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Sleep Needs and Insomnia

We've been doing a giant experiment on ourselves by turning night into day. In the millennia before electricity lit up our nights, we slept about 10 hours a night. Today Americans average just under 7 hours' sleep on weeknights, and a half hour more on weekends. That's a whopping 20 hours less sleep each week. And 20% of us sleep less than 6 hours a night.

What are the effects of this radical change? For the most part, we don't know. The scientific study of sleep is still young. We're just beginning to chart the territory, from the basics of normal sleep patterns through the woes of insomnia and further to the exotic lands of sleep disorders called parasomnias, where mild-mannered men howl like wolves and women ravage their kitchens for food while fast asleep. It's a fascinating journey for scientists as they discover the role of sleep in learning, memory, disease, immunity and aging. There is already lots of evidence of a feedback cycle between not sleeping well or enough and poor health.

For many of us sleep is a frustrating issue. We have so many tasks and distractions that we can't get our kids or ourselves to bed on time. When we do get to bed we lie awake with racing minds or restless legs. Our partners snore so loudly it makes us crazy. We wake up in the wee hours and can't fall back asleep. By day we're so drowsy we can't think straight. We nod off in meetings and at stoplights--or worse, while actually driving.

Our basic problem is too little sleep. But about 64 million Americans a year also have insomnia, often for long periods. Insomnia is trouble falling asleep, waking up often, waking up early and being unable to fall back asleep, or waking up not feeling rested. Another 18 million or so have sleep apnea, where part of the throat relaxes and repeatedly closes the airway until they snort or gasp and breathe again. As many as 12 million have restless leg syndrome. And another quarter million has narcolepsy, causing "sleep attacks" where they may suddenly lose all muscle tone and collapse.

There's help for nearly all of these problems. This week we'll start with the basics of sleep needs and insomnia. Next week we'll discuss some of the other sleep disorders that trouble our days and nights, like restless legs syndrome and narcolepsy. To learn about the serious health condition sleep apnea, search the Cover Story Archives for our article *More Than Snoring: Obstructive Sleep Apnea (OSA).*

How much sleep do we really need?

- **Infants:** 11-18 hours per night
- **Toddlers:** 12-15 hours
- **Preschool kids ages 3-5:** 11-13 hours
- **Kids 5-12:** 9-11 hours
- **Teens:** at least 8.5-9.5 hours
- **Adults:** 7-9 hours (women in the first 3 months of pregnancy often need several more)

Many of us feel like we're doing fine even though we get less sleep than that. Part of the problem is that people who are short enough on sleep to do poorly on reflex and coordination tests don't know it. So they keep on getting less sleep than they need. They don't realize that they're making mistakes and getting into arguments and accidents because they're tired. If you haven't been getting enough sleep, you develop a "sleep debt" and will need more sleep to catch up.

What happens when I don't get enough sleep?

- You're likely to be drowsy and unfocused. If you are unrushed you may function okay. But if you're under any pressure, you'll make more mistakes than you would if you were well rested. You're apt to forget things, get confused and take more risks. You can't solve problems as well. Your brain starts to take tiny naps of 1-10 seconds called microsleeps, when you're not processing information.
- Learning suffers. You won't remember what you learned yesterday as well as if you were rested. Important short-term memories are downloaded into long-term memory while you sleep. If you don't get enough sleep those memories may not make it.
- You're likely to get cranky and feel depressed. And if you're already depressed, you're less likely to recover.
- Your coordination drops to the level of a drunken person, or worse. If you average 6 to 7 hours of sleep a night, your risk of a car crash doubles compared to sleeping 8 hours. If you sleep less than 5 hours, your risk is 4 to 5 times greater. Falling asleep at the wheel causes over 100,000 car crashes and 1,550 deaths a year.
- You're more likely to gain weight and to develop diabetes. Your body will probably produce more of a hormone that makes you feel hungry (gherin), and less of one that suppresses appetite (leptin). And you'll crave the most fattening kinds of food--high-calorie carbohydrates. Many studies have found that the less sleep you get the more likely you are to be overweight or obese. That applies to toddlers and kids, too. Insufficient sleep is also linked to higher blood sugar levels and greater risk of diabetes.
- Your risk of heart disease is increased. People who are sleep deprived have higher rates of inflammation (a marker of heart disease risk), high blood pressure, heart disease and heart attacks.
- You may have more pain. This can be a vicious circle. Nearly half of people with chronic pain have insomnia. And several studies have found that people report more pain after nights of less than 6 hours of sleep than on nights when they slept more. There's some data that poor or interrupted sleep lowers the brain's inhibition of pain.
- Your immune system doesn't work as well, so you'll have less resistance to disease. In one study, volunteers who slept well the night after getting a vaccine had almost twice the immunity a month later than others who were kept awake the night after the shot. In another, participants were exposed to a cold virus and then quarantined for 5 days. Those who normally slept less than 7 hours a night were 3 times more likely to come down with colds than those who slept at least 8 hours.

I've tried to get my child to go to bed earlier, but he says he can't fall asleep.

Kids who drink beverages that have caffeine in them get an average of a half-hour less sleep a night less than those who don't. So you might try cutting out caffeinated sodas or iced tea. And kids with TV sets in their rooms sleep less, too. Remove the TV if there is one in his room.

Kids with bedtime routines get more sleep. Establish a relaxing routine that ends in his bed, ideally when your child is still a baby. A bath at the same time each night, followed by reading to the child can be very effective. It may end up helping you relax and get ready to sleep, too.

If your child is a teenager, the problem is more complex. Caffeine and a TV in the bedroom still affect sleep, so we don't recommend either. But kids' inner clocks shift in the teen years. They don't get tired until almost 11 PM. They sleep later in the morning. Unfortunately most middle and high schools start too early to accommodate this natural cycle, so kids drag themselves out of bed and go to school while their brains are literally half asleep.

Some schools--and even the U.S. Navy basic training base--have changed their hours so that teens and young adults can get more sleep. Studies show they perform and feel better. If you can't arrange that for your teen, you probably ought to let him do his best to catch up on weekends and vacations. And teach your son about the danger of driving when he's tired. Young males age 16 to 29 have the highest risk of drowsy driving accidents.

What increases the risk of chronic insomnia?

These are linked with higher rates:

1. **Health conditions:** Most people with chronic insomnia have other health conditions. Chronic pain, GERD (chronic heartburn), or hot flashes can keep or wake you up. So can any condition that makes you need to go to the bathroom often. Breathing problems from allergies, asthma, sleep apnea, lung disease or heart failure can disrupt sleep, too.

   Trouble sleeping is characteristic of many mental health conditions and brain disorders including anxiety, depression, Parkinson's disease, Alzheimer's disease, bipolar disorder, schizophrenia and post-traumatic stress disorder (PTSD).

   People with high blood pressure, obesity, cancer, migraine headaches and heart disease also have high rates of insomnia or trouble sleeping. In many cases, we don't know whether a health condition causes insomnia or if they arise together.

2. **Many medications** can contribute to sleep problems, too. Check with your pharmacist or health care provider if you suspect an over-the-counter or prescribed medicine could be a problem. And make sure to heed the directions on dose as well as warnings about how long it's okay to take the drug.

3. **Night shifts, rotating shifts and jet lag:** Anything that disrupts a regular nighttime sleep routine can cause "desynchronization." Daylight shuts down the brain's production of sleep-inducing melatonin, while darkness triggers it. Going against that normal pattern is bound to make sleep more difficult.

4. **Stimulants and alcohol:** Stimulants, including caffeine, nicotine and many illegal drugs, interfere with sleep for many people. There might be an exception, though. Although insomnia is listed as a side effect of prescribed stimulants, several studies have found that when people with ADHD take them as prescribed their sleep is either unaffected or actually better than if they're unmedicated.

   Moderate use of alcohol (a "night cap") within an hour of bedtime may help people fall asleep. But it interferes with sleep quality during the second half of the night. You're more likely to wake up and be unable to get back to sleep. Even a single drink before dinner can have this effect, so if you have this type of insomnia, not drinking at all might help. And if you have sleep apnea, drinking definitely makes it worse.

5. **Stress, noise, and light:** Most of us know from experience that stress can make it hard to sleep, especially if your mind is racing with anxious thoughts. Even watching a violent or suspenseful TV show before bed can make it harder to fall asleep. In fact, staring at a bright TV or computer screen doesn't help prepare you for sleep no matter what the content. Even the tiniest sliver or glow from a nightlight decreases your brain's production of the sleep hormone melatonin. (Red light has the least effect on melatonin, so if you need a bathroom night light, put a red bulb in it.) Noise--from street noise or your partner's snoring--can also keep you awake.

6. **Eating spicy or high-fat foods, especially late at night:** There's some evidence that high-fat diets may disrupt your body's clock. And spicy food before bed raises your temperature, which doesn't help you sleep well. If you have a tendency to get heartburn, eating within a few hours of lying down is asking for trouble.

I often wake up in the middle of the night, but I fall back asleep after a while. Is that a problem?

Not if you go to bed early enough to get enough sleep to feel rested and energized the next day. The sleep pattern you describe is common in many animals and humans who live without artificial light, so it's probably a natural pattern. They go to sleep soon after dark, and awaken for an hour or so in the middle of the night, then sleep again. Some experts think that we've compressed our sleep unnaturally by staying up long past dark.

It sounds like you aren't fretting over being awake for a while. That's good, because worrying about not getting enough sleep and constantly checking the clock can worsen insomnia and become a problem in itself.

When I'm short on sleep but just have to get through the day, what helps the most?

- A nap works best. Humans naturally get sleepy in the afternoon. A 20-90 minute nap after lunch can improve your productivity and performance. Morning and evening naps aren't as good.
- Caffeine makes you feel less sleepy, but it won't improve your motor, verbal or visual skills like a nap will. It works best if you have a little bit every few hours rather than a big dose less often. Try a cup of green tea every hour or two. It has half as much caffeine as coffee.

Insomnia is wrecking my life. What can I do?

Talk to your provider to see if a medical condition, symptom or drug could be part of the problem. Treatment for arthritis, depression, heartburn, nasal allergies, hot flashes, or any other health condition you have may also help you sleep better.

Then improve your sleep habits. People who do these things fall asleep faster.

- Exercise regularly. The conventional wisdom is that it's better not to do so within 3 hours of bedtime, but there isn't any good evidence that it matters. Exercisers get to sleep faster and sleep better.
- Avoid caffeine in the late afternoon or evening.
- Don't drink alcohol after dinner.
- If you're hungry before bed, stick to a light snack. Warm milk, turkey or chicken, and whole-grain cereal with milk are good choices.
- Quit smoking if you smoke. Nicotine withdrawal can wake you up in the middle of the night.
- Don't drink a lot of fluids in the evening before bed.
- Use the bed only for sleep and sex, not for reading or watching television.
- Develop a relaxing ritual before bedtime, like a hot bath, a relaxation exercise, or reading (out of bed).
- Learn muscle relaxation from a tape, CD or book. Tensing and then relaxing your muscles can help you relax and fall asleep.
- Try keeping the bedroom at a cooler temperature. Many people sleep better in a cool room.
- Go to bed and wake up at the same time every day, even on weekends.
- Keep your bedroom very dark. Don't use a nightlight or clock that glows in the dark, or cover it up at night. Get "blackout" curtains to block outside lights.
- Try listening to relaxing music as you're falling asleep.
- If you are awake for more than 20 minutes, leave the bed and don't go back to bed until you are ready to sleep.
- Work on accepting that it's okay if you don't get an ideal night's sleep every night.
- Try to get exposure to bright daylight in the mornings.

What about sleep medicines?

If you've tried these things and still have insomnia for over a month, you may need more help. Talk with your health care provider about trying a prescription sleeping pill for a limited time. It's generally not a good idea to take sleeping pills for longer than four weeks, because you may get dependent and get "rebound insomnia" after you stop taking them.

The older type of prescription sleeping pills, in the benzodiazepine group of drugs, help you sleep longer but can have serious side effects. Estazolam (brand name ProSom), flurazepam (Dalmane), lorazepam (Ativan) and temazepam (Restoril) are in this group. They work by slowing the central nervous system. They can cause side effects including drug dependency, poor memory, dizziness, fuzzy thinking and daytime sleepiness. You may have trouble sleeping if you stop taking them.

A newer group of sleeping pills, short-acting sedative hypnotic medications, are considered safer than benzodiazepines. These slow down brain activity and help you get sleepy by increasing the effects of a brain chemical called GABA. They include eszopiclone (Lunesta), zaleplon (Sonata) and zolpidem (Ambien). A continuous-release version of Ambien (Ambien CR) may help you stay asleep longer. But you can become dependent on these drugs, too, and feel anxious or have trouble sleeping if you stop taking them.

Another new pill, Rozerem, works in a different way. It targets receptors in the brain for the natural sleep hormone melatonin.

You may have heard news reports of people driving, preparing meals, sending bizarre e-mails and making phone calls after taking Ambien or other sleep drugs. These folks didn't remember doing these things later. Nearly all had consumed alcohol before or after taking the drug, in some cases just one glass of wine. It's important not to mix alcohol with them. Labels on sedative-hypnotic drugs now warn of these rare but possible side effects. Read them carefully, and head the warnings.

Over-the-counter sleeping pills like Sominex, Benadryl, Unisom or Tylenol PM generally contain antihistamines like diphenhydramine or doxylamine. They may help you sleep, but they can alter alertness and thinking for 48 hours, especially in older people. And if you take them regularly you may become tolerant to them and they won't work. Read the warnings carefully, because they aren't appropriate for many people.

My doctor wants me to get special counseling called cognitive behavior therapy for my insomnia. Sleeping pills would be a lot easier, wouldn't they?

Possibly easier, but not better. Short-term cognitive behavior therapy (CBT) for sleep problems has proved more effective and longer lasting than drugs in many studies. CBT teaches you how to prepare for sleep and what to do when you can't get to sleep. You practice techniques for dealing with stressful thoughts that can keep you awake. And you learn to link being in bed with sleeping, not lying awake.

What else could I try to improve my sleep and feel more awake in the day?

There isn't enough research to prove these things work, but they aren't likely to do any harm and may help:

- A regular meditation practice may reduce arousal, a state that is more acute in people who have chronic pain, anxiety disorders and insomnia.
- Light box therapy may help reset your internal clock. Early morning exposure to wavelengths called "blue light" that are similar to natural early morning light may help you wake up. If you combine that

with a regular bedtime and wake-up time eight hours later, your body may learn a healthier routine. Light boxes are available for sale. "Dawn simulators" that gradually increase the light in your bedroom prior to your wake-up time work on the same principle. Light therapy is effective as a treatment for depression, too.

Is sleeping less just a natural part of growing older?

Not necessarily. Many older people sleep as much as younger adults do. Only about half of healthy seniors say they have trouble sleeping. So it doesn't happen to everyone. Some experts think that older adults may have higher rates of insomnia because they have more medical conditions and take more medications linked to trouble sleeping. Others say that older people tend to spend less time in the deepest stages of sleep, and wake up more often in the night.

Daytime naps can help by adding an hour or two a day to their sleep total. Sleeping pills may help, too. They fell out of favor for elders because of fears that they'd increase the risk of falls. But some research has found that older people with untreated insomnia are more likely to fall than those who got drugs to help them sleep.

Not being able to sleep can be a terrible problem. But for most Americans the problem with sleep isn't a disorder like insomnia. It's simply that we don't arrange our lives so that we get enough shuteye. Even people who are careful to eat their vegetables, watch their weight and get treatment for whatever ails them often skimp on sleep. They don't see getting good rest as part of a healthy lifestyle. Skip the coffee, alcohol and high-drama TV at night. Try a hot bath, soothing music and a regular, earlier bedtime. You might reap a host of health benefits.

Next week learn about sleep disorders like restless leg syndrome, periodic limb movement disorder, night terrors, sleep-related eating disorder, narcolepsy and sleepwalking.

Learn more about healthy living at Blue Health Connection