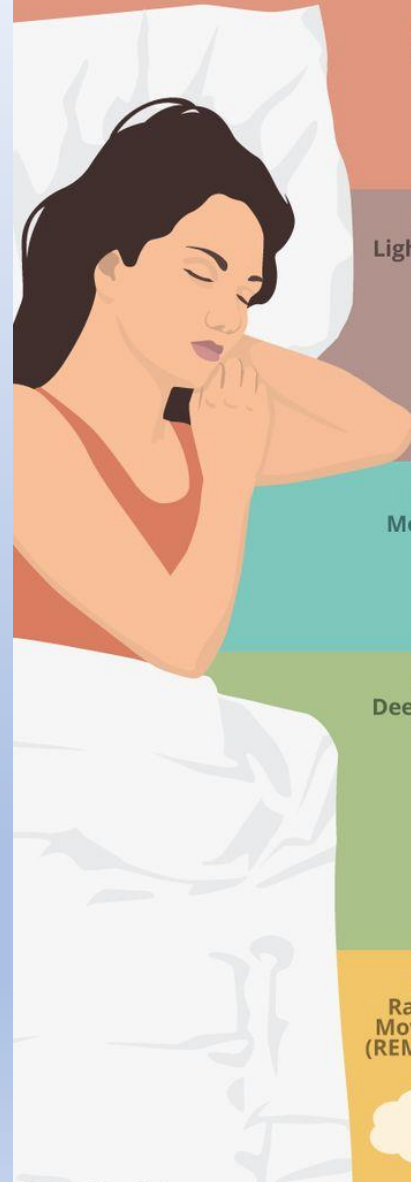


Improving Your Z's

Daniel Leffingwell MS, RN

March 31 2017

The Five Stages of Sleep



STAGE 1
Drowsy First 5-10 minutes of sleep cycle. This is the transition between wakefulness and sleep where the brain produces theta waves.



STAGE 2
Light Sleep Lasts about 20 minutes and your brain starts to produce rhythmic brain waves known as sleep spindles. Body temperature starts to decrease and heart rate slows down.



STAGE 3
Moderate Sleep Brain starts to produce deep and slower brain waves called delta waves.



STAGE 4
Deep Sleep A very deep sleep that lasts about 30 minutes. If prone to sleepwalking, it would occur during the end of this stage.



STAGE 5
Rapid Eye Movement (REM) Sleep Muscles become more relaxed while brain system is more active. Dreaming occurs during stage five because of the increase in brain activity and the temporary paralysation of voluntary muscles.

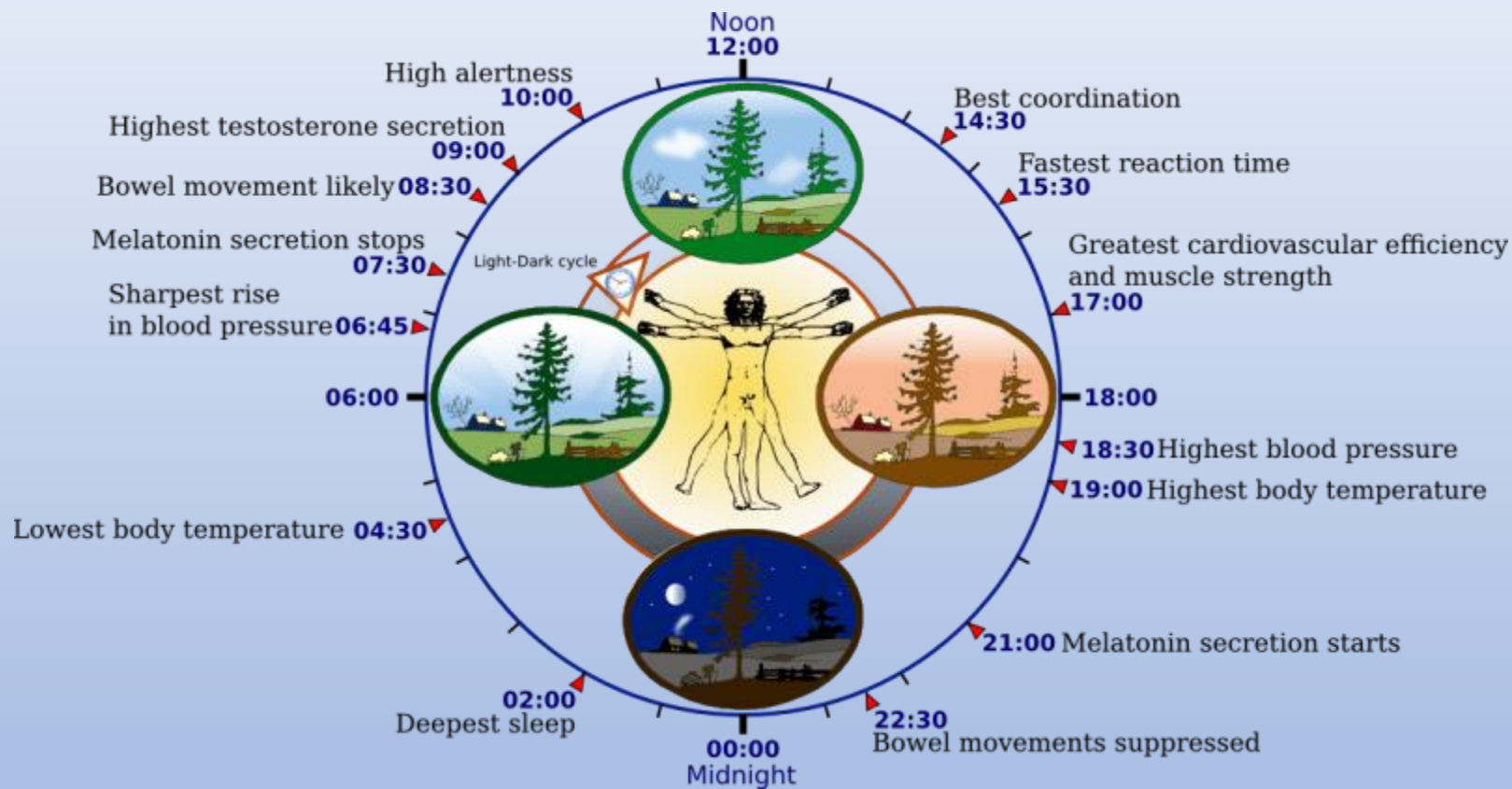


Two Types of Sleep

- There are two types of sleep: non-rapid eye movement -- or NREM sleep -- and rapid eye movement -- or REM sleep.
- NREM sleep includes four stages, ranging from light to deep sleep.
- Then we go into REM sleep, the most active stage of sleep when dreaming often occurs. During REM sleep, the eyes move back and forth beneath the eyelids and muscles become immobile. We cycle through the NREM-REM stages of sleep approximately every 90 minutes.

How Sleep is Regulated

- Researchers believe that two body systems -- the sleep-wake process and our circadian biologic clock -- regulate our sleep. They program our bodies to feel sleepy at night and awake during the day.
- The sleep-wake process works by balancing the amount of sleep a person needs based on the time spent awake. Our circadian biologic clock is a 24-hour body rhythm affected by sunlight. It regulates hormones such as melatonin, which is secreted during the night and promotes sleep, and other processes like body temperature. Sleeping at a time that is in sync with this rhythm is important for healthy sleep.⁵



How much sleep do we need?

- Nearly half of men and women over the age of 65 say they have at least one [sleep](#) problem. With age, many people get [insomnia](#) or have other [sleep disorders](#).
- It's true that as we get older, our [sleep](#) patterns change. In general, older people sleep less, wake up and go back to sleep more often, and spend less time in deep sleep or dreaming than younger people.

1,2,3

1

We Really do Need Sleep



24 hours of sleeplessness makes a person as impaired as having a 0.10% BLOOD ALCOHOL CONCENTRATION.

(LEGALLY DRUNK)

A week of 5-hour sleep nights also leaves a person in this "sleep drunk" state, according to a Harvard Study



1912



2012

On average, PEOPLE SLEEP 20% LESS than they did 100 years ago

1/5 OF CAR ACCIDENTS involve driver sleepiness

The number of car accidents declines when daylight savings yields an extra hour of sleep



Sleeping and aging

As we age, we may notice some of the following:

- Taking longer to fall asleep
- Sleep is less deep
- Waking up three or four times a night
- Frequent [nighttime bathroom trips](#)
- Sleep is not as restful or satisfying
- Tendency to fall asleep in the early evening and wake up in the [early morning](#)

Sleeping and Aging: Symptoms

- Difficulty falling asleep at night
- Waking up during the night
- Waking up too early
- Not feeling well-rested after a night's sleep
- Daytime tiredness or sleepiness
- Irritability, depression or anxiety
- Difficulty paying attention, focusing on tasks or remembering
- Increased errors or accidents
- Ongoing worries about sleep ⁶

What Causes Sleep Problems With Age?

- **Poor sleep habits:** If you don't keep a steady schedule for going to bed and waking up, it can affect your body's internal clock and make it even harder to get good sleep. Also, at any age, it's a minus if you drink alcohol before [bedtime](#), nap too much, or stay in bed when you're not sleeping.

Medical problems

- Some health conditions (like arthritis) cause pain, which makes it difficult to fall asleep.
- Other conditions (like diabetes or an [enlarged prostate](#)) may cause you to use the bathroom frequently during the night, which interrupts deep sleep.
- [Heart disease](#), [high blood pressure](#), and other [cardiovascular conditions](#) may cause you to wake suddenly due to breathing difficulties or changes in heart rate.
- Parkinson's disease, Alzheimer's disease, and [mental illnesses](#) may cause anxiety that interferes with sleep. ¹

Medication

- Many prescription and nonprescription drugs can cause [sleep](#) problems. The severity of sleep problems caused by a drug will vary from person to person.

Prescription drugs that may cause sleep problems include:

- High blood pressure drugs like beta blockers
- Hormones such as oral contraceptives
- Steroids, including prednisone
- Inhaled respiratory drugs
- Diet pills
- Seizure medications
- Attention deficit hyperactivity disorder stimulant medications
- Some antidepressants

The following nonprescription drugs can cause sleep problems:

- [Pseudoephedrine](#), including the brand [Sudafed](#)
- Medications with [caffeine](#). These include the brands [Anacin](#), Excedrin, and No-Doz, as well as many [cough](#) and cold medications.
- Illegal drugs such as [cocaine](#), [amphetamines](#), and [methamphetamines](#).
- Nicotine, which can disrupt sleep and reduce total sleep time. Smokers report more daytime sleepiness and minor accidents than do nonsmokers, especially in younger age groups.

Alcohol and Sleep

- Alcohol often is thought of as a sedative or calming drug. While alcohol may induce sleep, the quality of sleep is often fragmented during the second half of the sleep period. Alcohol increases the number of times you awaken in the later half of the night, when the alcohol's relaxing effect wears off. It prevents you from getting the deep sleep and [REM sleep](#) you need, because alcohol keeps you in the lighter [stages of sleep](#).

Alcohol and Sleep

- With continued consumption just before [bedtime](#), alcohol's sleep-inducing effect may decrease as its disruptive effects continue or increase. The sleep disruption resulting from alcohol use may lead to daytime [fatigue](#) and sleepiness. The elderly are at particular risk for alcohol-related sleep disorders, because they achieve higher levels of alcohol in the [blood](#) and [brain](#) than do younger adults after consuming an equivalent dose. [Bedtime](#) alcohol consumption among older adults may lead to unsteadiness if walking is attempted during the night, with increased risk of falls and injuries.

Other causes of lost sleep as we age

- **Hormones:** As we age, our bodies secrete less of two important sleep hormones: melatonin and growth hormone.
 - Melatonin is important because changes in the [level of this hormone control](#) our [sleep cycle](#). With [less melatonin](#), many older adults feel sleepy in the early evening and wake up in the early morning. They also may have more trouble falling asleep.
 - [Growth hormone](#) is what makes children sleep so deeply. As we age, our body secretes less of this hormone and [deep sleep](#) becomes more difficult.
 - Menopause causes a lot of hormonal changes in women, sometimes resulting [in night sweats](#) and other symptoms that interfere with sleep.
 - Lack of a good pillow and mattress

In stage 1 we experience a light transitional sleep. This is where drowsiness and sleep begin.



In stage 2 more stable sleep occurs. Chemicals produced in the brain block the senses making it difficult to be woken.



90-120
Minutes



REM sleep revitalizes the memory. In this stage brain activity is very high and intense dreaming is likely to occur.



Stage 3 is deep sleep. Growth hormone is released during this stage. Most stage 3 sleep occurs in the first third of the night.



Many older adults yearn for a restorative sleep, or the ability to sleep through the night and to awake with a feeling of being refreshed. Gradual, subtle, age related changes affect the nervous system which in turn, interferes with the ability to sleep throughout the night. The intention of this program is to present the “Whys” and the “How to’s” for individuals to experience an improved sleep. Discussion centers on the effects of medications that interfere with sleep, and on modifying bedtime and sleep rituals and patterns.

Resources

- Healthy Aging: How Sleep Changes With Aging <https://www.verywell.com/sleep-and-aging-2224266>
- Sleep and Aging <http://www.webmd.com/healthy-aging/guide/sleep-aging>
- 8 ways to improve sleep quality as you age <http://www.mayoclinic.org/healthy-lifestyle/adult-health/in-depth/8-ways-to-improve-sleep-quality-as-you-age/art-20270179>
- How to Sleep Better as You Get Older <http://www.webmd.com/sleep-disorders/guide/aging-affects-sleep#1>
- Sleep and Aging <https://nihseniorhealth.gov/sleepandaging/aboutsleep/01.html>
- Insomnia: Symptoms and Causes <http://www.mayoclinic.org/diseases-conditions/insomnia/symptoms-causes/dxc-20256961>