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# ELDER CARE

## A Resource for Interprofessional Providers

HGNI
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# Sleep in Older Adults

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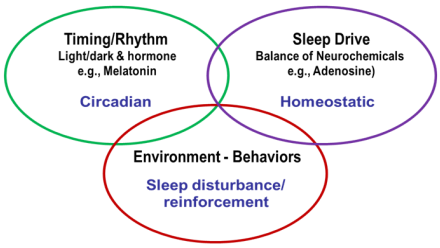
With healthy aging, sleep becomes less consolidated, which people experience as frequent awakenings and perceptions of sleep loss or inadequacy. At least half of older adults report poor or worsened sleep.

### 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 living circumstances in which there is more time spent indoors and thus less exposure to adequate bright light.




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. Observed changes with aging include more light sleep, less deep-stage and REM sleep, 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 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.
- Avoid using sedative-hypnotic medications for chronic treatment of insomnia. Cognitive and behavioral approaches (Table 1) are better for long-term treatment.
- Always consider sleep-related breathing disorders, movement disorders, and rapid eye movement disorders as possible contributors to a patient's insomnia or daytime sleepiness.

Continued from front page

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

**Treating Insomnia**

A 2005 National Institutes of Health consensus panel concluded that chronic use of benzodiazepines is not effective and poses risks to patients, especially older adults. Medications, including over-the-counter products, containing diphenhydramine or similar medications, should also be avoided in older adults. There are, however, several new non-benzodiazepine hypnotics, such as eszopiclone, ramelteon, zaleplon, and zolpidem. These allow insomnia in older adults to be managed initially with hypnotics, and then longer term with cognitive and behavioral therapies (Table 1).

**Table 1. Cognitive and Behavioral Treatments for Insomnia**

| |
|---|
| ***Cognitive*** |
| • Discuss sleep expectations, misconceptions, and sleep-promoting behaviors |
| ***Behavioral – the 4 Rs*** |
| **R**egularize sleep-wake pattern<br>• No daytime napping<br>• Restrict time in bed to current sleep duration; gradually lengthen time in bed<br>• Arise at consistent time |
| **R**itualize cues for sleeping<br>• Quiet, dark environment<br>• Lie down only when sleepy<br>• If not asleep in 20 min, get up<br>• Use bedroom only for sleep and sex |
| **R**elaxation techniques<br>• Comfortable posture<br>• Clear the mind – concentrate on breathing or scenery<br>• Use biofeedback, deep relaxation |
| **R**esist sleep interference (sleep hygiene)<br>• Avoid heavy meals before bed<br>• Avoid heavy exercise 2-3 hours before bed<br>• 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 Findings |
|---|---|
| Sleep-Disordered Breathing (Snoring, Sleep Apnea) | • Complete sleep history – especially snoring, unintentional daytime dosing, excessive daytime sleepiness<br>• Bed partner testimony<br>• Risk factors (male, obesity, use of sedatives, alcohol, smoking, thick neck (men), narrow upper airway (women), family history<br>• Confirm with overnight polysomnography |
| Restless Legs Syndrome | • Discomfort in legs (crawling sensation), urge to move<br>• 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<br>• Bed partner testimony<br>• Confirmed by overnight polysomnography |
| Rapid Eye Movement Sleep Behavior Disorder | • Absence of usual muscle atonia during REM<br>• Gross movements occur during sleep, e.g., running, kicking, yelling, punching (complex motor movements while dreaming)<br>• Can be dangerous or injurious<br>• Confirmed by recording intermittent muscle tone and movements during REM sleep |

**References and Resources**

Crowley, K. Sleep and Sleep Disorders in Older Adults. *Neuropsychol Rev*. 2011;21:41–53.
Neikrug, AB, Ancoli-Israel, S. Sleep Disorders in the Older Adult –A Mini-Review. *Gerontology*. 2010;56:181–189.

**Interprofessional care improves the outcomes of older adults with complex health problems**

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