10 Fascinating Things That Happen While You're Sleeping

Prevention


© Shannon Fagan/Getty Images

John Steinbeck once noted that "it is a common experience that a problem difficult at night is resolved in the morning after the committee of sleep has worked on it." When my head hits the pillow and I can't seem to turn off my thoughts, I like to picture the committee gathering in a miniature boardroom in my brain. I imagine tiny committee members heatedly arguing over my dilemmas while I snooze. What a relief to leave the toughest calls up to somebody else.

Whether you've imagined it or not, you've probably benefited from such a committee's hard work. While we doze, our brains and bodies aren't slacking off, they're at work, repairing us from the day's battles and refueling us for tomorrow's slog—in more ways than you likely realize.

There's probably no teeny boardroom. But here's what's actually going on while you're conked out:

1. You aren't sleeping deeply most of the time.


© Hero Images/Getty Images

Not all sleep was created equal: When you first drift off, you get only very light sleep, then progress deeper and deeper into dreamland. The sleep cycle starts in what's called non-rapid eye movement or NREM stage 1 (the kind of sleep you might nab if you were the type to doze off during your college lectures; you know who you are). Then you move into a deeper NREM 2 and the deepest, NREM 3, also called slow-wave sleep. Finally, you land in rapid eye movement, or REM, sleep, the wild part of the ride where most of our dreams occur. The whole shebang usually takes somewhere between 90 and 120 minutes, so on a typical night you'll cycle through 4 or 5 times, waking up for just a sec (even if you don't realize you're up) after REM sleep before starting over in stage 1.

As the night goes on, you spend less time in that deliciously deep stage 3 and more time in REM sleep, which explains why your alarm so often wakes you up in the middle of a totally bizarre dream, says Sigrid C.Veasey, MD, a professor of medicine and neuroscientist at the University of Pennsylvania's Center for Sleep and Circadian Neurobiology. But we don't really know why REM periods get longer in the wee hours, says Daniel A. Barone, MD, assistant professor of neurology at the Weill Cornell Medical College's Center for Sleep Medicine. One theory, he says, is that REM sleep may somehow prepare you to get your butt out of bed.

2. Your brain cleans house.


© Jupiterimages/Getty Images

Our brains are "on" throughout the night, especially in that dream-heavy REM sleep, Barone says, when they're actually almost as active as they are when we're wide awake.

Among other things, they may be taking out the trash. That's one of the more exciting new ideas about the purpose of sleep: A 2013 study in mice found that waste removal systems in the brain are more active during sleep. Perhaps, the researchers theorized, we sleep to allow time to clear away toxic byproducts that would otherwise pile up and cause problems, like the trademark plaques of Alzheimer's disease, Veasey says.

Your brain's also busy cementing new memories while you sleep. "We think the brain is processing the information we gained throughout the day and filtering out the information we don't need, which may be one of the reasons we dream," Barone says. The theory goes that maybe connections between brain cells are strengthened or weakened during sleep, depending on how much we used them during the day, he says. The important stuff gets reinforced while the factoids we just don't need get trashed.

3. Your heart rate and breathing slow.


© Yagi Studio/Getty Images

That "can't…move…another…muscle" feeling comes from the fact that all sorts of normal physiological processes slow way down at bedtime, like how many breaths you take per minute and how quickly your heart beats. Even your muscles and organs chill out.

"The intestines quiet down in the nighttime, and the liver goes from trying to detoxify during wakefulness to trying to build and synthesize when you're sleeping," Veasey says. There's also less

adrenaline pumping through your veins, since you won't be needing your fight-or-flight response between the sheets (at least, we hope).

4. Your blood pressure plummets.

© AlexRaths/Getty Images

Total-body relaxation results in something called a "nocturnal dipping" of your blood pressure, Veasey says. If you're otherwise fit, your blood pressure can drop by about 5 to 7 points with a good night's sleep. (Got high blood pressure when you're awake? Check out this list of foods that lower blood pressure naturally.)

5. And so does your body temperature.

© Eric Van Den Brulle/Getty ImagesSleep experts are constantly quoted in articles like these saying to keep your room cool for a good night's sleep. But they're not just saying it because it sucks to try to fall asleep with your hair plastered to your neck with sweat. A cool room actually mimics something your body's doing naturally: While we sleep, core temperature drops a bit, so cooling off before bed can help you nod off.

During REM sleep, you might chill by a whole degree or 2. "If you were cold and you were awake, you would shiver, but during REM sleep the body loses its capacity for thermoregulation," Veasey says, "and we have no earthly idea why that happens."

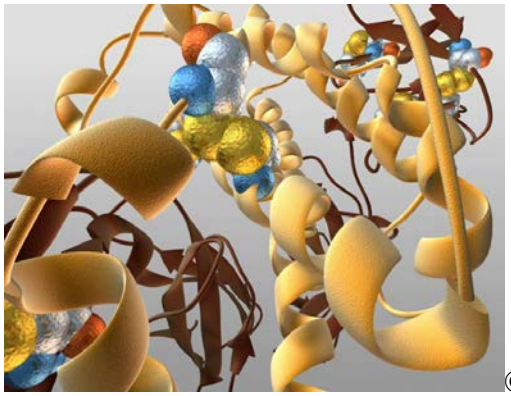
6. You're paralyzed.


© iStock/Getty Images

Speaking of REM sleep: During this phase, you literally cannot move a muscle. Only those that control your eyes (hence the name rapid eye movement sleep) and your breathing are not paralyzed. Muscle paralysis is the body's way of preventing you from kicking in the World Cup-winning goal, serving a knuckle sandwich to that intruder who turns out to be your unsuspecting and undeserving spouse beside you, or otherwise acting out your weirdest dreams.

The paralysis is (obviously) temporary, but it can last up to about 20 minutes. Your once-slow-and-steady breathing and heart rate will also become a little less regular and a little more erratic during REM sleep, Barone says.

7. You pump out growth hormones…


© Kenneth Eward/Getty Images

No, not the performance-enhancing-drug kind of growth hormone. Even if you're not growing taller, you're always growing: building muscle cells after a tough workout, healing a cut from dicing onions for dinner. Our bodies make a host of different growth hormones during NREM sleep that we need throughout our lives, not just during developmental periods, Veasey says.

One of the clearest ways to see this process at work, though, is among children with sleep apnea, a disorder that causes a person to stop breathing throughout the night (if that sounds scary, it's because it is). A common cause of the condition in kids is extra-large tonsils, so some who really can't get any rest will get theirs removed. Many of these youngsters are short for their age—until they can finally sleep.

Their tonsils are removed, their sleep apnea is reversed, and suddenly they shoot up to a normal height, Barone says, now that they're finally getting the growth hormones they so desperately needed.

8. ...and regulate your hunger hormones.

If a frosted donut has ever looked particularly tasty after a night spent tossing and turning, at least it's not just you: Most people reach for higher-calorie foods (and more of 'em) when they've logged too few hours of sleep, which can in turn, of course, lead to weight gain. Researchers believe that the hunger-regulating hormones leptin and ghrelin get out of whack when we don't sleep well, Barone says. (Balance your hormones and lose up to 15 pounds in just 3 weeks with the Hormone Reset Diet.)

9. You might walk, talk, or even drive.


© iStock/Getty Images

There's no good reason for these so-called parasomnias, or weird behaviors known to happen during sleep, but luckily they're mostly harmless. Sleepwalking and similar mid-slumber activities occur during stage 3 sleep, making it tough to rouse a sleepwalker from deep sleep but not dangerous to do so. (In fact, it can be dangerous not to wake them, considering their next move could be to try to get behind the wheel.)

Sleepwalking, talking, or driving is usually due to sleep deprivation or a side effect of certain medications and occurs in anywhere from 1 to 15% of us, according to the National Sleep Foundation. While it's definitely most common in kids, you probably don't have to worry if you find your spouse has migrated to the living room.

10. You also might twitch.


© Paul Piebinga/Getty Images

If you're not the type to venture all the way out of bed but you're familiar with that what-the-heck-where-am-I feeling of twitching yourself awake for no apparent reason, what you're experiencing is not a parasomnia, but a hypnic jerk. There's not really a good reason for these spastic movements either, Veasey says, but know that they're perfectly normal (and typically a feature of that very light stage 1 sleep).

There's probably more, but we don't know how much we don't know.

Much like the unexplained way my committee arrives at its decisions by morning, sleep is still in many ways a mystery. It's an "absolute necessity" but "with limited scientific understanding as to why," Barone wrote in a recently published paper. We know getting too little (and possibly too much!) ups a person's risk for health problems ranging from type 2 diabetes and heart disease to stroke and earlier death, but much of what we know about sleep is understood by observing the effects of its absence, he and his co-author Ana C. Krieger wrote. In other words, we know more about what happens when we're sleep deprived than what happens when we're actually asleep. Maybe, with future research, we'll pin down countless other processes that occur overnight and make sleep so essential.

In the meantime, Veasey says, it's time the "I'll sleep when I'm dead" types pay more attention to the quantity and quality of their Zzs. Constantly feeling burned out, after all, is no way to live. "We're really thinking one of the clearest reasons to sleep," she says, "is so you can actually thrive, not just exist."