MANAGING SLEEP CHALLENGES IN THE ALLIED HEALTH PROFESSIONS

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Objectives

List the two common disorders.

What are factors unique to the Healthcare setting?

List the effective approaches for reducing risk.

What is normal sleep?

List management options.

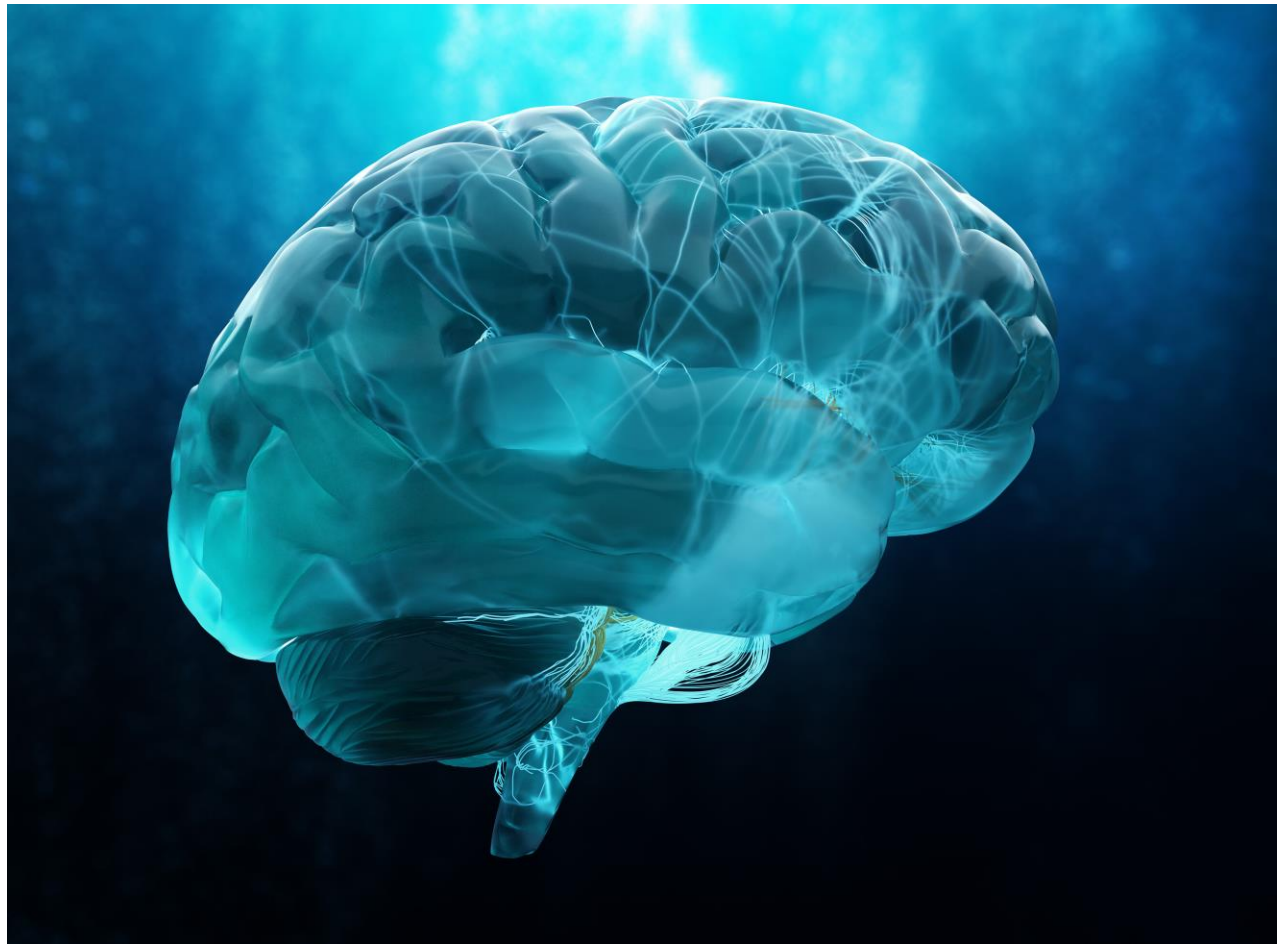
Study discussion.

What is Normal Sleep?

- Many factors to consider such as quality, timing, and duration.
- Individual variability is high due to bio psychophysiological factors.
- Duration is influenced the most by all these factors.
- Basis of AASM consensus for sleep amount necessary to support optimal health in adults as 7 – 9 hours.

Normal Polysomnography

- A normal sleep period of 7 – 9 hours is comprised of approximately 5 cycles sleep.
- Each cycle has a rhythm of 4 sleep stages, encompassing two types of sleep, NonREM and REM. NonREM is broken down into 3 stages, N1, N2, and N3.
- Time spent in N3 decreases over the course of the night and time in REM increases.



Normal Polysomnography (cont'd)

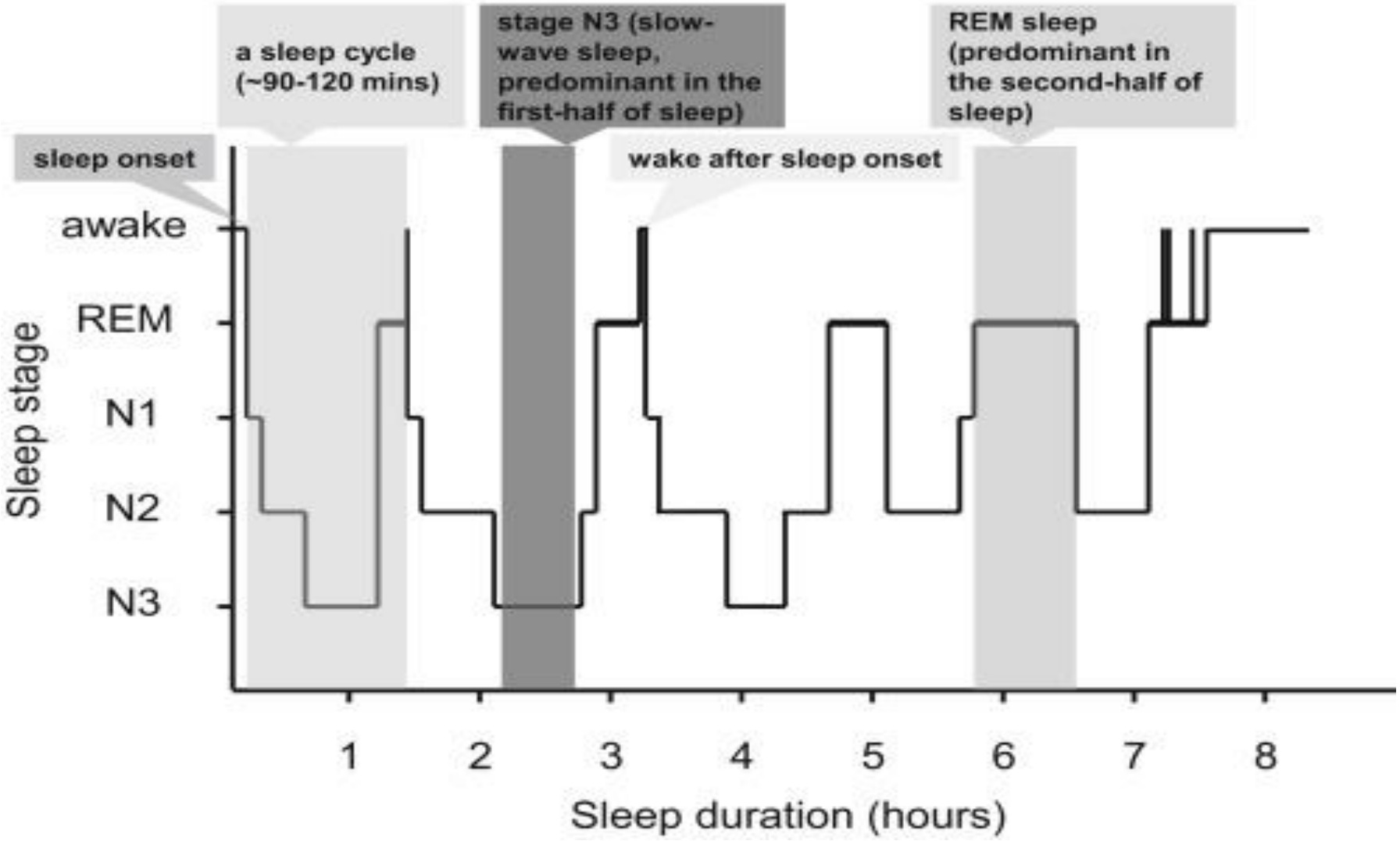
Stage N1 = transitional, light stage of sleep, and least amount of each sleep cycle (1 to 5 minutes).

Stage N2 = 50% of the sleep cycle. Sorts useful memories for easy retrieval.

Stage N3 = Deep sleep and approx 20% of the total cycle. Responsible for body repair and memory consolidation.

REM sleep = approximately 20-25% of total sleep cycle. Two phases: Phasic and Tonic. The parts of the brain associated with learning are activated.

Normal sleep architecture



Allied Health Professionals

Include: RRT, OT, PT, Medical Lab Techs and Assistants, Radiological Techs, Medical Sonographers,

Private and public sectors.

Provide acute, chronic, specialty, rehabilitative, and palliative support.

A strained Heathcare system demands increased support from this group.

Unique Demands of Healthcare System

- Care is 24 hours a day and adrenaline/cortisol filled.
- Emergent patient care focus with little time for self-care.
- Fatigue = dedication/excellence culture.
- System is inflexible to circadian rhythm resets between shifts.
- Environment of artificial light and chaotic activity.
- A bad day at work can be a loss of life, even when we do everything right.

Sleep Disorders most common to Allied Health Professionals

Shift Work Disorder (SWD) – relates to the extrinsic circadian rhythm disturbances of night and day shifts on the intrinsic biological clock.

Insomnia – Hypervigilance related to work demands or work-related trauma.

Shift Work Disorder

An Extrinsic Circadian Rhythm Sleep–Wake Disorder: daytime sleepiness and/or insomnia for a period of three months and in the presence of rotating shifts or night shift schedules.

The Master circadian clock (or Circadian Rhythm) is located in the Suprachiasmatic Nuclei in the hypothalamus. Regulated by exposure of the eyes to light.

The master circadian clock influences sleep / wake cycles, hormonal activity, body temperature rhythm, and eating / digesting.

Exposure to light = Serotonin production (activity and mood).
Exposure to dark = Melatonin production (pressure to sleep).

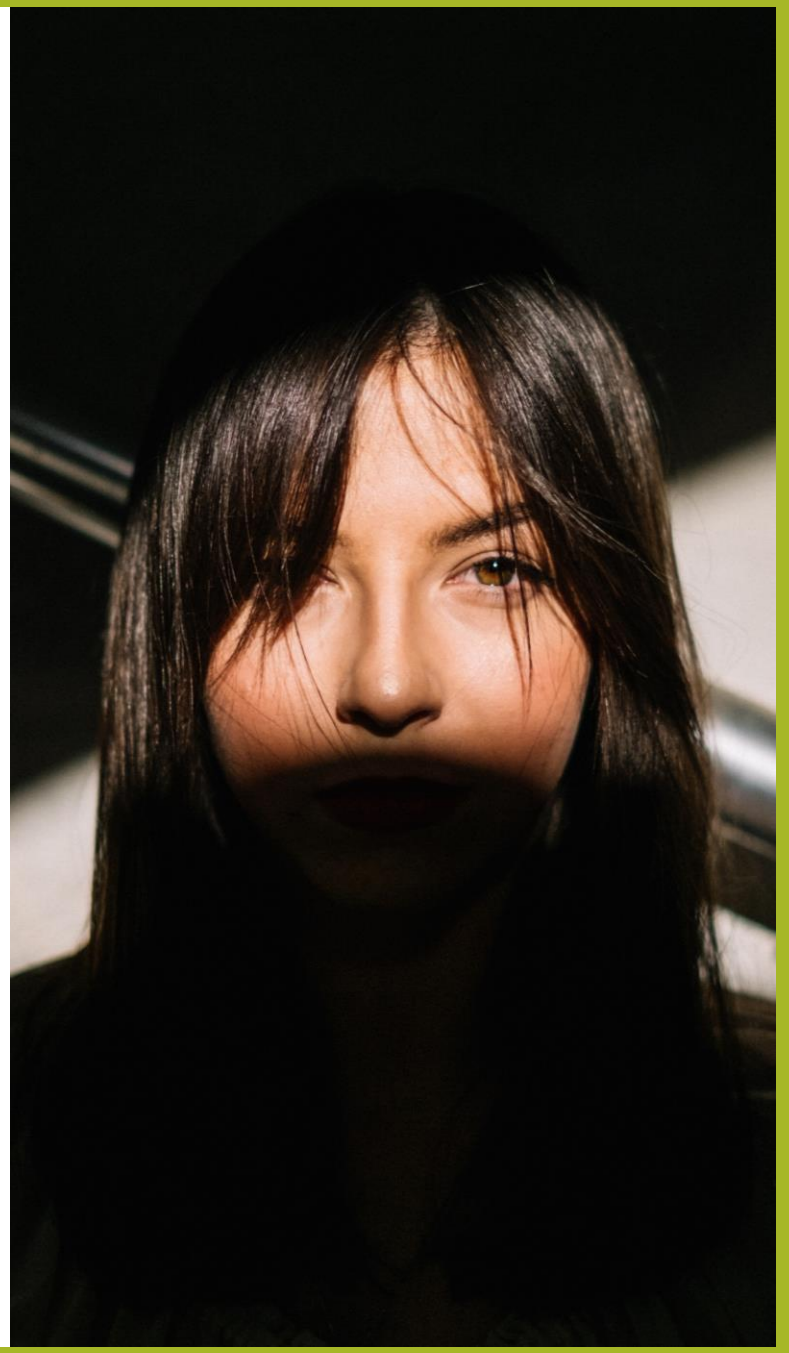
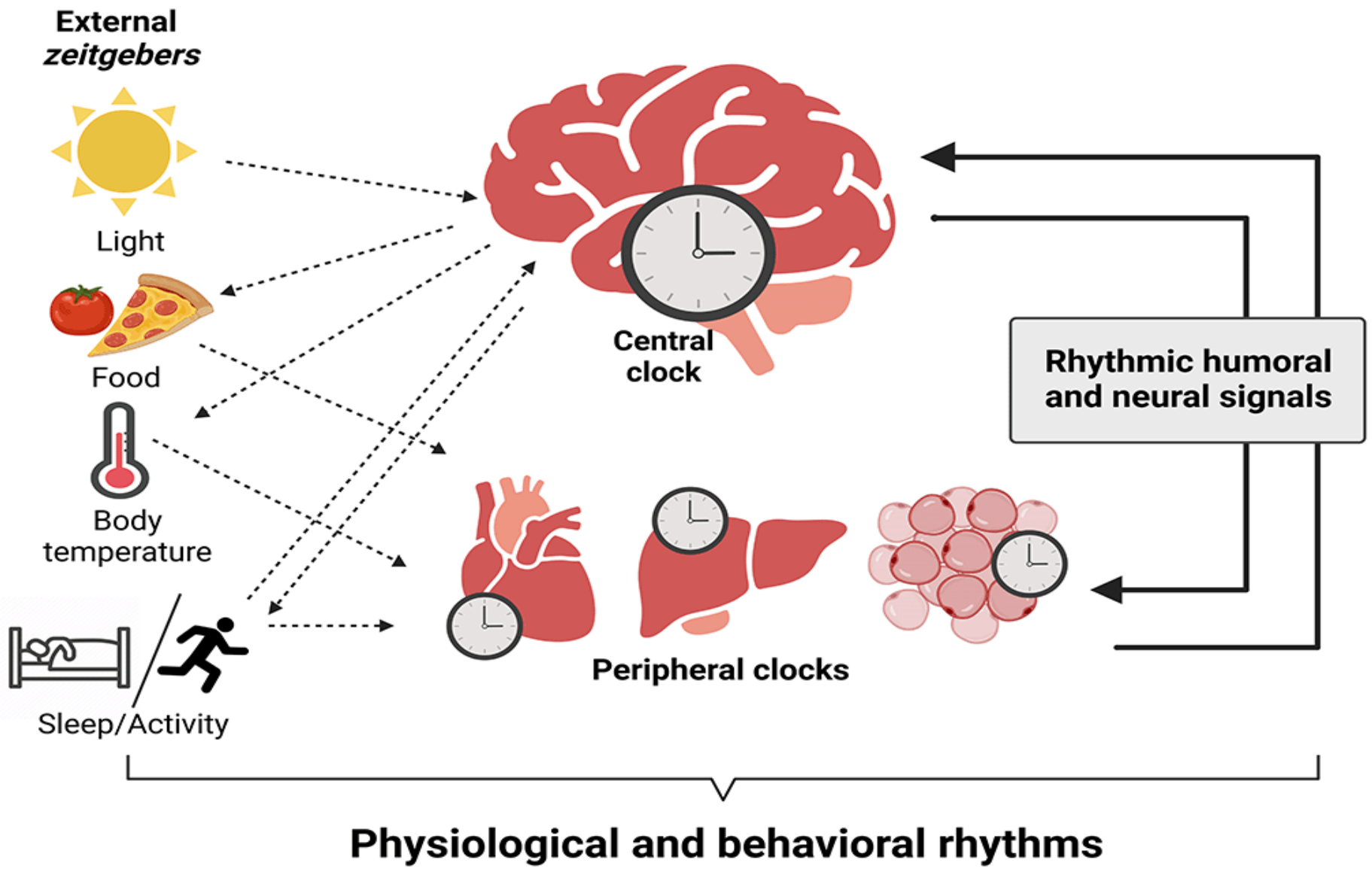


Figure 1. Organization of the circadian system in mammals.



Galinde AA, Al-Mughales F, Oster H and Heyde I. Different levels of circadian (de)synchrony – where does it hurt? [version 2]. F1000Research 2023, 11:1323 (doi: 10.12688/f1000research.127234.2)

Master Circadian Clock Influences

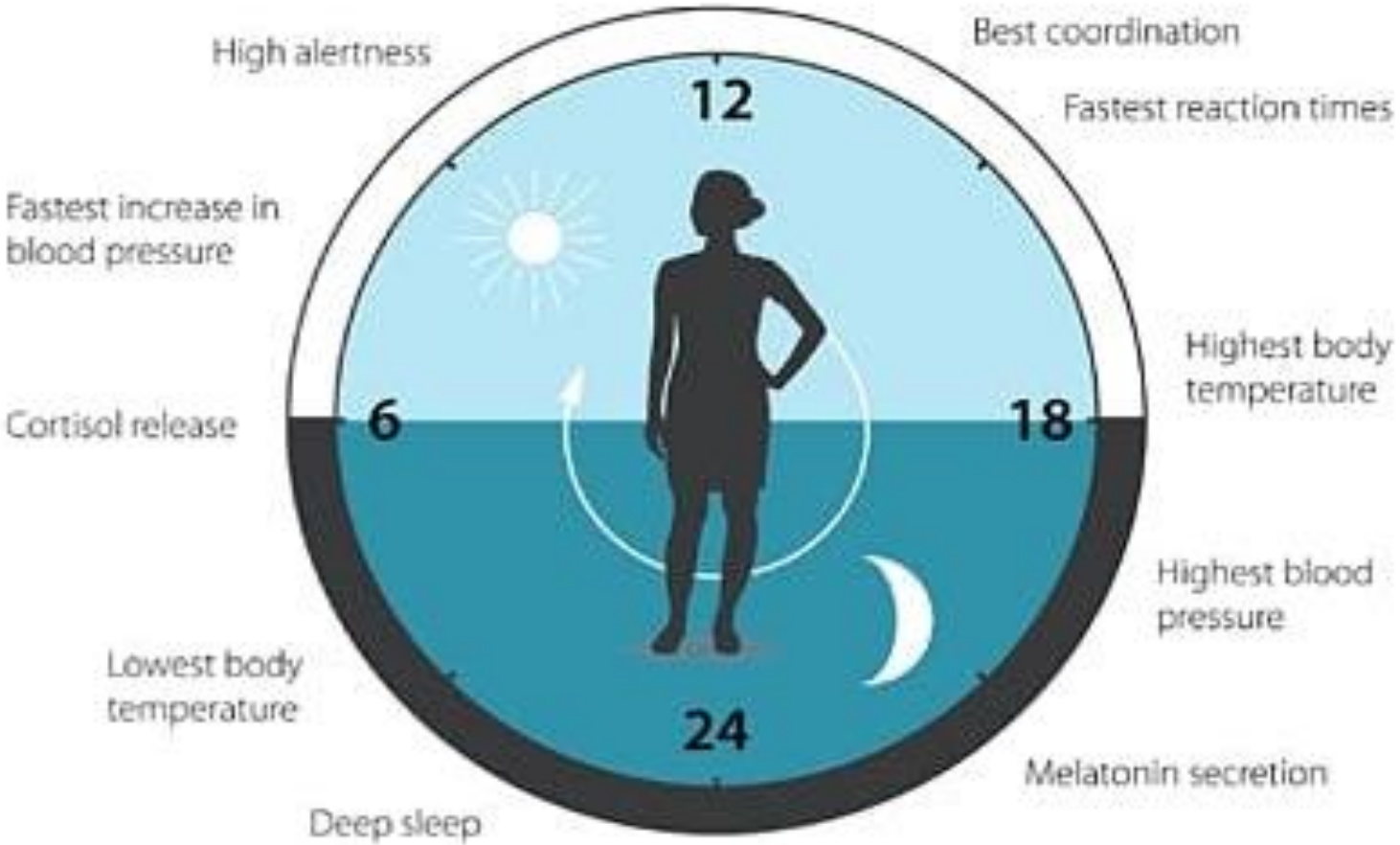
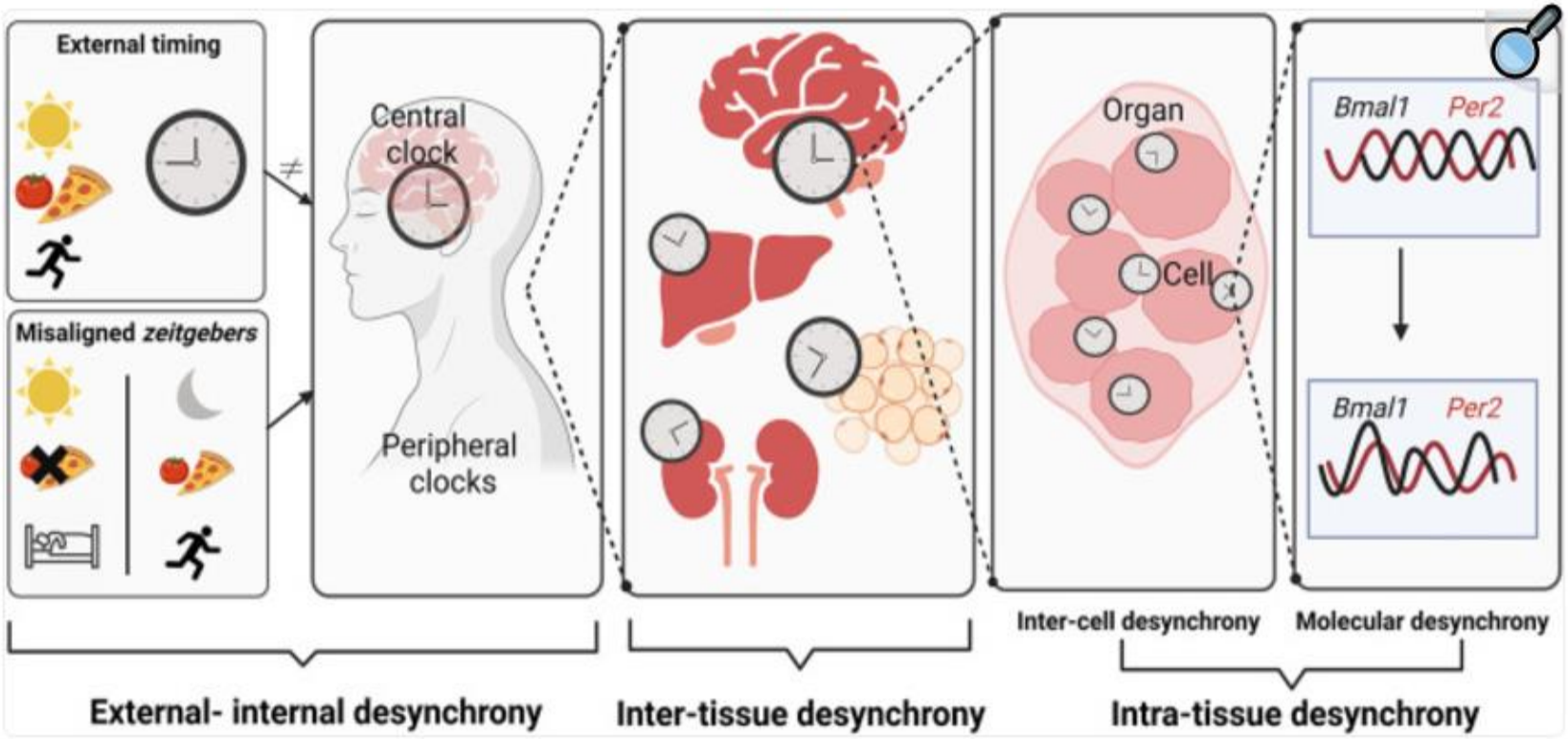


Figure 2. Different levels of circadian desynchrony.

Misaligned zeitgebers like artificial lighting conditions, mistimed food intake, or activity in the rest phase create dissonance between the internal circadian timing system and geophysical time – a state somewhat vaguely termed as chronodisruption. Desynchrony of circadian rhythms can occur at various levels – from misalignment of internal and external time (as during jetlag) to alterations in the coordination of different clock gene expression rhythms at the cellular level. It is still poorly understood how the different levels of circadian desynchrony contribute to the adverse health effects of chronodisruption



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Shift Work Disorder and Allied Health Professionals

24/7 artificial light + stress of patient care + shift work = significant circadian shifts.

Night shift results in 1 – 4 hours less sleep compared to day shift workers.

Greater incidences of Insomnia, metabolic disturbances, Depression, Anxiety, and suicide.

2% of the general population meets the criteria for SWD compared to 20 - 33% of Allied Health Pros.

Among HCW's with SWD, Insomnia is linked to functional and cognitive impairments.

Overnight occupational and neurophysiologic impairment is most strongly correlated to insomnia.

Managing Shift Work Disorder

The first order of addressing sleep difficulties is to address current sleep hygiene practices and bring attention to timing, quality and quantity of sleep.

AASM has put forth several recommendations in Tip Sheets for Healthcare Workers to prioritize sleep and manage fatigue.

AASM suggestions to alleviate stress load prior to bed, optimize hormonal pressure to sleep, and minimize extrinsic stressors/stimuli.

Manage light exposure through activity, artificial light, or Melatonin.

What is the role of sleep, diet, and exercise?

Optimal Diet, Exercise, and Sleep is determined individually

We can control digestion, stress management, activity level and light exposure = hormones and metabolism that influence states of alertness.

Bright light, stress, strenuous activity = Increased Cortisol = body alert increase (Beta).

Calm activity, low light, positive emotions = Serotonin and dopamine increase = Alpha (drowsy)

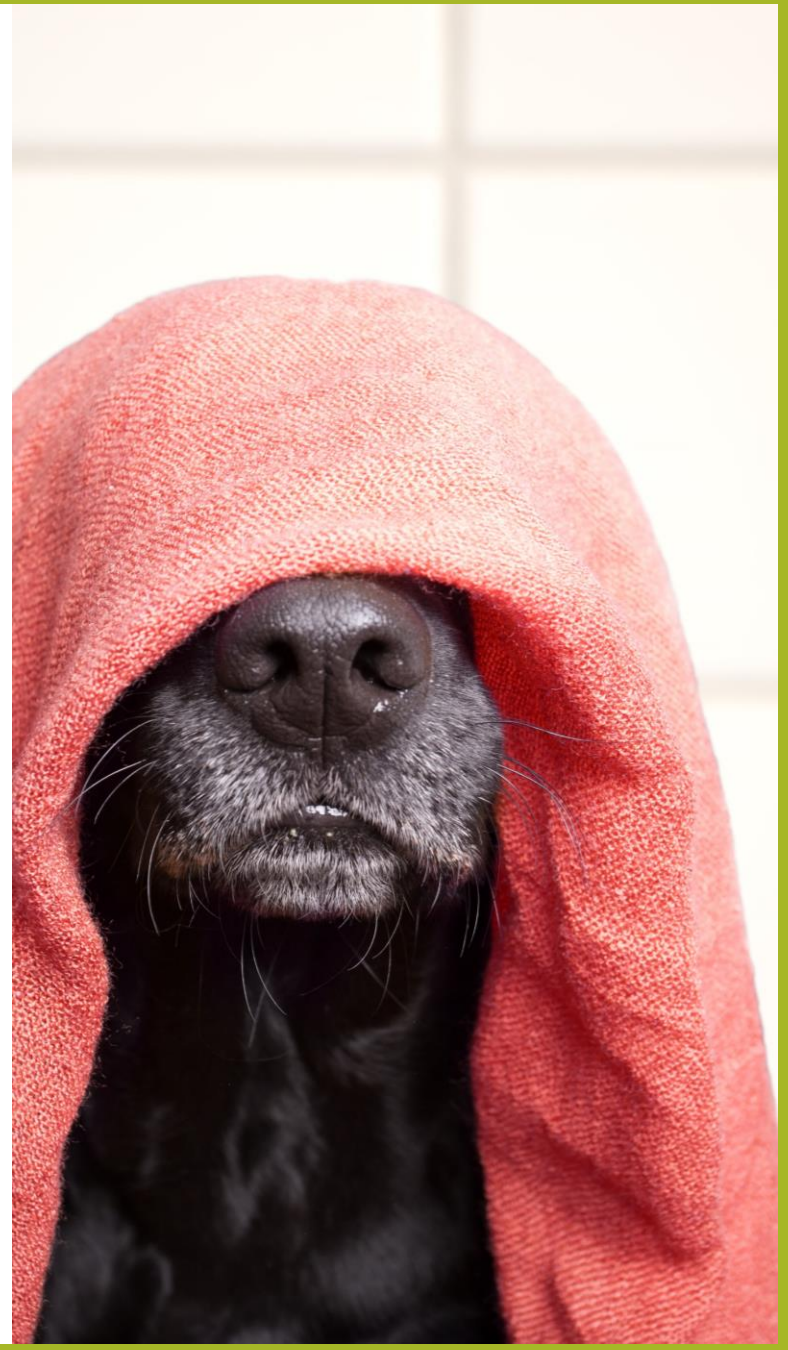
Give yourself a buffer…

The AASM suggests to give yourself a 30 - 60 minute buffer before you head to bed".

A mental switchover from work brain to sleep brain or sympathetic to parasympathetic mode.

Healthcare Workers often dismiss or avoid purposely due to shift demands, excessive fatigue, inability to quiet the mind, or worse, the negative thoughts come up when it's too quiet.

The reality is that most workers will often fall asleep much sooner than 30 to 60 minutes when using the suggested techniques.



Breaking old patterns…

Learned behavior = Negative Experience = Cyclical Insomnia

AASM suggests we reassociate sleep with the positive by waiting until we are tired to go to bed and utilizing the bed for sleep and sex only.

Adding in other stimulating “wake” activities cues our bodies and brains that bed is for wake time

Reassociating bed with positive in a repetitive way gives rise to new positive associations with bed.

These are the behavioral foundations of Cognitive Behavioral Therapy for Insomnia (CBT-I) and Brief Behavioral Treatment for Insomnia (BBTI).

Making the mental switch…

Soft lighting

Meditation or Apps on Guided Meditation/Visualization

Listening to calming music/Audiobooks

Reading

Taking a bath

Gentle stretching

Photic Stimulation

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REM: A PUBLICATION FOR RESIDENTS AND FELLOWS

SHIFT WORK: A Perspective on Shift Work Disorder—Is Prevention the Answer?

Amit Gupta, MD; Thomas Roth, PhD; Timothy Roehrs, PhD; Christopher L. Drake, PhD

Henry Ford Health System, Wayne State University School of Medicine, Detroit, Michigan

The prevalence of shift work in the United States is nearly 20%, but recognition of shift work disorder (SWD) among shift workers is still a challenge. The health care sector is no exception. While a substantial portion of shift workers are physicians and nurses, expertise in identifying SWD is lacking. Shift work adjustment occurs spontaneously in some individuals, but for others, it poses difficulties, including both sleep disturbance and insufficient sleep, leading to chronic excessive sleepiness and other long-term morbidities. Treatment is multifaceted and often requires pharmacologic therapy to address acute sleep-wake symptoms, as well as circadian interventions to realign intrinsic biological rhythms to the externally imposed shift-work schedule. The complexity and myriad obstacles of treating maladjustment to shift work after its manifestation, including determination of circadian phase, risk-benefit considerations in pharmacologic treatment, and behavioral/health risks associated with delaying intervention, suggest that prevention of SWD should be a priority. This article presents the personal experience of one author (Amit Gupta), identifies some of the issues faced by shift workers, especially medical trainees, and suggests a preventive approach to this complex problem that should be considered for future research and practical implementation in the clinic.

Keywords: prevention, shift work disorder (SWD)

Citation: Gupta A, Roth T, Roehrs T, Drake CL. Shift work: a perspective on shift work disorder—is prevention the answer? *J Clin Sleep Med*. 2019;15(12) 1863–1865.

- *"Without knowing the precise phase of a patient's endogenous pacemaker, light exposure at the wrong time can exacerbate sleep-wake symptoms."*
- *"…prevention of SWD by applying light to align the endogenous circadian clock immediately before going on the night shift and using the concept of type 0 resetting…avoids the adverse effects of stimulants or hypnotic agents, typically given for the symptomatic treatment of this common condition"*

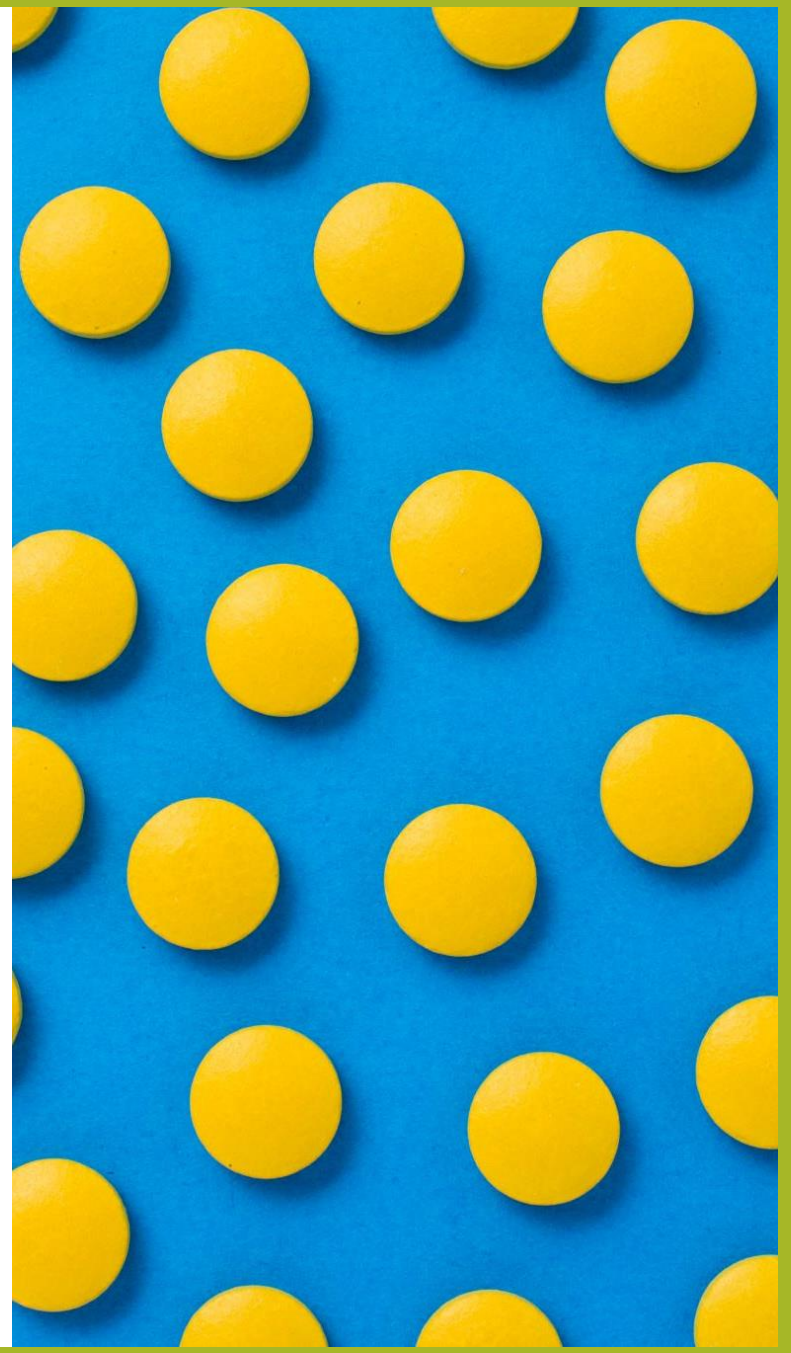
Managing Fatigue: Better Sleep

Use of calming medications such as Hypnotics and Sedatives to improve total sleep time.

Managing light exposure (brightness and timing) to reset internal master clock or stimulate Melatonin production. Darkness = Melatonin, leading to sleep pressure.

Melatonin timing and dosage are key to optimal desired effectiveness, mitigating side effects, and avoidance of worsening symptoms.

Higher doses of Melatonin have sedative effects and lower doses assist in realigning circadian rhythms.



Managing Fatigue: Stimulants

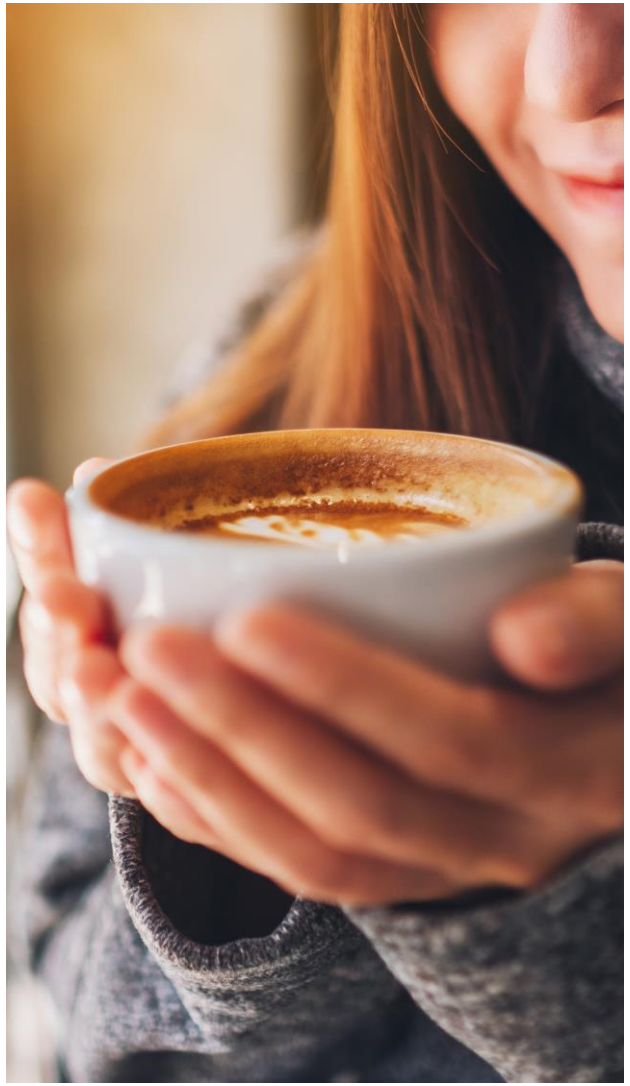
Timing is everything.

Modafinil is indicated when all else is optimized yet fatigue persists.

Caffeine is most effective in small amounts used in the first half of a shift.

Exercise elicits hormones of the sympathetic nervous system. Uses are both relieving of stress and stimulating for fatigue.

Eye movement = Beta activity, useful in reactivity and maintenance of alertness.



Insomnia Disorder

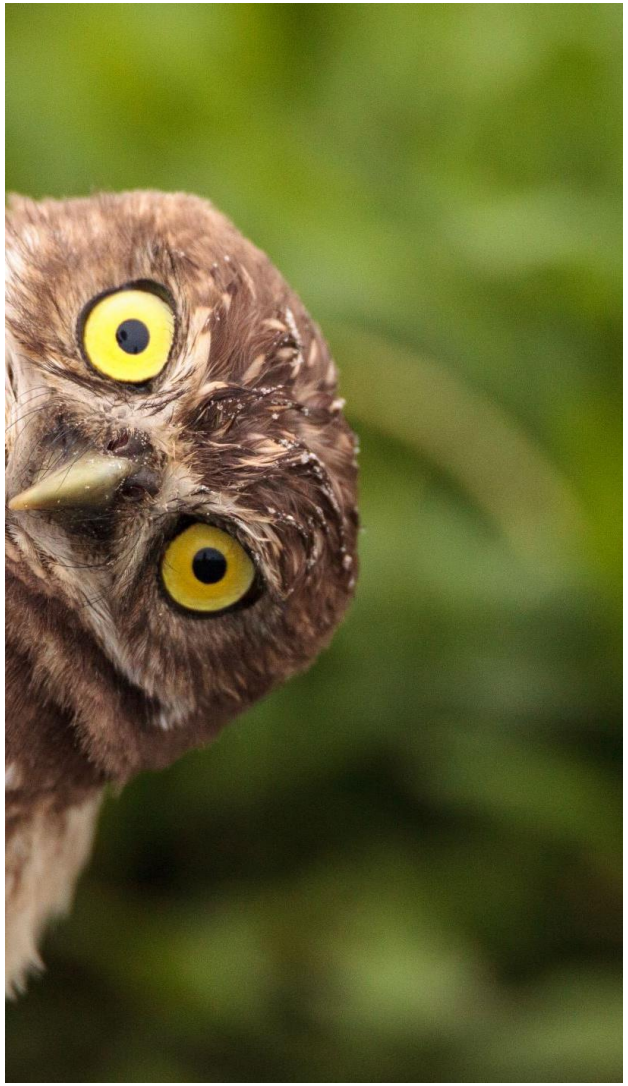
Defined in the ICSD-3 as a complaint of trouble initiating or maintaining sleep which is associated with daytime consequences and is not attributable to environmental circumstances or inadequate opportunity to sleep.

Includes both acute and chronic forms of Insomnia.

Chronic Insomnia = Insomnia persisting for at least 3 months at a frequency of at least 3 times per week.

Acute (Short Term) Insomnia – Disorder meets same criteria but persists less than 3 months

Advanced age, female gender, those with lower socioeconomic status, and those with medical or psychiatric illness are risk factors for chronic or acute models.



Insomnia Disorder (cont'd)

- Prevalence of Chronic Insomnias among general population is estimated at 5 – 15%.
- Among HCW's it is estimated much higher due to the multiple stressors involved with the nature and structure of the work.
- Insomnia is a component of SWD but can exist independently in Healthcare Workers not working or no longer working in circadian rhythm shifts.
- Insomnia is a risk factor for mood disorders such as Depression, poor quality of life, and an increased risk of suicide.

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SCIENTIFIC INVESTIGATIONS

Short-term insomnia disorder in health care workers in an academic medical center before and during COVID-19: rates and predictive factors

William V. McCall, MD, MS; Demetra Mensah-Bonsu, BA; Allison E. Withers, BS; Robert W. Gibson, PhD

Department of Psychiatry and Health Behavior, Medical College of Georgia, Augusta, Georgia

Study Objectives: This study investigated risk factors and estimated rates of acute insomnia disorder in health care workers at the onset of the coronavirus disease 2019 (COVID-19) pandemic.

Methods: A Qualtrics survey of more than 2,300 health care providers was conducted in a single academic health system on May 15, 2020, including practicing attending physicians, residents and fellows in training, advanced practice providers, and nurses. Six hundred and sixty-eight responded (29% response rate). The survey employed the Research Diagnostic Criteria for insomnia disorder to diagnose acute insomnia disorder.

Results: Five hundred seventy-three respondents had no missing data pertaining to sleep, with a mean age of 43.4 ± 12.5 years and 72% women. The rate of insomnia disorder before COVID-19 was 44.5%, while after COVID-19 it was 64.0%. Of persons with insomnia disorder before COVID-19 10.2% stated it had resolved during COVID-19, while 43.4% of persons who did not have insomnia disorder before COVID-19 developed acute insomnia disorder during COVID-19 (χ^2 = 145.2; df = 1; P < .0001). New cases of acute insomnia disorder were related positively to female sex, advancing age, and less time spent in direct patient care.

Conclusions: Acute insomnia disorder was exceptionally common in this sample of tertiary care health care workers. The effects of sex and age were similar to what has been generally described as risk factors for insomnia. The surprising finding that less time spent in direct patient care was associated with more cases of acute insomnia disorder might be explained by the poorly understood stresses of working from home during COVID-19.

Keywords: COVID-19, health care workers, insomnia, acute insomnia disorder

Citation: McCall WV, Mensah-Bonsu D, Withers AE, Gibson RW. Short-term insomnia disorder in health care workers in an academic medical center before and during COVID-19: rates and predictive factors. *J Clin Sleep Med*. 2021;17(4):749–755.

Study review: *Insomnia*

- *"the rate of insomnia disorder before COVID-19 was 44.5%, while during COVID-19 it was 64.0%. The rates of insomnia disorder during COVID-19 were identical in those respondents who worked the day shift vs those who did not."*
- *"cases of acute insomnia disorder were associated with depression and anxiety symptoms, especially for new cases of the disorder. The combination of insomnia and anxiety over COVID-19 represents a potent risk for suicidal ideation."*
- *"This implies a need for awareness on the part of health care system leaders of the pandemic's impact on their health care workers, both in the health care setting and in the home when working from home."*

AASM Clinical Practice Guideline: Insomnia

https://doi.org/10.5664/jcsm.8986

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SPECIAL ARTICLES

Behavioral and psychological treatments for chronic insomnia disorder in adults: an American Academy of Sleep Medicine clinical practice guideline

Jack D. Edinger, PhD[1,2]; J. Todd Arnedt, PhD[3]; Suzanne M. Bertisch, MD, MPH[4]; Colleen E. Carney, PhD[5]; John J. Harrington, MD, MPH[6]; Kenneth L. Lichstein, PhD[7]; Michael J. Sateia, MD, FAASM[8]; Wendy M. Troxel, PhD[9]; Eric S. Zhou, PhD[10]; Uzma Kazmi, MPH[11]; Jonathan L. Heald, MA[11]; Jennifer L. Martin, PhD[12,13]

[1]National Jewish Health, Denver, Colorado; [2]Duke University Medical Center, Durham, North Carolina; [3]Michigan Medicine, University of Michigan, Ann Arbor, Michigan; [4]Brigham and Women's Hospital, Harvard Medical School, Boston, Massachusetts; [5]Ryerson University, Toronto, Canada; [6]University of Nebraska Medical Center, Omaha, Nebraska; [7]University of Alabama, Tuscaloosa, Alabama; [8]Geisel School of Medicine at Dartmouth, Hanover, New Hampshire; [9]RAND Corporation, Pittsburgh, Pennsylvania; [10]Harvard Medical School, Dana-Farber Cancer Institute, Boston Children's Hospital, Boston, Massachusetts; [11]American Academy of Sleep Medicine, Darien, Illinois; [12]David Geffen School of Medicine at the University of California Los Angeles, Los Angeles, California; [13]VA Greater Los Angeles Healthcare System, Geriatric Research, Education and Clinical Center, Los Angeles, California

1. We recommend that clinicians use multicomponent cognitive behavioral therapy for insomnia (CBT-I) for the treatment of chronic insomnia disorder in adults. (STRONG)
2. We suggest that clinicians use multicomponent brief therapies for insomnia (BTI) for the treatment of chronic insomnia disorder in adults. (CONDITIONAL)
3. We suggest that clinicians use stimulus control as a single-component therapy for the treatment of chronic insomnia disorder in adults. (CONDITIONAL)
4. We suggest that clinicians use sleep restriction therapy as a single-component therapy for the treatment of chronic insomnia disorder in adults. (CONDITIONAL)
5. We suggest that clinicians use relaxation therapy as a single-component therapy for the treatment of chronic insomnia disorder in adults. (CONDITIONAL)
6. We suggest that clinicians not use sleep hygiene as a single-component therapy for the treatment of chronic insomnia disorder in adults. (CONDITIONAL)

Insomnia Interventions

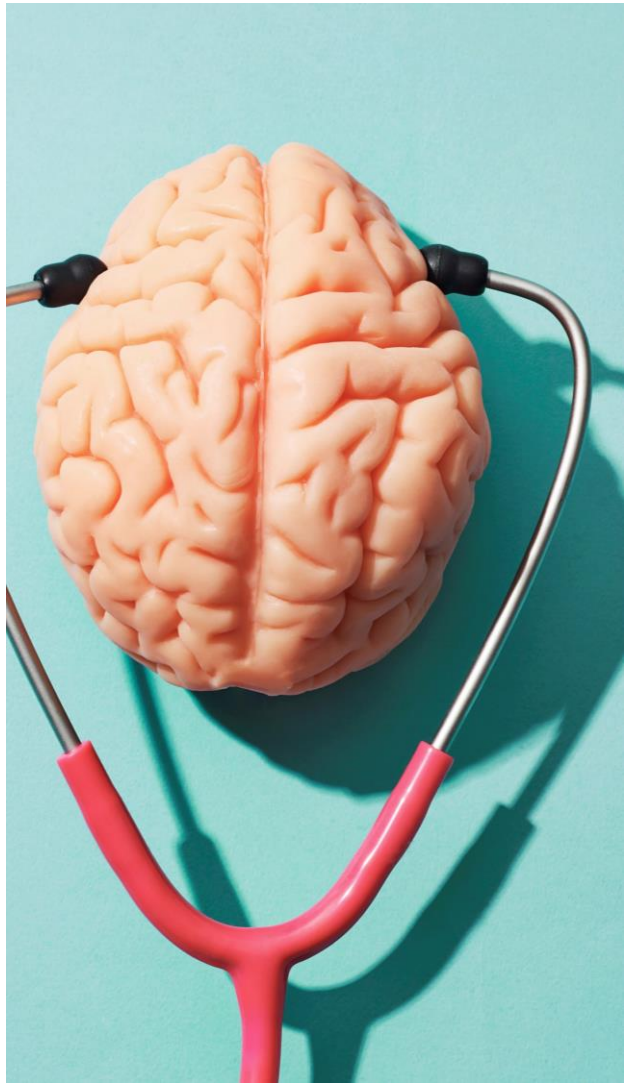
Psychological and Behavioral Interventions are Primary Interventions for all ages and chronic hypnotic users.

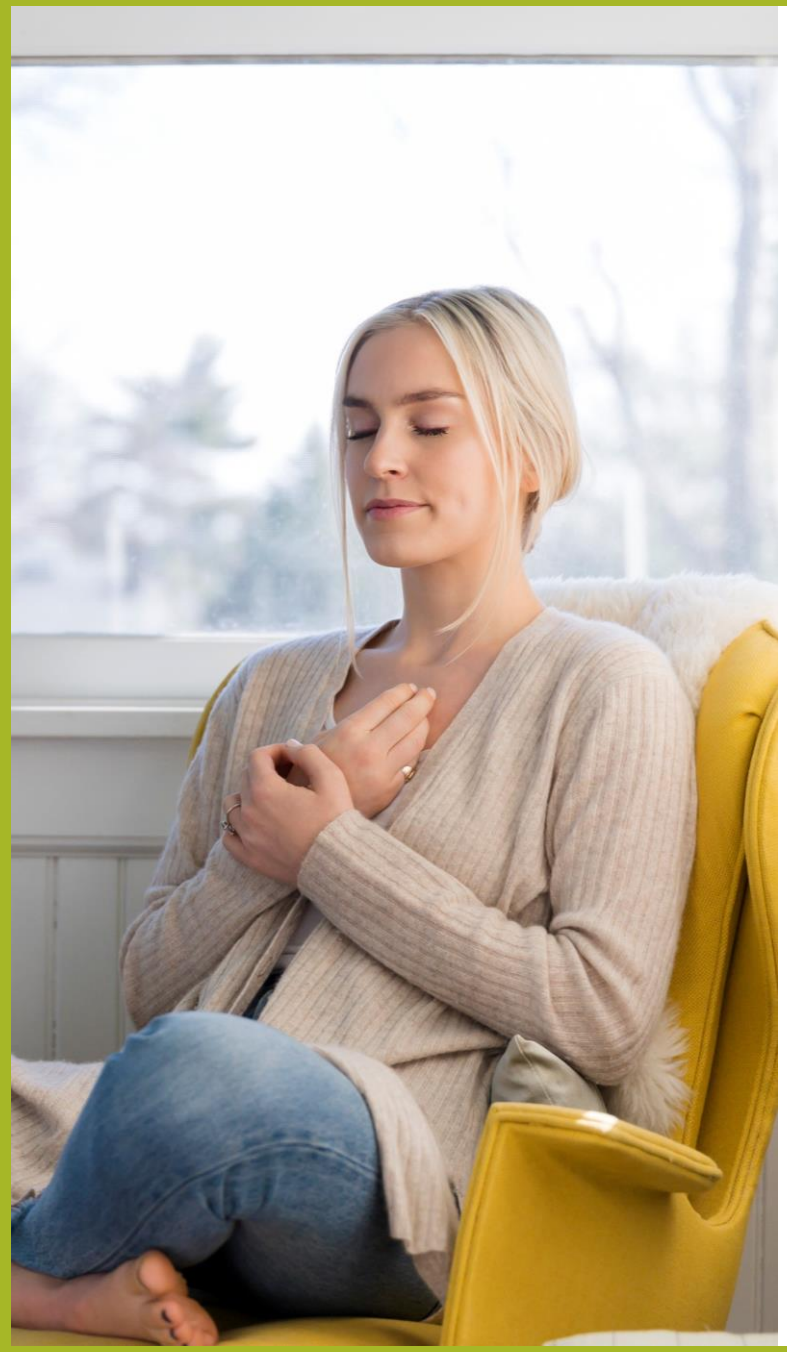
CBT-I is the recommended, first-line treatment, BTI is the alternative when availability is a factor

CBT-I = Behavioral Intervention + Psychological Intervention

BTI: An abbreviated version of CBT-I, emphasizing the behavioral components.

Behavioral Therapy = Stimulus Control Therapy, Relaxation Therapy, and Education re behaviors that influence sleep.





Relaxation Therapy

Somatic tension reduction - Abdominal breathing, Progressive muscle relaxation and Autogenic training

Cognitive Arousal Reduction – Guided Imagery Training and Meditation

Depending on one’s suggestibility, one method will be more effective than the other.

Sleep Restriction Therapy

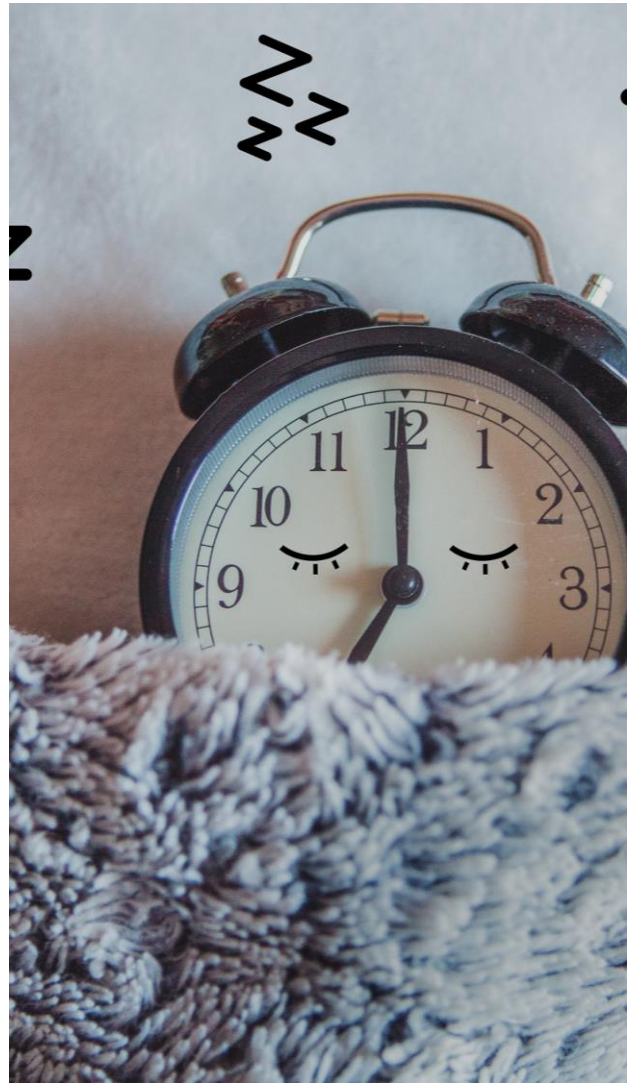
Enhance sleep drive and consolidate sleep

Initially, limit time in bed to sleep diary reports.

Increase or decrease time based on sleep efficiency reported.

Final time in bed determined by sleep satisfaction and minimal duration.

Contraindicated for mood disorders and seizures.



Stimulus Control Instructions

Go	Go to bed only when sleepy.
Get out	Get out of bed when unable to sleep.
Use	Use the bed/bedroom for sleep and sex only
Wake up	Wake up the same time every morning.
Refrain	Refrain from daytime napping.

Less stress = More sleep.

The more you practice a calm state of mind, the stronger your mindset becomes.

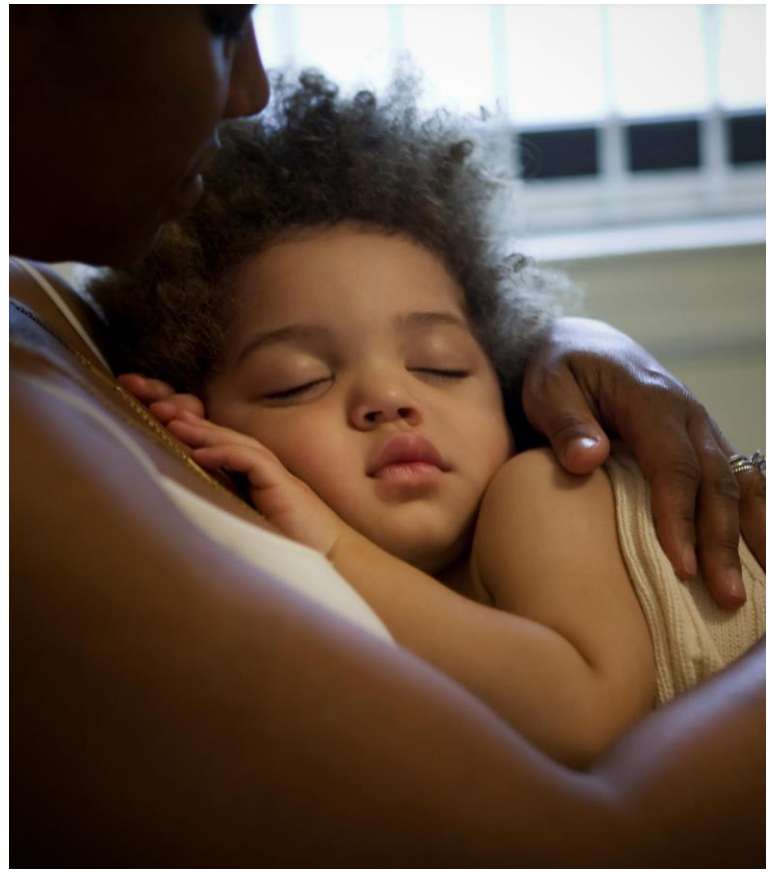
Stronger mindset = increased resiliency and lower stress

Having a strong state of mind is an important part of reducing Insomnia episodes.

Apps: Calm and NapFlix suitable for use anywhere, anytime.

Calm = mostly audio, feel good vibes; NapFlix uses visual and audible monotony.

Monotony has the effect of putting the brain into Alpha and transition to sleep.



Why is Alpha state important?

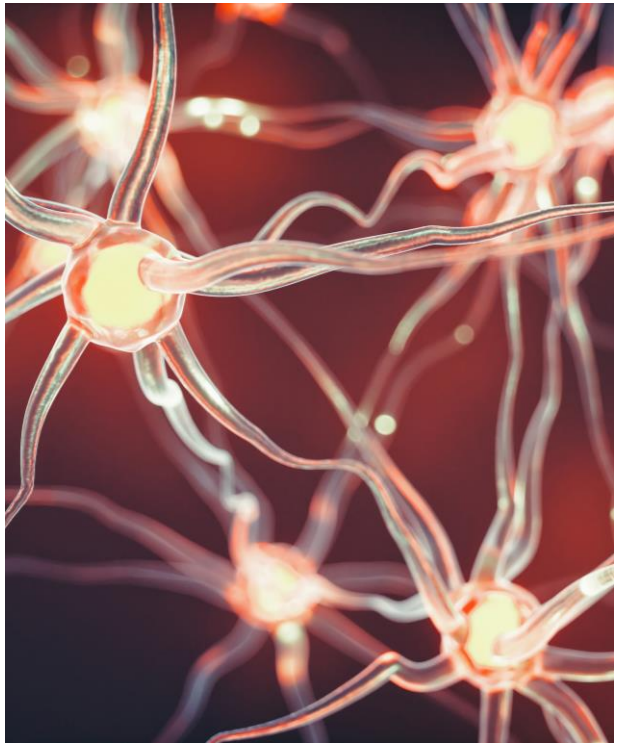
Typical wake brain activity while performing daily activities is Beta.

In order to transition to sleep or Theta, we must pass through Alpha first.

Activity like exercise, electronic use, or problem-solving delays sleep onset until the brain overrides and crashes into Theta.

When WASO occurs, the brain pressure to sleep is not enough to force theta, resulting in Middle Insomnia.

A person trained in initiating Alpha state will be able to initiate sleep quickly at any point in the sleep period.



Pharmacotherapy

Dependent upon comorbidities, availability, cost, patient preference, and treatment goal.

Often used in combination with CBT-I to boost effectiveness of treatment.

Expected Outcomes of Intervention

Summary

- Awareness and sensitivity needs to be elevated to the importance of sleep on quality of work, overall health and safety so that Allied Health Professionals can confidently perform their tasks while optimizing the effect on health.
- Although there is an understanding of the significant impact on the health of Allied Health Professionals due to the nature of their work, however specific suggestions unique to individuals is still on the horizon and just beginning to emerge in treatment *for* Allied Health Professionals.
- Care centers need to consider their abilities to allow for key influencers of sleep for shift workers, namely adequate sleep time between shifts, decompression techniques for stress and trauma, sleep education, and light sources.

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