

## Sleep disorders in older adults

# A primary care guide to assessing 4 common sleep problems in geriatric patients

**Sonia Ancoli-Israel, PhD**

Complaints about sleep are common among older adults, yet are not a normal consequence of old age. Disordered sleep can be due to medical conditions, chronic diseases, psychiatric disorders, and medications. Age-associated, oropharyngeal anatomical changes can result in sleep-disordered breathing (sleep apnea). In addition, the circadian rhythm advances that accompany aging can cause early evening lethargy and early morning awakenings. Discovering and treating the underlying cause(s) of the sleep disorder is the first step in approaching the problem.

Ancoli-Israel S. Sleep disorders in older adults. *Geriatrics* 2004; 59(Jan):37-40.

**Key words:** apnea • periodic limb movements in sleep  
restless legs syndrome • circadian rhythm • insomnia

**S**leep disorders are more prevalent among older adults. Primary sleep disorders include sleep-disordered breathing and sleep apnea, restless legs syndrome/periodic leg movements in sleep, circadian rhythm disturbances, and insomnia. A majority of older adults has more than one of these primary sleep disorders.

Many of the consequences of sleep disturbances are thought to be typical of old age and as such, many sleep dis-

turbances in older adults go undiagnosed and untreated. Sleep disturbances affect an individual's ability to sustain attention and slow response time. Other consequences of disordered sleep are poor memory, difficulty concentrating, and decreased performance—all of which can be misinterpreted as signs of dementia. This article reviews primary sleep disorders and effective treatments for older adults, as well as provides guidance for primary

care physicians in assessing sleep issues in a geriatric population.

### Communication is key

Physicians need to ask aging patients about their sleep habits on a regular basis. Typically, if patients are not asked, they won't tell. Key questions include:

- Are you sleepy during the day?
- Do you find yourself falling asleep at times you want to stay awake?
- Are you sleepy in the early part of the evening?
- Do you fall asleep reading or watching TV and then have difficulty falling asleep once in bed?
- Do you wake up early in the morning no matter what time you go to sleep?
- Have you been told that you snore, choke, or kick your legs?
- What medications are you taking that might be affecting your sleep?
- What medical or psychiatric conditions do you have that might be affecting your sleep?

The answers to these questions will help physicians determine the best course of treatment, which can range from changing bedtime patterns, to breathing aids for sleep apnea, to bright light therapy, to changing the times certain medications are taken.

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**Disclosure:** Dr. Ancoli-Israel is on the speakers bureau and scientific advisory board for King Pharmaceuticals.

**Sponsorship:** This is the first article in a 3-part series on sleep issues among geriatric patients sponsored by an unrestricted educational grant from Sanofi-Synthelabo.

*continued*

**Table 1 Selected pharmacotherapy for restless legs syndrome and insomnia in older adults**

Agent	Recommended dose/timing	Comments
<b>Dopamine agonists for restless legs syndrome</b>		
Carbidopa/levodopa (Sinemet)	25/100 mg	Traditionally used for RLS; may cause augmentation (shift symptoms to daytime)
Pramipexole (Mirapex)	0.125 mg at bedtime	Newer dopamine agonist; may cause sleepiness
Pergolide mesylate (Permax)	0.05-1 mg	Divided doses (dinner and bedtime); gradually increase as needed; ↑ incidence of confusion, somnolence, and peripherical edema; consider monitoring renal function
Ropinirole HCl (Requip)	0.25-4 mg	Divided doses (dinner and bedtime); start with each dose at 0.25 mg and double, up to 1-2 mg per dose
Gabapentin (Neurontin)	600 - 2400 mg	One third dose at noon; 2/3 dose at 2000h; monitor creatine clearance and adjust dose accordingly

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## Sleep apnea

The primary symptoms of sleep apnea are loud snoring (often heard outside of the bedroom) and excessive daytime sleepiness, both of which increase with age. Heart disease, hypertension, and cognitive impairment are certainly more common with increasing age and are also associated with sleep-disordered breathing.

A 1993 study found that 10% of adults age 30 to 60 stop breathing 10 or more times per hour of sleep (ie, have a respiratory disturbance index or RDI =10), whereas 60% of people over age 65 have an RDI of 10.<sup>1,2</sup> This increased prevalence of sleep disordered breathing in older adults may be due in part to the anatomical changes occurring with age, including longer soft palates, an increase in the size of the pharyngeal fat pads, a change in the shape of the bony structures around the pharyngeal airway, and the diminished response of the genioglossal muscle to negative pressure stimulation.<sup>3</sup>

Sleep apnea significantly increases risk of death in people with congestive heart failure (CHF). Mean survival for patients with both CHF and sleep apnea is less than 2.71 years, for those with neither disease or sleep apnea alone it is 6.75 years, and for those with CHF alone it is 4.04 years.<sup>4</sup> Cardiovascular disease (CVD) or pulmonary disease are often reported as the primary cause of death in people with severe sleep apnea (ie, RDI >30).

The treatment of choice for sleep apnea is continuous positive airway pressure (CPAP), a device with a nose piece connected to a hose that pushes positive pressure through the airway to keep the airway open during the night. This device can be used effectively by older persons, including those with mild dementia. In patients with mild Alzheimer's disease and sleep apnea, treatment with CPAP also decreased snoring, daytime sleepiness in the patient, and depressive symptoms in both patients and caregivers.<sup>5</sup>

Other treatments for sleep apnea include oral appliances that move the mandible forward or pull the tongue forward during the night. These devices are designed and fitted by specially trained dentists. However, these devices do not always fit well with dentures, so they may not be appropriate for all older adults. Other treatments include

- weight loss, since obesity is one of the biggest predictors of apnea,
- not sleeping on the back if the apnea is occurring just in that position, and
- avoiding alcohol and hypnotics since those are respiratory depressants.

Surgical treatments are available but are not often recommended in older adults because of the possibility of the type of complications usually associated with major surgery.

## Periodic limb movements in sleep and restless legs syndrome

Periodic limb movements in sleep (PLMS) is a condition in which the legs kick or jerk at 20- to 40-second intervals throughout the night, resulting in fragmented sleep (brief arousals that occur throughout the night and reduce the total amount of time spent in deep levels of sleep), complaints of insomnia, and at times, complaints of exces-

## Sleep-disordered breathing in older adults may be due to age-related anatomical changes

sive daytime sleepiness. A related disorder, restless legs syndrome (RLS), produces disagreeable leg sensations that are relieved only by moving the legs. RLS can occur prior to sleep onset and in the daytime, when the individual is in a relaxed state.

A study of adults age 65 and older found that 45% met the diagnosis for PLMS, that is they kicked their legs at least 5 times per hour of sleep and 34% kicked at least 10 times or more per hour of sleep.<sup>6</sup>

Both PLMS and RLS can be treated with medications (table 1), with the dopaminergic agents often being the first line of treatment, as they decrease both the number of leg kicks and the number of arousals during the night.

### Circadian rhythm disorders

In addition to the sleep/wake cycle, circadian rhythms are found in body temperature, hormone secretion (ACTAH, LH, FSH, Melatonin, TSH), cardiopulmonary functions (blood pressure, myocardial infarction, pulmonary function), drug metabolism, gastric acid secretion, and distribution of REM/non-REM sleep. In adults with normal circadian rhythms, sleepiness occurs around 10:00 or 11:00 pm, persists for approximately 8 hours, with awakening occurring at approximately 6:00 or 7:00 am. This is related to a drop in the core body temperature at night (causing sleepiness) and a rise in temperature in the morning hours (causing awakening).

As people age, the circadian rhythm advances so that sleepiness occurs earlier in the evening, perhaps 7:00 or 8:00 pm and awakening occurs spontaneously about 8 hours later at 3:00 or 4:00 am. However, most older adults, although sleepy, try to stay awake until later in the evening. Nevertheless, as core body temperature rises in the early morning hours, they will still wake up, regardless of how late they went to bed. This results in the older adult not being in bed long enough to get a full night's sleep.

A second common pattern is that older adults will doze off in the early part of the evening and then experience insomnia when they go to bed at 10:00 or 11:00 pm. In this scenario, the older person experiences both difficulty falling asleep and waking up too early in the morning.

## Table 2 Drugs that cause insomnia

- alcohol
- CNS stimulants
- beta blockers
- calcium channel blockers
- corticosteroids
- decongestants
- stimulating antidepressants
- bronchodilators
- thyroid hormones
- nicotine

CNS: central nervous system

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## Table 3 Selected pharmacotherapy for insomnia in older adults

Agent	Recommended dose/timing	Comments
<b>Nonbenzodiazepine hypnotics for insomnia</b>		
Zolpidem tartrate (Ambien)	5-10 mg at bedtime	Can be used for sleep-onset and sleep-maintenance insomnia
Zaleplon (Sonata)	5-10 mg at bedtime	Can be used for sleep-onset and sleep-maintenance insomnia; due to short half-life, may also be used to dose in the middle of the night
<b>Benzodiazepine for insomnia</b>		
Temazepam (Restoril)	7.5 mg	Rule out obstructive sleep apnea before prescribing
<b>Antidepressants for insomnia and depression</b>		
Sertraline HCl (Zoloft)	50 mg in the morning	Well tolerated; treatment with antidepressants is indicated for clinical depression at any age
Fluoxetine HCl (Sarafem)	20 mg in the morning	Same as sertraline; consider lower or less frequent dosing for patients 65+, those with concurrent disease, or those taking multiple medications.
Mirtazapine (Remeron)	15 mg at bedtime	In cases of depression associated with severe insomnia and anxiety has been show superior to selective serotonin reuptake inhibitors

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Treatment of this advanced sleep phase involves delaying the sleep cycle with bright light. Older adults should be exposed to bright light late in the day, ideally from 7:00 to 9:00 pm. However, since the sun has often set by then, older adults should try to get outdoors as late in the day as possible before the sun has set, as this will also improve sleep. This late-day light exposure will delay the circadian rhythm, so patients will become sleepy later in the evening and sleep later in the morning. If the older adult with advanced sleep phase wakes up early and goes for an early morning walk, they need to wear dark sunglasses to block the light, as morning light will advance their rhythm even more. In the absence of sunlight exposure, a bright light box is effective for light exposure late in the day. Normal room light is usually not bright

enough to be effective. Bright light is effective in improving sleep not only in older adults,<sup>7</sup> but also in patients with dementia and in patients with severe Alzheimer's disease.<sup>8</sup> Bright light therapy is contraindicated in people with a history of mania. In all other older adults with advanced sleep phase, bright light may be tried as a first-line

## Untreated depression is likely to lead to insomnia; untreated insomnia can result in depression

treatment. (For more information on bright light therapy or to find sources of bright light boxes, refer to the Society for Light Treatment and Biological Rhythms at [www.slfr.org](http://www.slfr.org).)

### Insomnia

Insomnia can have medical, psychiatric, and pharmacologic etiologies. Any medical condition that causes pain can result in insomnia. Common painful medical conditions affecting older persons include arthritis and cancer. Neurological conditions, such as restless legs syndrome, dementia/Alzheimer's disease, and Parkinson's disease are also associated with insomnia. Older patients with angina, CHF, asthma, COPD, gastroesophageal reflux, urinary incontinence, nocturia, and benign prostatic hyperplasia frequently experience insomnia, as well.


In addition to medical conditions, psychiatric disorders are also associated with insomnia in older persons. Depression is one of the most common causes of insomnia in the geriatric population. Untreated depression is likely to lead to insomnia, and conversely, untreated insomnia can result in depression. Anxiety disorders, in addition to depression, are prevalent in older per-

sons, in part due to an increased incidence of personal loss, bereavement, social changes, and relocation.

Polypharmacy, common among older people, can result in insomnia. Drugs known to cause insomnia are shown in Table 2. Alcohol is sometimes used to induce sleepiness, but several hours later, the opposite effect occurs. Alcohol abuse (and also depression) can be responsible for early morning awakenings. Adjusting the dose of medications or altering the time of day they are taken can improve the patient's insomnia. In general, sedating drugs should be taken later in the day and alerting drugs should be taken early in the day.

There are also classes of drugs that cause sedation: hypnotics, antihypertensives, antihistamines, tranquilizers, and antidepressants. Patients with insomnia should be counseled to take these medications at night, if possible. Table 2 lists selected pharmacologic treatments for insomnia and restless legs syndrome in older adults.

### Conclusion

A large percentage of older adults complain of difficulty staying asleep and at times, difficulty falling asleep; however, disordered sleep is not associated with healthy aging. The first step for the primary care physician is to determine what is causing the sleep complaint. Much of the sleep disturbance is not secondary to aging per se, but to chronic medical conditions that cause pain, psychiatric problems such as depression and anxiety, medication use, circadian rhythm changes, and specific sleep disorders such as sleep disordered breathing (sleep apnea), restless legs syndrome, and periodic limb movements during sleep. Each of these conditions is treatable. 

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***Ancoli-Israel S. Sleep disorders in older adults. A primary care guide to assessing 4 common sleep problems in geriatric patients. Geriatrics 2004; 59(January):37-40.***

1. Age-related anatomical changes believed to be associated with sleep disordered breathing include:
  - a. longer soft palates
  - b. increase in size of pharyngeal fat pads
  - c. change in the shape of bony structure of pharyngeal airway, and diminished response of the genioglossal muscle to negative pressure stimulation.
  - d. longer hard palates, hardening of pharyngeal fat pads, tightening of the pharyngeal airway, and increased response of the genioglossal muscle to positive pressure stimulation.
2. Physicians should encourage all patients with sleep apnea to sleep on their backs.
  - a. True
  - b. False
3. What percentage of adults over age 65 meet criteria for a diagnosis of periodic limb movements in sleep?
  - a. 25%
  - b. 30%
  - c. 35%
  - d. 40%
  - e. 45%
4. Dopaminergic agents are first-line treatments for restless legs syndrome
  - a. True
  - b. False
5. Circadian rhythms are found in body temperature, select hormone secretion, cardiopulmonary functions, drug metabolism, gastric acid secretion, and distribution of REM/nonREM sleep.
  - a. True
  - b. False
6. Bright light therapy improves sleep in older adults with
  - a. dementia and Parkinson's disease
  - b. Alzheimer's disease and CHF
  - c. Lung cancer and dementia
  - d. dementia and Alzheimer's disease
7. Adjusting the dose of a medication or the time of day the medication is taken can improve certain patients' insomnia.
  - a. True
  - b. False
8. Consequences of disordered sleep include difficulty in sustaining attention, slowed response time, poor memory, difficulty concentrating, and decreased performance.
  - a. True
  - b. False

**In addition to the exam questions, answer the following evaluation questions: (1=strongly agree, 6=strongly disagree)**

- |  |   |
|--|---|
| 1. The information presented in this article was useful. | 2. The information presented was fair, objective, and balanced. |
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