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ELDER CARE

A Resource for Interprofessional Providers

Sleep in Older Adults

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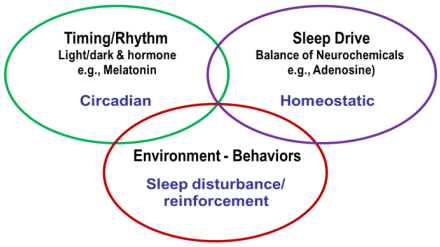
As we age, sleep becomes less consolidated, which people experience as frequent awakenings and perceptions of sleep loss or inadequacy. At least half of older adults report poor or worsened sleep.

The Daily Sleep/Wake Cycle

The daily sleep/wake cycle is governed by three interacting processes: (1) sleep drive, (2) circadian rhythm, and (3) environmental and behavioral factors (Figure). With aging, sleep drive weakens due to changes in neurochemical receptor sensitivity. Various circadian rhythms, most importantly levels of melatonin and its sensitivity to the light-dark cycle, also change with aging. Indeed, many older adults experience a 'phase advance' of the sleep/wake rhythm, with earlier positioning of the night sleep period within the 24-hour light/dark cycle, leading to earlier bedtimes and arise times (the phase advance can be normalized using an early evening dose of bright-light therapy). Decreased sensitivity to the light/dark cycle can be further aggravated by environmental factors, such as increased time spent indoors with less exposure to adequate bright light as well as with artificial light (especially blue spectrum) from electronic devices.



Interactive Sleep Regulating Dimensions

The Nighttime Sleep Cycle

Each night's sleep is characterized by recurring cycles lasting roughly 90 minutes each, which on polysomnogram reveal the sequential stages of a cycle from awake to transitional, light, deep, and rapid-eye-movement (REM) sleep. Changes with aging include more light stage, and less deep- and REM sleep stages, and a gradual reduction in total sleep time each night.

When individuals report waking at approximately 1-2 hour intervals, they are probably waking between sleep cycles. If return to sleep is relatively rapid, sleep cycles likely are being completed with little overall sleep loss or effect on daytime function. In otherwise healthy older adults, simply explaining this normal phenomenon can help alleviate undue anxiety about poor sleep.

On the other hand, when individuals truly have inadequate sleep, they can experience impaired physical performance (e.g., slower reaction times), poor cognitive performance (e.g., impaired memory), and a propensity to fall. Indeed, poor sleep efficiency and decreased total sleep time have been associated with higher risk of death, even after controlling for other factors.

Sleep in Chronic Disease

Chronic health conditions produce a myriad of disease changes which, along with the many medications prescribed, can induce insomnia - the inability to fall or stay asleep or get restful sleep. Chronic insomnia can be primary (i.e., occurring in the absence of a clear causative condition), but more frequently poor sleep emerges secondary to stress or chronic disorders such as arthritis, chronic pain, diabetes, heart failure, cancer, chronic lung disease, stroke, Parkinson's disease, or dementia.

Insomnia is also strongly associated with depression. Indeed, there is growing evidence that insomnia is prodromal to depression and depression predicts insomnia. Therefore, reports of chronic insomnia should trigger an evaluation for symptoms of depression. Alternatively, depressive mood states should raise concern about the possibility of poor sleep.

Many medications used to manage common chronic diseases can affect sleep and contribute to insomnia. These include nervous system stimulants, antihypertensives, respiratory medications, chemotherapy, decongestants, steroid hormones, and many psychotropic medications.

TIPS FOR DEALING WITH SLEEP DISORDERS IN OLDER ADULTS

- When an older adult reports problems with sleep, consider depression as a possible contributor.
- Also consider the possibility that medications are causing or aggravating a patient's insomnia.
- For treatment of chronic insomnia, use cognitive behavioral therapies (Table 1) with only short-term, intermittent use of sedative-hypnotic medications.
- Always consider sleep-related breathing disorders, movement disorders, and rapid eye movement disorders as possible contributors to patient reports of insomnia or daytime sleepiness.

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Prescribe medications with stimulating or activating effects earlier in the day, and sedating medications near bedtime.

Treating Insomnia

Use of benzodiazepines is not generally recommended as it poses risks of side effects for older adults, including excessive sedation, cognitive impairment, delirium and balance difficulties with increased risk of falls. Comparatively, non-benzodiazepine hypnotics, such as eszopiclone, ramelteon, zaleplon, and zolpidem pose fewer side effects. Other medications, such as over-the-counter products containing diphenhydramine or other antihistamines, also should be avoided in older adults. Insomnia in older adults can be managed in the short term with the aforementioned non-benzodiazepine hypnotics, and longer term with cognitive behavioral therapies (Table 1).

Table 1. Cognitive Behavioral Therapies for Insomnia

Cognitive
• Discuss sleep expectations, misconceptions, and sleep-promoting behaviors
Behavioral – the 4 Rs
Regularize sleep-wake pattern
• No daytime napping • Restrict time in bed to current sleep duration; gradually lengthen time in bed • Arise at consistent time
Ritualize cues for sleeping
• Quiet, dark environment • Lie down only when sleepy • If not asleep in 20 min, get up • Use bedroom only for sleep and sex
Relaxation techniques
• Comfortable posture • Clear the mind – concentrate on breathing or scenery • Use biofeedback, deep relaxation
Resist sleep interference (sleep hygiene)
• Avoid heavy meals before bed • Avoid heavy exercise 2-3 hours before bed • Avoid tobacco, alcohol, caffeine

Important Sleep-related Disorders

Adding to risk of sleep disturbance with aging are the sleep-related conditions of sleep-disordered breathing; sleep-related movement disorders (restless leg syndrome and periodic limb movements); and rapid eye movement sleep-behavior disorder (Table 2). A key manifestation to these disorders is excessive daytime sleepiness (EDS), most often seen as unintentional napping. As part of a sleep history, assessing for EDS is warranted. Symptoms of these disorders should trigger in-depth assessment and possible referral to a sleep center.

Table 2. Important Sleep-Related Disorders

Disorder	Key Clinical Considerations
Sleep-Disordered Breathing (Snoring, Sleep Apnea)	• Complete sleep history – especially loud snoring, unintentional daytime dozing, excessive daytime sleepiness, morning headaches, non-restorative sleep • Bed partner testimony • Risk factors: male, thick neck (men), narrow or crowded upper airway (women), obesity, use of sedatives, alcohol, smoking, family history • Confirm with overnight polysomnography
Restless Legs Syndrome	• Discomfort in legs (crawling sensation), urge to move • Most prominent at rest, in relaxed state, during inactivity, usually evening or night
Periodic Limb Movements in Sleep	• Clusters of repetitive limb movements during sleep - can cause arousal • Bed partner testimony • Confirmed by overnight monitoring
Rapid Eye Movement Sleep Behavior Disorder	• Absence of usual muscle atonia during REM • Gross movements occur during sleep, e.g., running, kicking, yelling, punching (complex motor movements while dreaming) • Can be dangerous or injurious • Confirmed by monitoring intermittent muscle tone and movements during REM sleep

References and Resources

Bryce A. Mander, B.A., Winer, J.R., Walker, M.P. (2017) Sleep and Human Aging. Neuron, 94 (1): 19-36. https://doi.org/10.1016/j.neuron.2017.02.004.

Reynolds, & Adams, R. J. (2019). Treatment of sleep disturbance in older adults. Journal of Pharmacy Practice and Research, 49(3), 296–304. https://doi.org/10.1002/jppr.1565

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