change during the course of a lifetime; most children need more sleep, most older adults, less.

The body's internal clock

The sleep-wake cycle is controlled by the body's internal clock. Many other bodily functions also wax and wane cyclically in response to the 24-hour circadian rhythm. For example, normal body temperature is lowest at about 5 a.m., when it averages 97° F, and highest at about 5 p.m., when it averages 99.4° F. Similarly, sodium excretion and urine output are normally higher during the day than at night. Hormone levels also fluctuate; cortisol secretion is highest during the morning. Testosterone production peaks in the morning, growth hormone at night. Melatonin, the "dark hormone," is produced by the brain's pineal gland during the night.

The daily cycles of light and darkness help set the body's internal clock. Disturbances in the normal coordination of light and darkness with wakefulness and sleep account for the temporary sleep disturbance of jet lag or the chronic disorders experienced by many shift workers. Travel is a common cause of disturbed sleep today, but similar disturbances originated long before the jet age; Robert Burton got it right way back in 1628 when he said, "Our body is like a clock, if one wheel is amiss, all the rest are disordered . . . with such admirable art and harmony is a man composed."

What is insomnia?

Since there is no "normal" amount of sleep, a diagnosis of insomnia does not depend on the number of hours a person sleeps. Instead, it's defined as an inadequate quantity or quality of sleep that interferes with normal daytime functioning. For some people, insomnia means difficulty in falling asleep, for others it's difficulty in maintaining sleep, and for still others it's early awakening.

Everyone has a rough night or two, and about 30% of adults have occasional or short-term insomnia. Chronic insomnia, though, lasts for more than three weeks. About 10% of American adults experience chronic insomnia, and most need treatment to get relief.

Symptoms

A restless, wakeful night is the most obvious symptom. Although that can be a miserable experience, daytime symptoms are actually more worrisome. They may include sleepiness and fatigue, which sometimes cause car crashes and other accidents. Impaired concentration, grumpiness and irritability, forgetfulness, and depression can also occur. Although insomnia itself does not lead to other medical illnesses, it can take a toll on work, family life, and personal happiness.

What causes insomnia?

Insomnia is not a disease but a symptom. And it's such a common symptom because it has many causes. Table 1 lists some of the things that can shorten sleep, interrupt sleep, or produce poor quality, nonrestorative sleep.

It's a long list; anxiety and depression belong in first place, but obstructive sleep apnea and benign prostatic hyperplasia (BPH) are of particular importance for men. And many people with insomnia don't have any of these underlying conditions. Instead, they have *primary insomnia*. Although doctors don't know what causes primary insomnia, they do know how to help.

Evaluation

There are no specific tests to diagnose insomnia. Still, it's very important for you to have a thorough medical evaluation. Your doctor will check your general health and review your medications and supplements. If there is reason to suspect any of the causes listed in Table 1, he may order lab tests or x-rays. In some cases, you may be asked to have a sleep study (*polysomnography*) or to see a sleep specialist, particularly if sleep apnea is suspected (see box, page 6).

You can help your doctor evaluate your problem by keeping a sleep diary. Table 2 lists the information you should record.

Sleep hygiene

Some simple tips can help you get a good night's sleep:

- Stick to a regular bedtime and rising time.
- Get lots of daylight, but avoid bright light before bedtime. ▸▸

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- Use your bed only for sleeping or lovemaking, never for reading or watching TV. If you can't sleep after 15 to 20 minutes, get out of bed and go into another room. Read quietly with a dim light but don't watch TV, since the full-spectrum light emitted by the tube has an arousing effect. When you feel sleepy, get back into bed—but don't delay your scheduled awaking time to compensate for lost sleep.
- Don't nap during the day unless it's absolutely necessary. Even then, restrict your nap to 15 to 20 minutes in the early afternoon.
- Get plenty of exercise. Build up to 30 to 45 minutes of moderate exercise nearly every day; walking is an excellent choice. Get your exercise early in the day, and then try some stretching exercises or yoga to relax your muscles and your mind at bedtime.
- Wind down late in the day. Whenever possible, schedule stressful or demanding tasks early and less challenging activities later. Establish a regular bedtime and a relaxing bedtime routine, such as taking a warm bath or listening to soothing music.
- Eat properly. Avoid caffeine, especially after mid-afternoon. Try to avoid all beverages after dinner if you find yourself getting up at night to urinate. If you enjoy a bedtime snack, keep it bland and light. Avoid alcohol after dinnertime; although many people think of it as a sedative, alcohol can actually impair the quality of sleep.
- Be sure your bed is comfortable and your bedroom is dark and quiet. It should also be well ventilated and kept at a constant, comfortable temperature. Try using a sleep mask, earplugs, or a white noise machine to compensate for problems in your sleeping environment.
- Above all, don't worry about sleep. Watching the clock never helps. Except when keeping a sleep diary, don't keep track of the amount of time you spend trying to sleep. Instead, just rest quietly and peacefully. Try not to lie in bed reviewing your problems and plans. If you really are overloaded, get out of bed and make a list, then return to bed and think of something relaxing and pleasant.

Treating insomnia: Behavioral therapy

If good sleep hygiene doesn't solve your sleeping problems, behavioral therapy may. Here is a quick summary of some techniques:

Relaxation training. Learn deep breathing, progressive muscular relaxation, or meditation. Relaxing your mind at bedtime will help you drift off to sleep.

Stimulus control therapy. Go to bed only when you are sleepy. Don't read, watch TV, snack, or listen to music in bed. Get up at the same time every day, no matter how little you've slept. Avoid daytime napping.

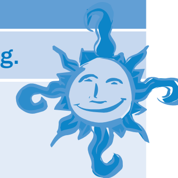
Sleep restriction therapy. Reduce your time in bed to the estimated total time you actually sleep in an average night by going to bed later, but don't go below five hours. Make the change by getting into bed later, not getting up earlier. Get up at the same time every day. Maintain the same bedtime every night for a week, and then move it 15 minutes

Obstructive sleep apnea

Although most people experience short pauses in breathing during REM sleep, individuals with obstructive sleep apnea stop breathing for longer periods. They always resume breathing and they rarely complain of insomnia—but their sleep is so fragmented that they experience as much daytime sleepiness as true insomniacs. Over the long haul, sleep apnea increases the risk of hypertension, heart disease, and stroke. Snoring, restless sleep, and morning headaches are clues to sleep apnea, which is most common in overweight men, especially those with necks that measure 17 inches or more. Good treatments are available, ranging from weight loss to a nighttime breathing mask or even surgery.

Table 2: Your sleep diary

Answer these questions in the evening before going to bed.	Answer these questions in the morning after awakening.
Medications during the day: ____	Bedtime last night: ____
Caffeinated beverages during the day: ____	Approximate time it took to fall asleep: ____
Alcohol during the day; list amount and time: ____	Approximate number of awakenings during the night: ____
Exercise during the day: ____	Reasons for awakening, if known: ____
Sleepiness during the day: ____	Time of awakening for the day: ____
Naps during the day: ____	Level of energy and alertness after washing up in the morning: ____
Food consumed within three hours of bedtime: ____	
Activities within two hours of bedtime: ____	Keep a record like this every day for the week before your checkup, and ask your bed partner or roommate for any observations about your sleep, such as snoring, interrupted breathing, thrashing, and so forth. Be sure to bring your diary to your appointment.



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Sleep, obesity, and health

You'd think that people who sleep less might get more exercise and thus enjoy some protection from obesity. In fact, though, reduced sleeping time has been linked to an increased risk of overweight and obesity. But why? A direct effect is possible, since sleep deprivation decreases levels of *leptin*, a satiety-promoting hormone, and boosts levels of *ghrelin*, an appetite-promoting hormone. But other explanations are possible. Since exercise promotes sleep, people who exercise less may burn fewer calories and also sleep less. Depression can produce disturbances in both sleep and appetite. And obesity can contribute to sleep apnea and disturbed sleep. Clearly, more research is needed to uncover the skinny on sleep and body weight.

Sleep deprivation has also been linked to hypertension, type 2 diabetes, heart attack, and stroke. As in the case of obesity, the link may be direct or indirect, causal or not. In fact, obesity increases the risk of all of these conditions.

earlier every week until you get a satisfying, refreshing amount of sleep. Then maintain the same schedule every day.

Cognitive therapy. Learn to replace negative thoughts about sleep ("I'll never get to sleep tonight;" "I'll be a wreck tomorrow;" "I'll get sick unless I sleep eight hours a night") with positive thoughts ("If I relax peacefully in bed, my body will take care of itself").

Treating insomnia: Supplements

A number of dietary supplements are heavily promoted to improve sleep. None is subject to FDA standards for purity, safety, or effectiveness. The two most popular supplements are melatonin and valerian. Melatonin is a hormone produced by the brain's pineal gland; in low doses, it may have some benefit for temporary insomnia due to jet leg. Valerian is an herb; there is little evidence that it helps.

Treating insomnia: Medications

Sleeping pills are available over the counter or by prescription. Whether you're treating yourself or using a drug prescribed by your doctor, you should follow several basic guidelines:

- Use medication only as a backup to behavioral changes.
- Use the lowest dose that is effective.
- Don't take a pill every night. Instead, use medication only when an uninterrupted night's sleep is really important. Even then, restrict yourself to two to four tablets per week.
- Try to stop using medication after three to four weeks.
- Discontinue medication gradually to avoid rebound insomnia.

Over-the-counter medications. Many brands are available. Most contain antihistamines such as *diphenhydramine* or *doxylamine*. Most sleep experts discourage the use of these products, particularly long-term use. Side effects include daytime sedation, dry mouth, constipation, and difficulty urinating.

Prescription medications. Your doctor will decide if you need a sleeping medication, then determine which drug is best for you and instruct you in its proper use, precautions, and potential side effects. The FDA has recently required stronger warnings about daytime sedation, untoward behavior such as sleep-driving, and allergic reactions. Many medications are available. The older barbiturates and sedatives have been almost entirely replaced by safer and more effective drugs. Certain antidepressants can help promote sleep, particularly if depression is also present. Examples include *trazodone* (Desyrel), *doxepin* (Sinequan and Adapin) and *amitriptyline* (Elavil and others). But doctors today usually choose among three groups of medications:

Benzodiazepines. *Temazepam* (Restoril), *oxazepam* (Serax), *estazolam* (ProSom), and many others. These older drugs were once the mainstays of insomnia therapy. But excessive use can be habit forming, and some of the longer-acting preparations can cause daytime sedation.

Nonbenzodiazepines. *Eszopiclone* (Lunesta), *zaleplon* (Sonata), *zolpidem* (Ambien). These newer medications act on the same receptor in the brain as the benzodiazepines, but they tend to act more quickly and to leave the body faster. They are less likely to cause daytime sedation, habituation, and rebound insomnia.

Melatonin receptor agonist. *Ramelteon* (Rozerem). This medication acts on the same brain receptors as the hormone

Napping

People who are ill or elderly need daytime naps. So do people who suffer from sleep deprivation. That's why napping appears to be associated with poor health. But voluntary napping is another matter. In fact, studies in shift workers, airline crews, and others show that "power naps" as short as 20 minutes can improve alertness, psychomotor performance, and mood. And a 2007 study from Greece linked voluntary siestas to protection from cardiovascular disease, especially in working men (see *HMHW*, January and September 2008).

For best results, plan to fit your snooze into your normal sleep-wake cycle; early afternoon is usually best. Two 2008 studies of older adults found that daytime napping didn't interfere with nighttime sleep. It's reassuring, but if your nap is too long you may find yourself awake in bed at night; 20 to 40 minutes is a good target. And give yourself time to wake up fully before getting back to work; 10 to 15 minutes will usually be enough to get the cobwebs out.

The poet John Keats asked, "Do I wake or sleep?" A power nap can allow you to enjoy both.

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melatonin. It is fast acting but very short lasting. It does not appear to cause habituation or rebound insomnia.

Sleep tight

According to the National Sleep Foundation, the average American adult gets 6.9 hours of sleep on weeknights and 7.5 hours on weekends. But about 70 million of us sleep poorly, and for more than half, it's a long-term problem. Nearly everyone can benefit from improved sleep hygiene. Men with sleep disorders should work with their doctors to diagnose the problem and treat conditions that may be responsible. If your doctor diagnoses primary insomnia, consider behavioral therapy first, and then discuss the proper use of prescription sleeping pills.

Good nights make good days and vice versa. The best way to get the sleep you need is to take good care of yourself, day and night. Be sure your daytime activities include good health habits such as regular exercise, sound nutrition, and stress reduction. Good sleeping habits will help at night. Use medications only as a temporary supplement to the lifestyle that will help keep your days healthful and your nights restful.

The key is a balanced approach. It's important advice, but it's hardly new; some 2,400 years ago, Hippocrates wrote, "Disease exists if either sleep or watchfulness be excessive."

ON CALL

Selenium and vitamin E for prostate cancer

Q I have been taking selenium in the hope that it would prevent me from getting prostate cancer. But I heard on the radio that the National Cancer Institute is advising men to stop taking selenium. Should I stop it?

A Many of us shared the hope that selenium might reduce the risk of prostate cancer. The optimism stemmed from a 1996 report from the Nutritional Prevention of Cancer Trial, which found that 200 micrograms (mcg) of selenium a day reduced the risk of prostate cancer by a startling 63%. A series of observational studies followed; although the results were mixed, many suggested that selenium might help (see *Harvard Men's Health Watch*, March 2007).

When results are mixed or surprising, the next step is a careful randomized clinical trial. Beginning in 2001, the National Cancer Institute recruited over 35,000 men age 50 and above to test the effects of selenium and vitamin E, which had also shown mixed results against prostate cancer (see *HMHW*, January 2006). The men were randomly assigned to take 200 mcg of selenium, 400 international units (IU) of vitamin E, both selenium and vitamin E, or a placebo every day.

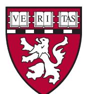
The Selenium and Vitamin E Cancer Prevention Trial (SELECT) was conducted at over 400 research centers in the U.S., Puerto Rico, and Canada at a cost of over $114 million. Results were not expected until 2011, but in late 2008 an independent monitoring group halted the trial because neither supplement was beneficial. In fact, there was a hint that selenium might be responsible for a slight increase in diabetes (see *HMHW*, April 2008) and that vitamin E might be linked to a slight increase in prostate cancer.

SELECT was expensive, and it produced disappointingly negative results. Still, the trial was very important and very productive. It tells us definitively that neither selenium nor vitamin E has a role in preventing prostate cancer. Scientists will continue to monitor the volunteers for at least three years to conduct additional studies on prostate cancer and other diseases of male aging.

Like the SELECT volunteers, you should stop your supplements. Unfortunately, selenium and vitamin E have joined the ever-lengthening list of supplements that have failed careful, objective scientific testing (see *HMHW*, March 2008).

HBS

Harvard B. Simon, M.D.
Editor, *Harvard Men's Health Watch*



Send us a question for On call

By mail Dr. Harvey B. Simon
Harvard Men's Health Watch
10 Shattuck St., 2nd Floor
Boston, MA 02115

By e-mail mens_health@hms.harvard.edu
(Please write "On call" in the subject line.)

Because of the volume of correspondence we receive, we can't answer every letter or message, nor can we provide personal medical advice.

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