



# Improving Your Well-Being through Optimizing Sleep

---

Deirdre Conroy, PhD, Diplomae  
Clinical Director, Behavioral Sleep Medicine  
Department of Psychiatry  
Michigan Medicine

# Learning goals



The science of sleep



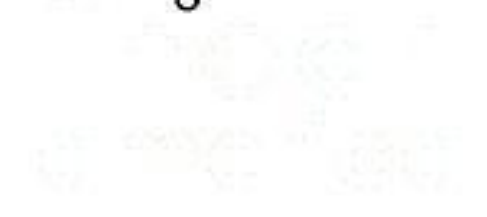
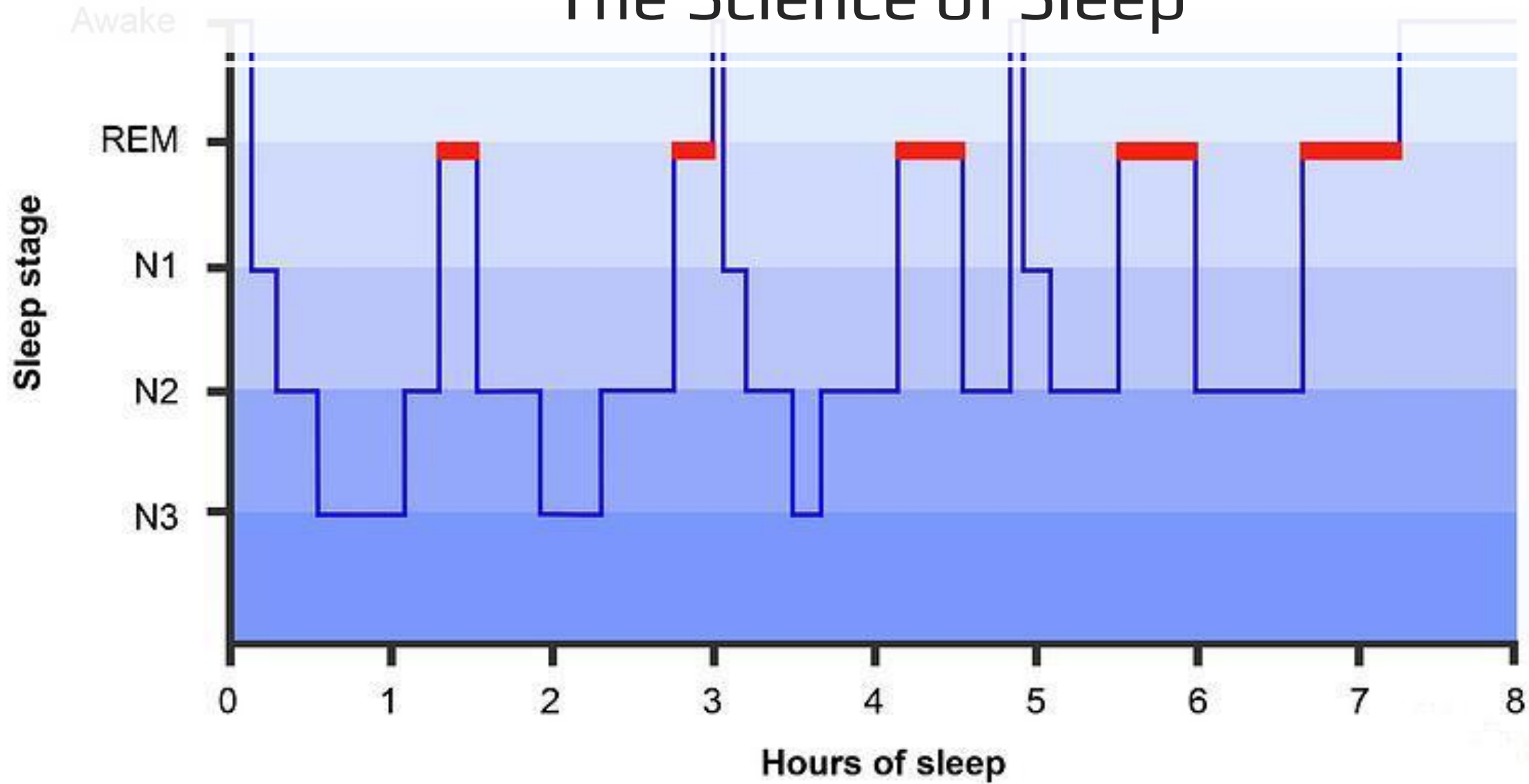
The impacts of sleep deprivation



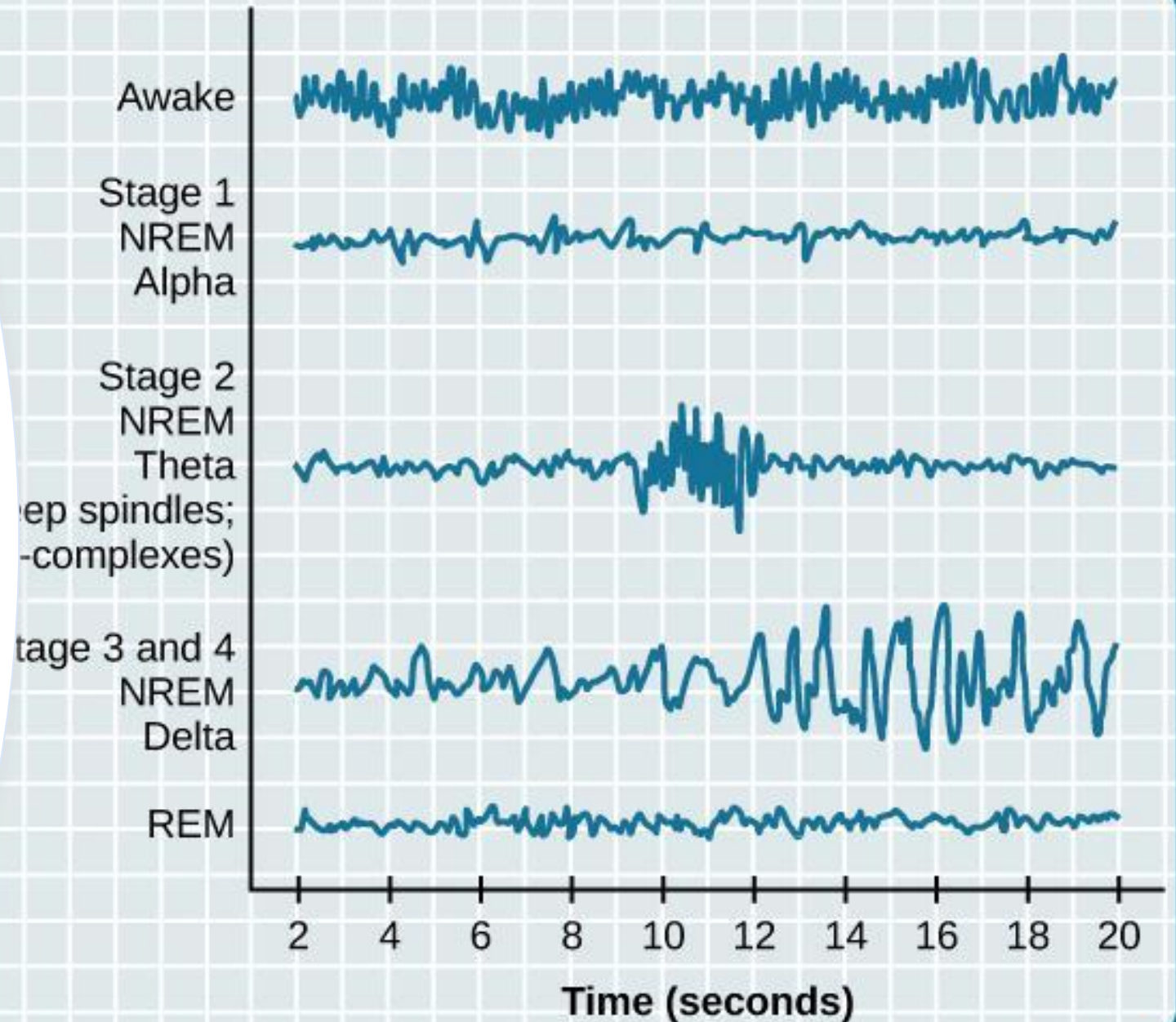
The practical tips for improving sleep hygiene

# The science of sleep

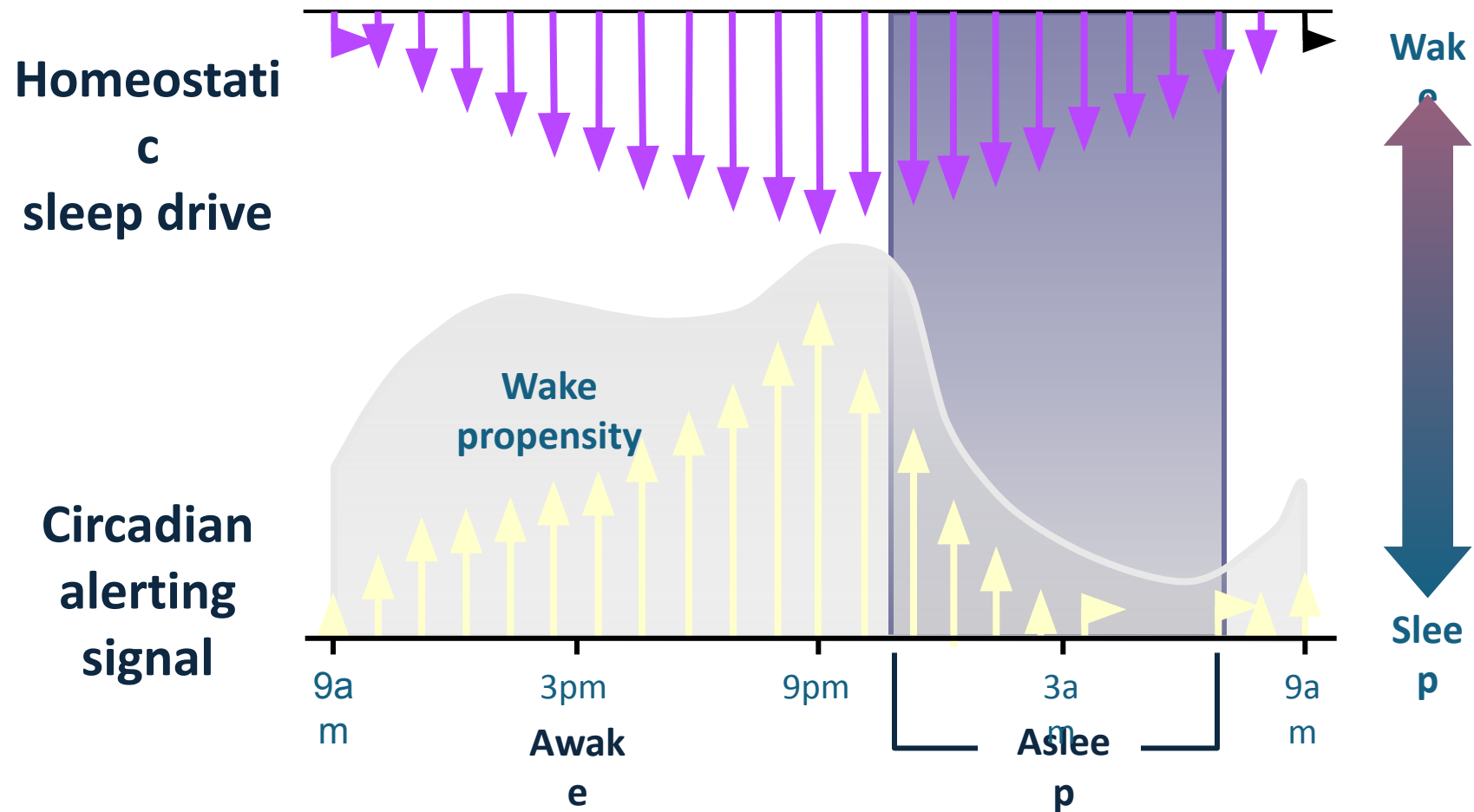
# The Science of Sleep



# EEG during sleep stages



# SLEEP AND WAKE REGULATION: THE TWO PROCESS MODEL



# Why is sleep important?

---

**Emotional Regulation:**  
Sleep helps stabilize your mood and manage stress, reducing the risk of mental health issues like anxiety and depression.

**Cognitive Function:**  
Adequate sleep enhances memory, concentration, and problem-solving skills, which are essential for effective daily functioning.

**Physical Health:** Sleep supports immune function, tissue repair, and growth, contributing to better overall health.

**Energy and Motivation:**  
Quality sleep boosts energy levels and motivation, improving both productivity and the ability to engage in physical activities.

**Mental Health:** By maintaining the balance of neurotransmitters and hormones related to mood and stress, sleep promotes a resilient mental state.

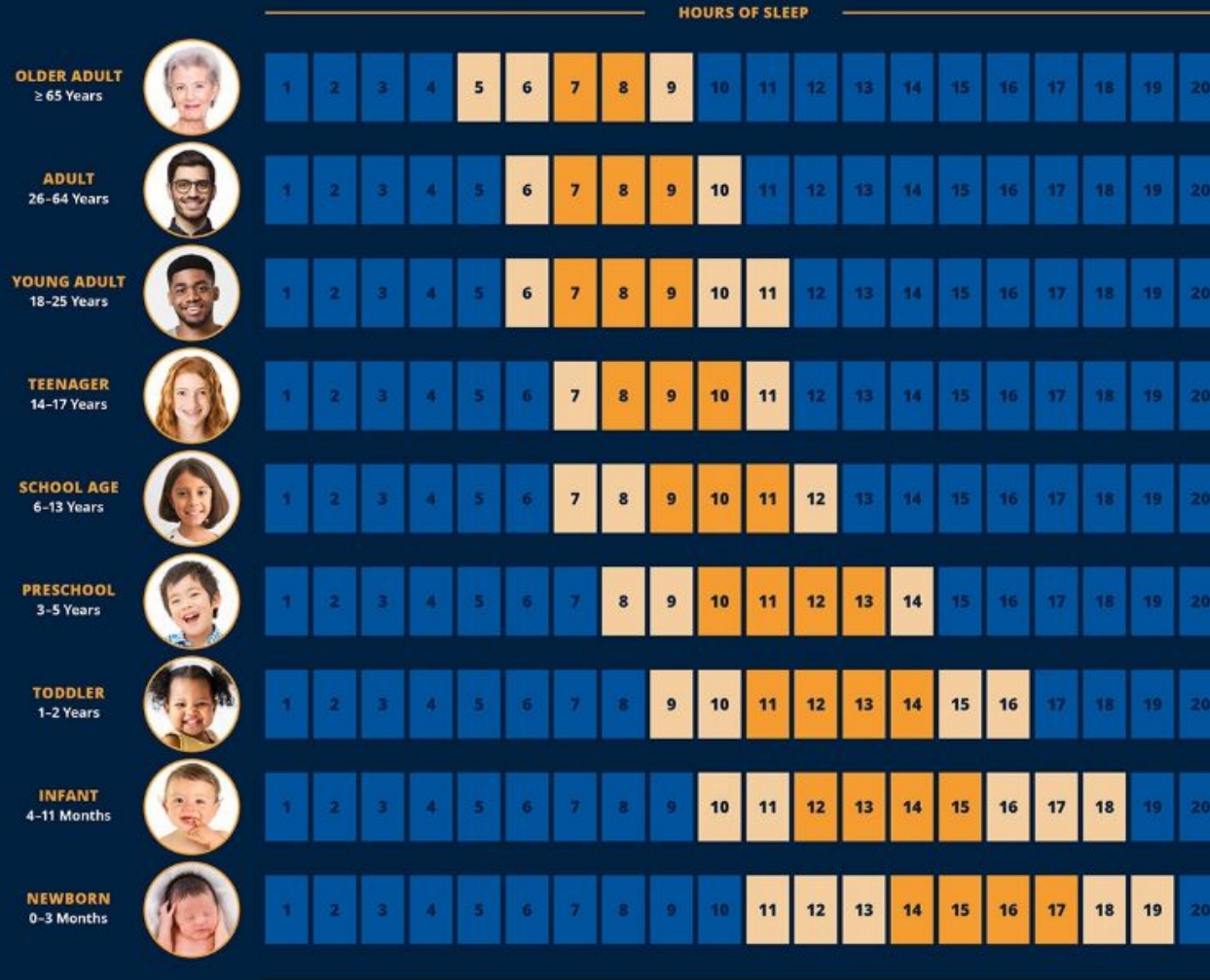
# How much sleep does an adult need?

---

There is no precise number of minutes or hours of sleep at night that guarantees you will wake up feeling totally refreshed.

Based on your age and lifestyle, what's recommended for you likely falls within a certain range.

NATIONAL SLEEP FOUNDATION  
RECOMMENDED SLEEP DURATIONS



Recommended Range



May Be Appropriate



Not Recommended

# The impact of sleep deprivation

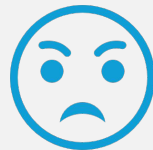
# The impact of sleep deprivation on mood



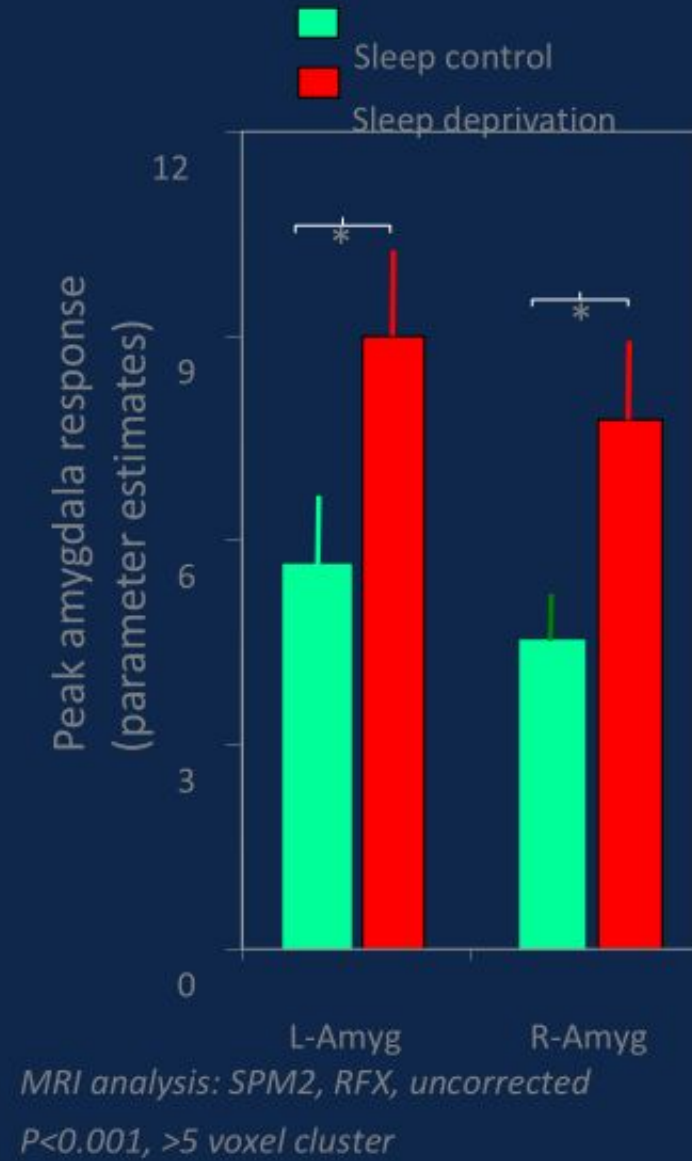
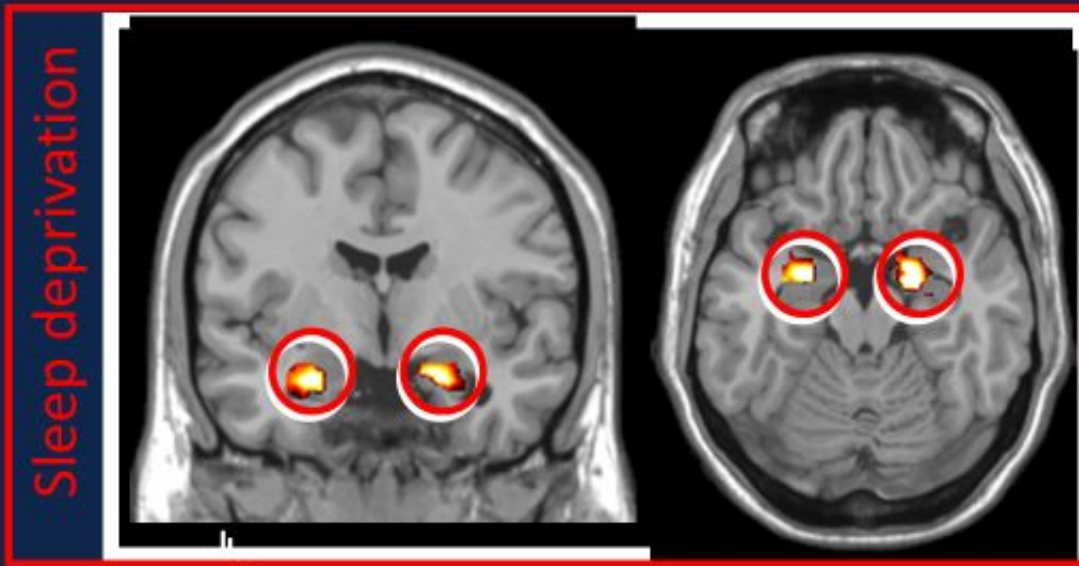
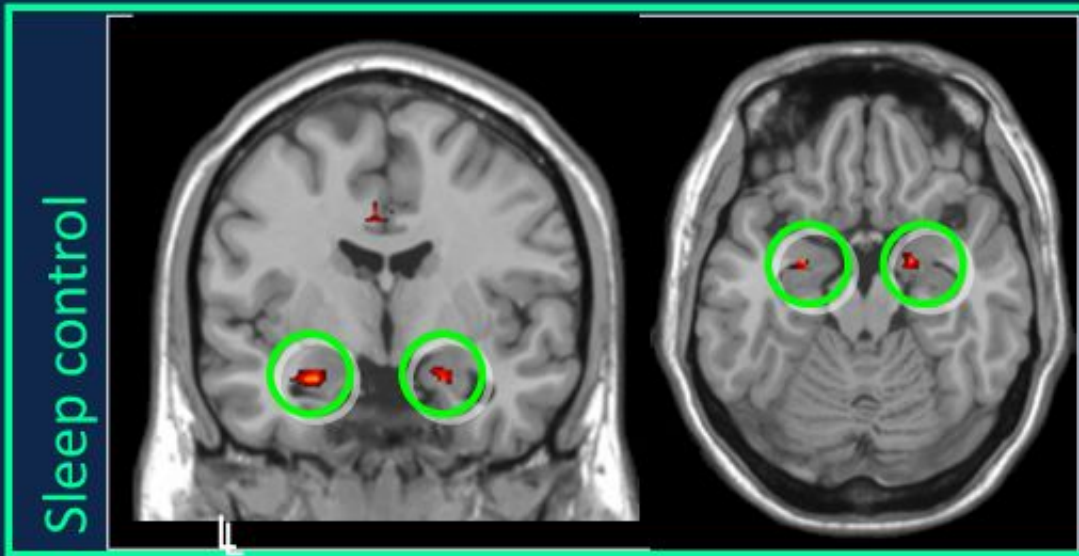
Increased risk of depression, anxiety, and irritability



Exacerbation of existing mental health conditions



Emotional instability and reactivity





# How does mental health affect sleep?

## Lead

Conditions like anxiety and depression can lead to difficulties falling or staying asleep, as well as cause insomnia or restless nights.

## Stress and racing

Stress and racing thoughts may disrupt your ability to relax, making it challenging to achieve restful sleep.

## Affect

Mental health can affect the natural sleep-wake cycle, leading to fatigue and irregular sleep schedules

# Sleep and Specific Mental Health Problems



## Depression

Individuals with depression often have difficulty falling asleep, staying asleep, or waking up too early. Some individuals might sleep for more hours than usual when depressed.



## Anxiety

Individuals who suffer from anxiety may have difficulty falling asleep or have difficulty getting back to sleep.



Other mental health disorders that may have sleep symptoms include Bipolar Disorder, Attention Deficit Hyperactivity Disorder (ADHD) and Schizophrenia.

A photograph of a bed with white linens and pillows. The bed is covered with a white sheet and a white duvet cover. There are several white pillows, some of which are slightly wrinkled. The lighting is soft and even, highlighting the texture of the fabric. The text "Sleep Disorders" is overlaid in the center of the image in a white, sans-serif font.

# Sleep Disorders



# What is Insomnia?

1. One or more of the following nighttime symptoms:
  - Difficulty falling asleep (>30 minutes per night)
  - Difficulty staying asleep (waking up and unable to return to sleep within 30 minutes)
  - Waking up too early in the morning ( $\geq 1$  hour before desired wake time)
2. Symptoms occur  **$\geq 3$  times** per week and have been present for  **$\geq 3$  months**
3. Symptoms are not directly caused by another sleep disorder (e.g., sleep apnea)
4. Causes next day dysfunction

# What is sleep apnea?

- Repetitive episodes of complete or partial upper airway obstruction occurring during sleep and typically resulting in oxygen desaturation and/or cortical arousal.
- Obstructive events (apneas, hypopneas, RERAS) must occur at frequency of
  - 5 or more per hour + symptoms\*/comorbidities\*\*
  - 15 or more per hour regardless of symptoms/comorbidities
- \*sleepiness, nonrestorative sleep, fatigue, insomnia, awakening with breath holding/gasping/choking, bedpartner noted snoring and/or apneas  
\*\*htn, mood disorder, cognitive dysfunction, CAD, stroke, CHF, afib, DM2



# Symptoms

Excessive daytime sleepiness, loud snoring, and witnessed apneas

Insomnia, mouth breathing, reflux, nocturnal hyperhydrosis, cognitive impairment, nocturia

Children may be inattentive, hyperactive, or aggressive with peers

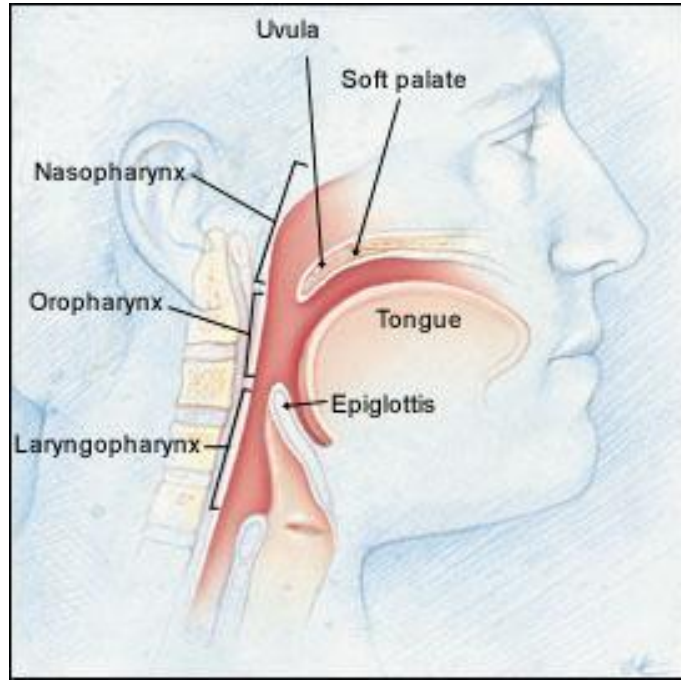


Illustration © 1999 Christy Krames

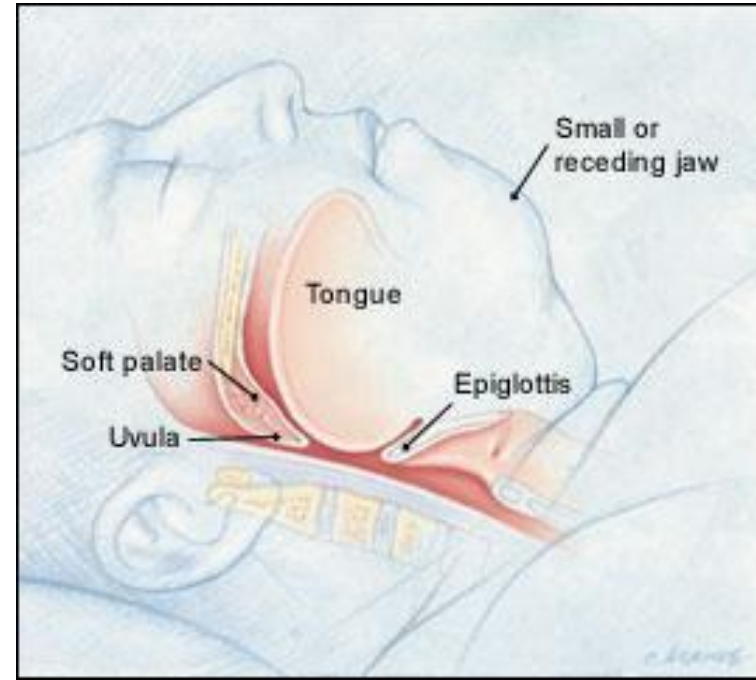


Illustration © 1999 Christy Krames

# Anatomy of OSA

# Consequences



**Acute physiological  
changes**



**Chronic effects on the  
brain**

sleepiness

cognitive impairment

motor vehicle crashes

# Conditions associated with sleep apnea

Hypertension

Stroke

Myocardial infarction

Arrhythmias

Heart failure

Increased mortality

Diabetes

Metabolic Syndrome

Depression

Asthma

# CPAP Masks



# What are Movement Disorders in sleep?

Restless Legs Syndrome  
Periodic Limb Movements



# Restless Leg and Periodic Limb Movement Disorder

## RLS and PLMD

**Restless leg syndrome (RLS)** is characterized by a feeling that you have to move your legs, usually at night when you are in bed.

**Periodic limb movement disorder (PLMD)** causes repetitive jerking movements in the foot/leg or hands/arm

RLS or PLMD is more than just a nuisance while you're trying to sleep. Studies show RLS is associated with a higher overall mortality rate in older adults.

## Histamine Connection

**Histamine acts as a neurotransmitter** in the brain, and histamine receptors in the brain are involved in wakefulness. **H3 receptor in the striatum** is likely involved in limb movement during sleep, and in animal models with restless leg syndrome had much higher levels of H3 receptors in the striatum.



## Genetic Connections

**MEIS1 gene:** encodes a protein involved in neurodevelopment and in dopaminergic neurons and variants are associated with higher PLMD and RLS.

**BTBD9 gene:** encodes a protein that alters neurotransmission and dopamine.

**GABA Receptor:** GABA is the main inhibitory neurotransmitter – it keeps the neurons from being overexcited.

Inflammation genes related to RLS: **IL-1B gene** and **IL-17A**.

## Ways to Reduce RLS Symptoms

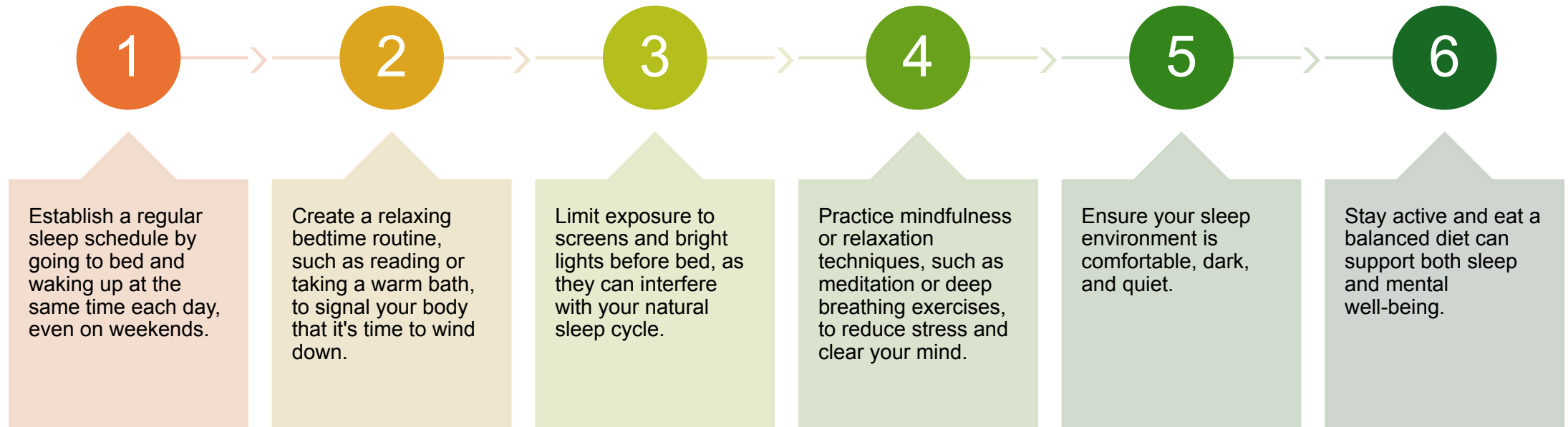
Yoga, exercise, and acupuncture can help with RLS and PLMD.

If deficient, **vitamin B6, vitamin D, iron and magnesium** may help with RLS and PLMD.

# Practical tips for improving sleep

# 6 Strategies for Improving Sleep and Mental Health

---



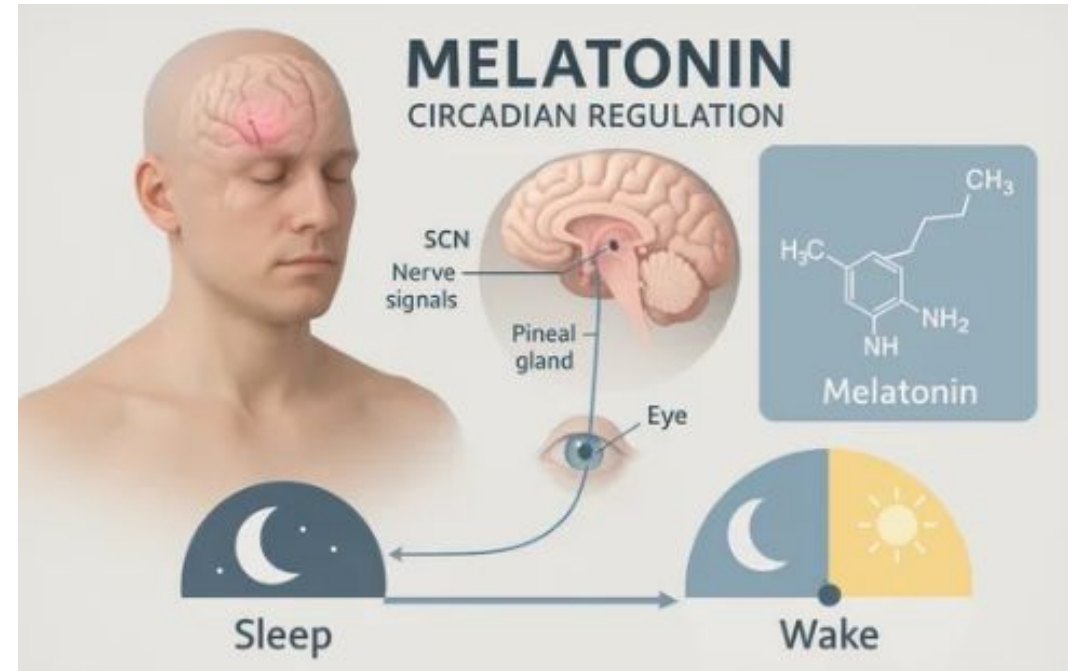
## ESTABLISH A SLEEP SCHEDULE

### Consistent Timing:

Go to bed and wake up at the same time **daily**.

### Gradual Adjustments:

Shift your **bedtime earlier** by 15-30 minutes each week.



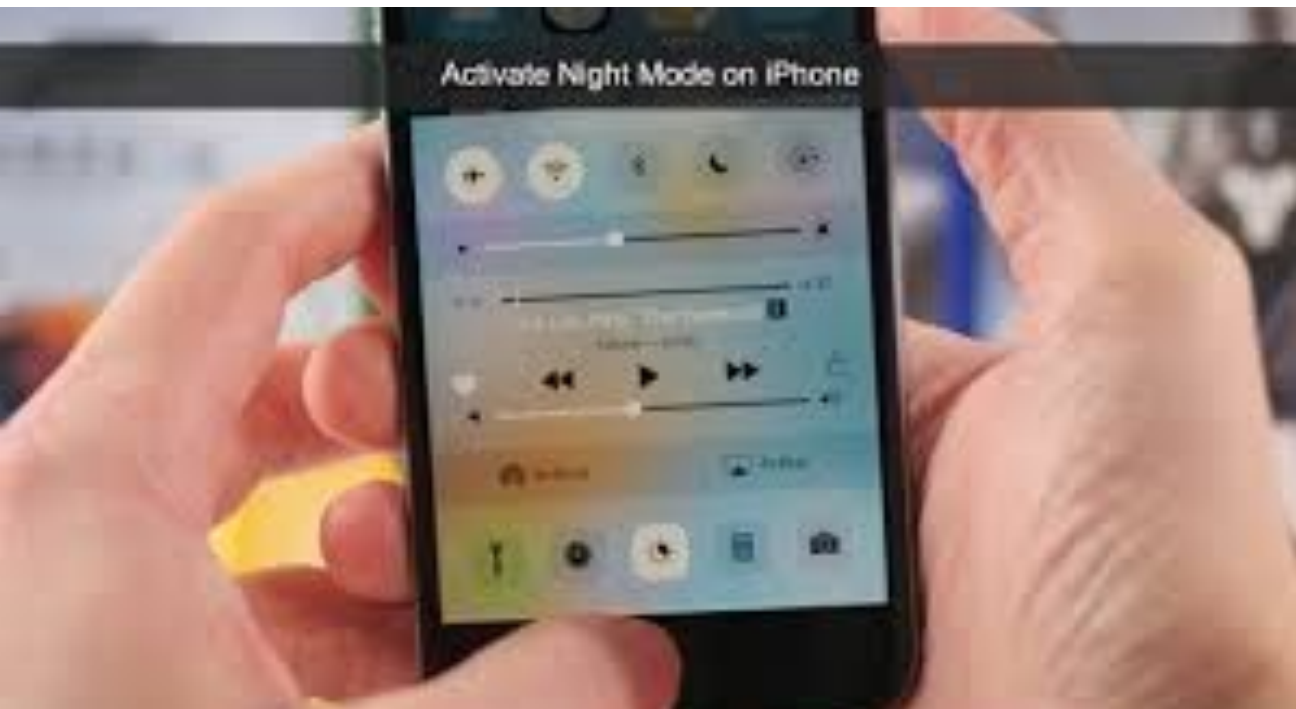
1. Keep a regular sleep /wake cycle

## 2. Winddown before bed

- **Make the last hour before bed a “wind-down” time.** Engage in relaxing and pleasant activities, dim the lights, and have a light snack.



3. Limit light exposure before bed



# 4. Breathe/engage in a relaxation practice

Bedtime stories

Ambient sounds

Winding down

Schedule worry time

Deep breathing

Muscle relaxation

Leaves on a stream

Guided Imagery

Mindfulness observation

Body scan

## 5. Ensure environmental comfort

- Cool
- Dark
- Quiet
- Comfortable



# 6. Exercise and eat well Nutrition

← MHealthy

## Physical Activity

### 🔍 Browse in this section

- Active U Autumn
- Active U
- Physical Activity Classes
- Fitness Centers at U-M
- Physical Activity Resources
- Time to Move
- MHealthy Movement Consultation

### 🔍 Browse in this section

- Nourish Your Whole Self
- MHealthy Cooking Classes
- Find Fresh Produce
- Ask A Registered Dietitian
- Resources
- Cooking Videos
- Food and Nutrition Security
- Holiday Webinar Series: Intuitive Eating & Joyful Movement
- MHealthy Nutrition Guidelines
- MHealthy Recipes
- MHealthy Vending, Dining and Catering Programs

# SLEEP RESOURCES



## **MHealthy Sleep Webpage (listed under health conditions)**

- Tips and Articles for Restful Sleep
- Audio Tracks and Apps to Help You Sleep
- Additional Resources on Sleep

<https://hr.umich.edu/benefits-wellness/health-well-being/mhealthy/faculty-staff-well-being/health-conditions/sleep>

## **MHealthy Sleep IQ Challenge (coming late October)**

Take the Sleep IQ challenge to improve your sleep knowledge and support you during daylight savings time.

## **MHealthy Portal Sleep Programs**

Path to Wellness: Sleep

In this program you will have access to informational articles and short interactive online courses that will help you improve your sleep.

Course: Rest (Sleep Hygiene)

In this course, you will learn about the restorative processes that take place while you sleep and the components of good sleep hygiene.

Course: Addressing Sleep Disorders

This course summarizes healthy habits that support proper sleep quantity and quality and will help determine if you have a sleep disorder.

## **Michigan Medicine Department Behavioral Sleep Medicine**

<https://medicine.umich.edu/dept/psychiatry/programs/sleep>

## **Michigan Medicine Sleep Disorder Center**

<https://medresearch.umich.edu/labs-departments/centers/sleep-disorders>



# From Sleep Disorders to Sleep Health

ENROLL NOW

**M** FREE ACCESS



SOCIETY OF BEHAVIORAL  
SLEEP MEDICINE



NATIONAL SLEEP  
FOUNDATION

# National Societies

- American Academy of Sleep Medicine  
<https://sleepeducation.org/>
- Society for Behavioral Sleep Medicine  
<https://www.behavioralsleep.org/>
- National Sleep Foundation  
<https://www.thensf.org/>

# SLEEP DISORDERS CENTER

The UM sleep medicine program is one of the oldest, largest, and most well-developed in the U.S.



## Care

### The Behavioral Sleep Medicine Program

Behavioral Sleep Medicine is an expanding area of the sleep field that focuses on the evaluation and treatment of sleep disorders by addressing behavioral, psychological, and physiological factors that interfere with sleep.

The Behavioral Sleep Medicine (BSM) Program is a specialty clinic within the University of Michigan Sleep Disorders Center that serves adults 18 years of age and older with sleep disorders amenable to psychological and behavioral approaches to treatment. Sleep disorders most commonly seen in this program include insomnia, sleeping pill dependence, circadian rhythm sleep disorders, and difficulty adjusting to therapies for sleep apnea.

Patients have the opportunity to receive treatment on a one-on-one



Sleep faculty team