

The worst thing in the world is to try to sleep and not to.  
- F. Scott Fitzgerald

As students, we know that getting to sleep is less of a priority at times than finishing an O-Chem lab or skimming through chapters before morning discussion. It's no wonder then that only 33% of U of C students report feeling well-rested on 5 or more days of the week. Unfortunately, when you miss out on sleep your body keeps count – like a credit card – and eventually your body “collects” on this sleep debt; usually at the most inopportune times (e.g. in the middle of class, when driving, while studying). So, how can you improve your sleeping habits and get better sleep (and grades)? Here are few a few basic insights...

(2005 undergraduate & graduate student data – University of Chicago Student Health Assessment Survey)

## Sleep History & the U of C!

Few students know that **modern sleep medicine began at the U of C!** In 1951, Nathaniel Kleitman, a professor of physiology and his graduate student Eugene Aserinsky, discovered a discrete stage of sleep characterized by rapid eye movements; known today as REM sleep. This discovery was the breakthrough in identifying sleep as an “active” not “passive” state of brain activity, and laid the foundation for current sleep medicine research and practice. A few years later (1957) in the University of Chicago sleep labs, William Dement and Nathaniel Kleitman discovered that there was a predictable and cyclical variation of brain activity throughout the night known as the “non-REM-REM” sleep cycle, which occurred in 90 to 100 minute intervals from the end of one rapid eye movement period to the end of the next.



**REM sleep is a crucial part of the sleep cycle**, since this is the time when the brain consolidates new memories, dreams, and processes learned information. If you recorded brain activity during REM sleep it would resemble wakeful brain wave patterns, however during REM sleep your body loses muscle tone and can't move (sleep walking and talking occur during non-REM, deep sleep). When the body experiences sleep debt or problems in sleeping, the quality of REM and non-REM sleep is affected and can lead to:

- Increased irritability
- Decreased motivation, memory, and concentration
- Poor academic performance and grades
- Decreased creativity and spontaneity
- Increased risk of injury
- Depressed moods
- Relationship problems

**1 in 5 UofC students reported that “sleep difficulties” contributed to their lowered academic performance in the past year.**

*University of Chicago Student Health Assessment Survey,  
2005 data undergraduate & graduate students*

## Understanding the Sleep-Wake Cycle

So, how do you know if you're getting enough sleep? The amount of sleep needed to feel well-rested varies among people and is controlled by an “internal clock”, which is regulated by hormones that roughly follow a 24-hour cycle. This internal clock characterizes the sleep-wake cycle, where periods of sleepiness and wakefulness are cued not only by hormones, but also by timing (darkness vs. light), patterns of meals, exercise, and social interactions. In general, a natural tendency towards sleepiness in the sleep-wake cycle occurs during the late night hours (2am-6am) and again during the midafternoon (1pm to 4pm). So, if you're missing out on sleep during the night, you'll have a higher tendency to fall asleep unintentionally during the day. Also, contrary to popular belief, feeling sleepy after lunch isn't due to eating a meal, but rather your natural sleep-wake cycle.

Finally, research shows that the average healthy adult needs 8-8.5 hours of sleep each night, while young adults and teenagers need 9-10 hours. College undergraduates fall somewhere in the middle of 8-10 hours (this may sound unreasonable, but it's science!). Again, some people need more sleep to avoid problem sleepiness; others need less.

## Identifying Problem Sleepiness

While it's normal to feel sleepy at times, if sleepiness regularly interferes with your daily routines and activities, or reduces your ability to function, then it's time to seek intervention. You may have problem sleepiness if you:

- Feel very sleepy during the day, even when you get a good night's sleep
- Fall asleep while driving
- Struggle to stay awake when inactive (e.g. watching TV, reading, attending class)
- Have difficulty remembering, concentrating, or paying attention at work, school, or home
- Wake up at night (or very early) and have trouble falling back to sleep
- Wake up gasping for breath or because of dreams
- Are often told by others that you seem sleepy

## Factors that Affect Sleep & Sleep-Related Problems

Problem sleepiness can be related to many factors: changes in your body's sleep-wake cycle (e.g. jet lag, late night work), inadequate sleep (too few hours), sleep disorders, drugs, and chronic illness. The following is only a brief overview. Please direct further questions, concerns, or evaluations to a medical or mental health provider.

- ❑ **Obesity:** During normal sleep the throat muscles relax. The presence of excess tissue or weight on the outside of the throat can press on the airway and block the movement of air. When blockage occurs, the brain "wakes up" and the sleeper awakes gasping for air. This condition is known as **sleep apnea** and while it is more common in people who are overweight, it can also occur in people with normal weight.
- ❑ **Mood Disorders:** Anxiety, depression, schizophrenia, and bipolar (mania, hypomania) conditions can contribute to states of **insomnia** or inadequate, unrefreshing, poor-quality sleep. In addition, some mental health medications can inhibit REM sleep, and mental health concerns and sleep problems can influence each other cyclically.
- ❑ **Chronic Illness:** Asthma, Parkinson's disease, hyperthyroidism, kidney disease, congestive heart failure, rheumatoid arthritis, or any other chronically painful disorder can induce sleep problems, primarily insomnia.
- ❑ **Medications:** Some medications to treat high blood pressure, heart conditions, and asthma may interfere with the sleep cycle by suppressing REM and non-REM sleep.
- ❑ **Substance use:** Alcohol (a depressant drug), caffeine, ecstasy, Adderall, Ritalin, nicotine, or other stimulants can lead to insomnia and decrease the quality of REM and non-REM sleep. Avoid using these substances 4-6 hours before going to bed.
- ❑ **Snoring:** Noisy breathing during sleep may be attributed to sleeping on the back, nasal blockage, obesity, some types of medications, substance use, and sleep apnea. Snoring is a sleep problem that affects the sleeper's bed partner more than the sleeper him/herself.
- ❑ **Restless Leg Syndrome (RLS):** RLS is a sleep disorder in which a person experiences unpleasant sensations in the legs that cause trouble sleeping (or insomnia). These sensations usually occur in the calf area and are described as creeping, crawling, tingling, pulling, or painful. RLS may be attributed to family history, pregnancy, anemia, chronic illness, or caffeine use, and is treatable with medication.
- ❑ **Periodic Limb Movements (PLMS):** PLMS typically occurs in conjunction with restless leg syndrome, and is characterized by involuntary jerking or bending leg movements during sleep that occur every 10 to 60 seconds. PLMS can disrupt sleep in both the sleeper and the bed partner.
- ❑ **Stress/worry:** May induce insomnia behaviors.
- ❑ **Change in environment:** Environmental noise, extreme temperatures, or a new sleeping location (e.g. moving to a residence hall; getting a new roommate) may lead to disrupted sleep.
- ❑ **Age:** Age impacts the sleep wake-cycle: babies and teenagers sleep more (9+ hours) vs. adults (8 hours) vs. senior citizens (more napping behavior).

- ❑ **Narcolepsy:** This sleep disorder is characterized by excessive and overwhelming daytime sleepiness, even after adequate nighttime sleep. A person with narcolepsy may have irresistible, sleeping attacks that may be triggered by sudden emotional reactions, such as laughter, fear, anger, or during sexual activity. Symptoms may be mediated by medication and a napping schedule.
- ❑ **Driving & sleepiness:** “Drowsy driving” accounts for 55% of motor vehicle accidents each year among people under age 26. Sleepy drivers experience delayed reaction time, and are actually more dangerous than drug-impaired drivers. Best advice: if you feel sleepy pull over and take a nap!

## Practices Conducive to Good Sleep



- Try to **sleep only when you are drowsy**.
- If you are unable to fall asleep or stay asleep, leave your bedroom and engage in a quiet activity elsewhere. Do not permit yourself to fall asleep outside the bedroom. Return to bed when - and only when - you are sleepy. Repeat this process of often as necessary throughout the night.
- **Maintain a regular sleep and wake-up time**, even on days off and on weekends (ex. go to bed by midnight-1am and get up by 8-9am = 8 hours of sleep).
- **Use your bedroom only for sleep and sex.** Studying, eating, or working in bed can lead to poor associations and negative feelings towards sleep.
- **Avoid napping during the daytime.** If daytime sleepiness becomes overwhelming, limit nap time to a single nap of less than one hour, no later than 3pm.
- **Distract your mind.** Lying in bed unable to sleep and frustrated needs to be avoided. Try reading or listening to music/books on tape. It may be necessary to go into another room to do these. Do these activities using dim or no lighting.
- **Avoid caffeine** (or other stimulants) within four to six hours of bedtime.
- **Avoid the use of nicotine** close to bedtime or during the night.
- **Do not drink alcoholic beverages** within four to six hours of bedtime.
- While a light snack before bedtime can help promote sound sleep, avoid large meals.
- Avoid strenuous **exercise** within six hours of bedtime, although exercise during the morning can induce better overall sleep.
- **Minimize light, noise, and extremes in temperature** in the bedroom.
- **Limit use of sleeping pills.** Sleeping pills may suppress REM sleep, cause memory loss, and lead to dizziness/unsteadiness. After about two weeks, the brain adjusts to and counteracts the medication, and the sleeping pill can become ineffective.



These tips were written by the Publications Committee for inclusion in the Sleep Hygiene wellness brochure published and copyrighted by the AASM. <http://www.aasmnet.org/disorderspub.asp>

## For more information

The **Student Care Center (SCC)** medical providers are available to meet with students to review their sleep concerns and symptoms. Make an appointment by calling (773) 702-4156. If you are interested in a sleep study or polysomnogram (PSG), which is a multiple-component test done overnight in a sleep lab or clinic (the University of Chicago Hospitals has a Sleep Lab), talk to your medical provider and call your health insurance company to check if this is a covered benefit.

**Student Counseling & Resource Service (SCRS)** providers are also available to meet with students to discuss sleep-related concerns. Call (773) 702-9800 for an appointment.

**National Institutes of Health** National Heart, Lung, and Blood Institute: informational flyers about sleep disorders are available at: <http://www.nhlbi.nih.gov/health/indexpro.htm#info>