

Sleep: Important Considerations in the Era of COVID-19

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Objectives



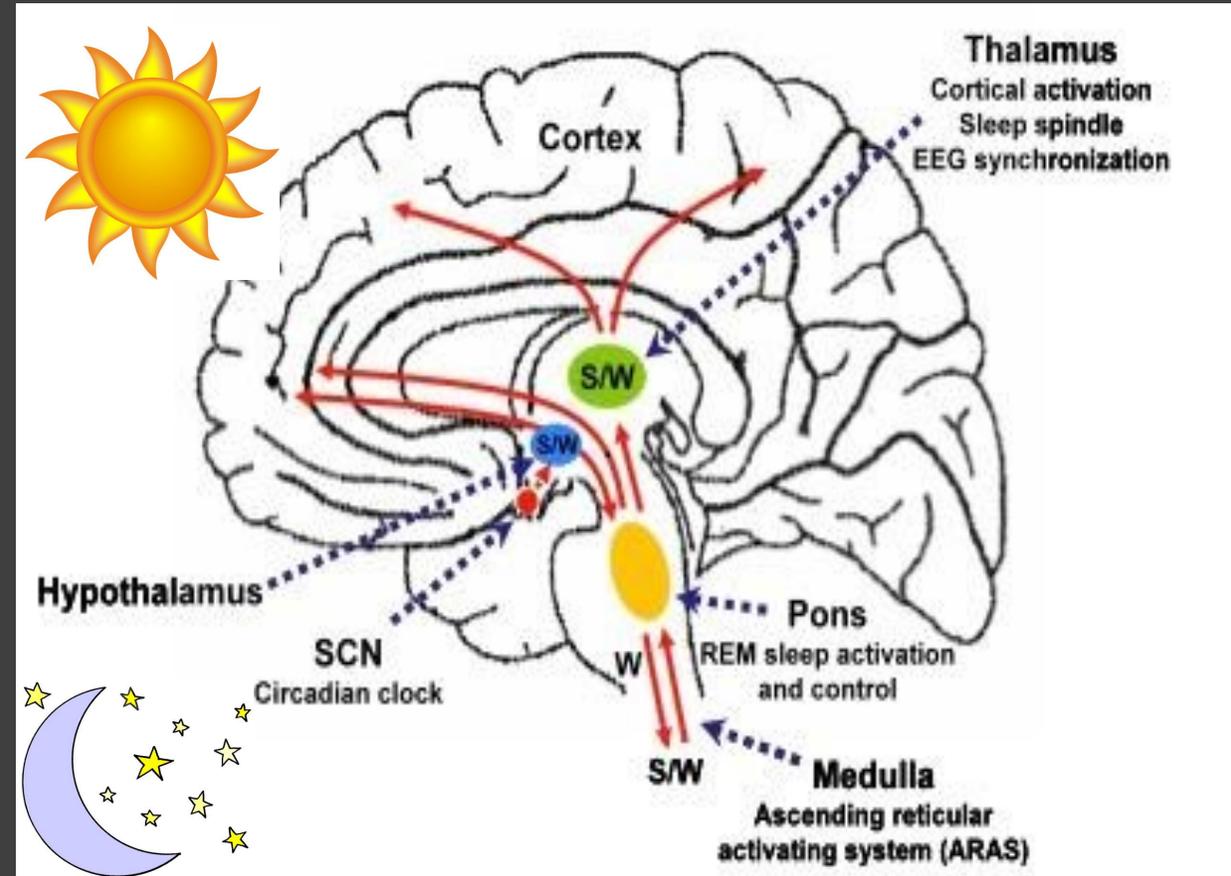
- Provide an overview of sleep mechanisms
- Discuss how sleep becomes unbalanced
- Discuss brief at-home interventions

What is Sleep?

- A physiological process with cycles of different sleep states
- Sleep is an important part of your daily routine
- Humans spend ~ 1/3 of your day sleeping
- Quality sleep is essential for the brain and body
- Sleep is an active process
 - Supports learning and memory
 - Removes toxins
 - Affects almost every type of body system: brain, metabolism, heart and lungs, immune, mood, and disease resistance

Anatomy of Sleep

- Regulated connections between:
 - Suprachiasmatic Nucleus in the hypothalamus
 - Brainstem (Pons and Medulla)
 - Reticular Activating System
 - Thalamus
 - Pineal Gland – increase melatonin
 - Basal Forebrain
- Two mechanisms manage our sleep-wake cycles
 - Circadian rhythm: body's internal clock for sleep and wake
 - Sleep-wake homeostasis: accumulation of sleep-inducing substances generate sleep drive



Sleep Chemicals:

GABA – sleep onset and muscle relaxation
Norepinephrine and Orexin – wake
Acetylcholine, histamine, adrenaline, cortisol, serotonin

Stages of Sleep

- Wakefulness
- NREM Sleep
 - Stage 1 – drifting off; floating feeling
 - Stage 2 – detached from outside world; easily awakened
 - Stage 3 – more difficult to awaken
 - Stage 4 – sleepwalking Stages 3 and 4; groggy and confused if awakened
- REM Sleep – dreaming; muscle paralysis



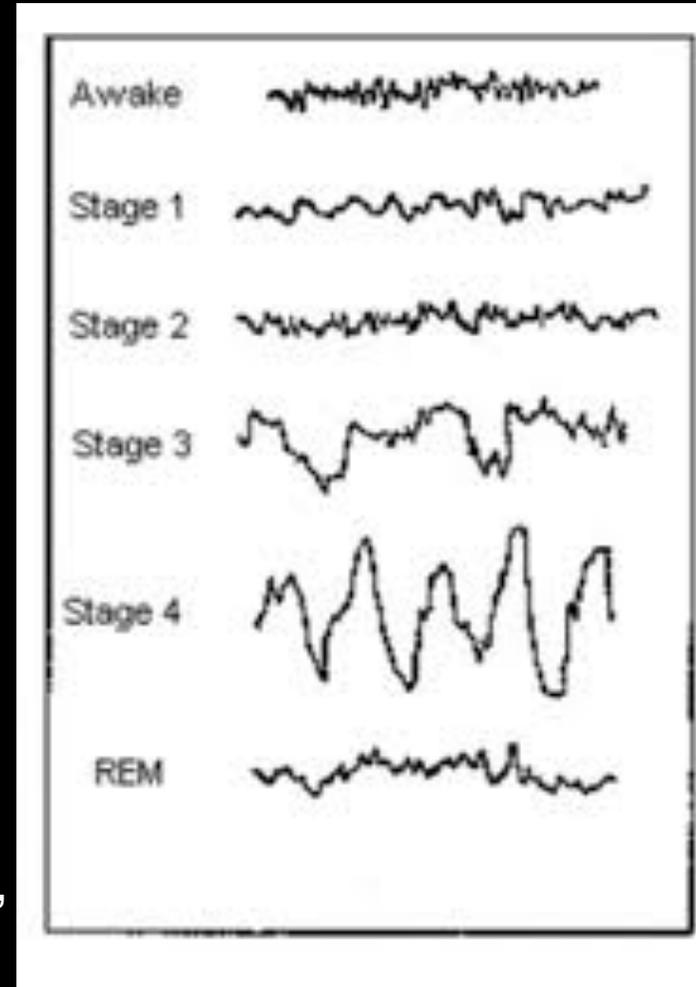
“light sleep”



“deep sleep,
slow wave sleep”



“active sleep”



Dreams

- We spend 2 hours each night dreaming
- The exact function of dreams is not known
 - ?help to process emotions
 - Facilitate consolidation of new information
- Dreams can happen in any stage of sleep
- Most vivid in REM sleep



Why do we sleep?



Restorative

Body
Brain
Regulates body temperature



Protective

Removes toxins
Conserves energy
Boosts immune defenses



Brain health

Promotes development
Consolidates learning and memory



Primal

Protective and adaptive behavior

What Happens with chronic sleep disruption?

- Impacts to Cognition:
 - Inattention
 - Slow response speed
 - Slowed processing of information
 - Reduced learning and memory
 - Difficulty multitasking and problem solving
- Impacts to Health
 - Increase blood pressure and contributes to cardiovascular/cerebrovascular stress
 - Obesity
 - Impacts diabetes management
 - Increases inflammatory markers
 - Increase susceptibility to illness and disease
 - Impacts mood: Depression, anxiety, ability to manage stress



Common Causes of Sleep Disruptions

Evening Light (TV,
electronics)

Lack of day light

No daily routine
No structure

Worried Thoughts

Mental Health

Lack of physical
activity

Daily naps

Evening Noise

Substance use:
nicotine, caffeine,
alcohol

Room/Environment
Factors

Bedroom used for
activity



Sleep disruptions in older adults and cognitive impairment

- As we age, the SCN may deteriorate which can lead to disruptions of the circadian rhythm and decreased release of melatonin
 - A community study showed 38% of people > 65 reported sleep disturbances
- As we age, we spend less time in REM Sleep
- Up to 59% of patients with MCI and 40% of patients with Alzheimer's disease suffer from sleep disturbances
 - More fragmented sleep
 - Longer periods of wakefulness during the night
 - Daytime sleepiness
- Sleep problems contribute to increased caregiver stress and burden

Improving Sleep: Self-directed approaches

- Approaches that can be used at home, either independently or with support from family member/care partner
- Sleep Hygiene
- Relaxation/Stress Management
- Sleep Diary



Sleep Hygiene: Tips for better sleep

- Have a routine – don't alter it greatly day to day or from the week to the weekend
- Use and/or take advantage of light cues – in our dark winter months, turn on bright lights in the morning and similarly, have dark curtains in the bedroom for early summer mornings
- Do something physically active every day to help normalize circadian rest/activity rhythm – needs to be done a handful of hours before bed
- Avoid napping if possible – if you do nap, try to limit it to 30 minutes in the afternoon

Sleep Hygiene: Tips for better sleep cont.

- Lie down to go to sleep only when sleepy and not before scheduled bedtime
- Use the bed only for sleeping – eating, reading, watching TV or other activities in bed confuses our brain, breaks the connection between “bed” and “a place for sleep”
- Make sure bed/bedroom are comfortable (temperature, enough blankets, etc.)
- Drinking fluid too late in the evenings may increase awakenings to urinate
- Avoid TV, electronic readers, and tablets/smartphones right before bed as they will send activating light to the eye and brain, which confuses our bodies
 - Some devices have settings to reduce brightness/blue light– if you don’t have this option, opt for a printed material or soothing music

Sleep Tips cont.

- Substances and Sleep
 - Alcohol can interfere significantly with sleep
 - Smokers often sleep lightly and have decreased REM – heavy smokers may wake up after a few hours due to nicotine withdrawal
 - Cutting out caffeine before bedtime – some people are very sensitive to caffeine and may need to cut it out after early afternoon

Relaxation/Managing Stress

- Develop a pre-bedtime routine – helps unwind; prepare bodies and brains for sleep
- Wind down before bedtime – identify activities that help you relax and relieve daytime stress (practice mindfulness, do some reading, take a warm bath listen to music, meditate, pray, etc.)
- Deep Breathing
- Visualization
- Mindfulness
- Yoga
- Meditation

SITTING MEDITATION

- **GET IN A COMFORTABLE SITTING POSITION.**
- **FOCUS ON YOUR BREATH,** as it enters and leaves your body, wherever you may feel it. You might focus on your belly, your chest rising and falling, your nostrils. The intention is not to change your breathing, rather to notice your breathing.
- **JUST NOTICE THE EXPERIENCE.** Notice without getting caught in the experience. And if you get caught up in your thoughts/feelings/sensations, notice that and return your focus to your breath.
- **ACKNOWLEDGE YOUR MIND WANDERING.** Your mind will likely wander away from your breath to other things, such as thoughts about the past or the future, sounds you hear, sensations you have.
- **LABEL YOUR MIND WANDERING.** It can be helpful to label your mind wandering, such as saying "Thinking" in response to having thoughts, or "Sound" in response to your mind wandering to sounds you hear, or "Judging" in response to judging yourself or your mind wandering.
- **GENTLY RETURN YOUR ATTENTION BACK TO YOUR BREATH, OVER AND OVER AND OVER AGAIN.** Continue to return the focus of your attention GENTLY back to your breath, again and again and again.

Diaphragmatic breathing technique

Lie on your back on a flat surface or in bed, with your knees bent and your head supported. You can use a pillow under your knees to support your legs. Place one hand on your upper chest and the other just below your rib cage. This will allow you to feel your diaphragm move as you breathe.



Breathe in slowly through your nose so that your stomach moves out against your hand. The hand on your chest should remain as still as possible.



Tighten your stomach muscles, letting them fall inward as you exhale through pursed lips. The hand on your upper chest must remain as still as possible.



When you first learn the diaphragmatic breathing technique, it may be easier for you to follow the instructions lying down, as shown above.

Diaphragmatic Breathing cont.

- To perform this exercise while sitting in a chair:
 - Sit comfortably, with your knees bent and your shoulders, head and neck relaxed.
 - Place one hand on your upper chest and the other just below your rib cage. This will allow you to feel your diaphragm move as you breathe.
 - Breathe in slowly through your nose so that your stomach moves out against your hand. The hand on your chest should remain as still as possible.
 - Tighten your stomach muscles, letting them fall inward as you exhale through pursed lips. The hand on your upper chest must remain as still as possible.
- **Note:** *It may require more effort to use the diaphragm correctly at first. But with continued practice, diaphragmatic breathing will become easy and automatic.*

Sleep Diary

- Sleep Diary – even if we think we know our sleep patterns, research shows we see them more clearly when we use Sleep Diaries
 - Choose a period of time that is fairly typical for you in terms of your sleep
 - Begin recording your sleep in the Sleep Diary each morning when you awaken
 - Remember, this is an *estimate* of your sleep over the past 24 hours – there is no need to record exact times you were awake during the night, or the exact time you fell asleep



Follow-up/Resources

- For chronic/severe sleep difficulties, consult with your regular providers
 - Therapy helps many people manage chronic sleep disturbance
 - Try sleep-focused behavioral therapy, relaxation therapy, or cognitive/behavioral therapy (a short-term, goal-oriented type of therapy)
- Always talk with your physician before considering any pharmacotherapy/sleep medications

Summary

- Sleep is important for brain and body health
- Environmental and mental health factors can disrupt sleep
 - Identify these on your own or working with a mental healthcare provider
- Sleep disruptions are effect people with MCI/Dementia and contribute to increased caregiver stress
- Practicing good sleep hygiene can improve sleep onset and quality
- Meditation and diaphragmatic breathing can help with relaxation
- Consult your physician to learn more



Thank you

For comments or Questions contact:

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