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# Managing insomnia in older adults

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**Abstract:** Nurses frequently care for patients with complaints of insomnia in the hospital and community settings. Because older adults with insomnia present unique challenges for successful patient management, nurses should understand the latest assessment and treatment options.

**Keywords:** chronic insomnia disorder, dementia, Epworth Sleepiness Scale, insomnia disorder, non-rapid eye movement, NREM, Pittsburgh Sleep Quality Index, rapid eye movement, REM, sleep-wake cycle

PATIENTS COMMONLY report sleep complaints, such as difficulty initiating and maintaining sleep or awakening too early, to their primary care provider (PCP). However, sleep assessment continues to receive far less attention than other aspects of patient care. This practice has started to change over the past decade as increased understanding of sleep reveals physical, psychological, and social detriments associated with sleep deprivation. The US Office of Disease Prevention and Health Promotion's Healthy People 2020 goals now include sleep health.<sup>1</sup> The study of sleep has grown significantly over the past decade, and healthcare professionals should be prepared to assess and screen patients appropriately. This article discusses evidence-based nonpharmacologic and pharmacologic treatment options.

## New classifications

Insomnia is the most common sleep disorder, and its definition has un-

dergone recent updates.<sup>2</sup> Replacing the previous categories of "primary" and "secondary" insomnia are the new classifications of "chronic insomnia disorder" in the third edition of the *International Classification of Sleep Disorders* (ICSD-3) and "insomnia disorder" in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5).<sup>3,4</sup> Justification for this change in the conceptualization of insomnia favors defining insomnia as a broad category. Both the ICSD-3 and DSM-5 classifications include the following criteria:<sup>5</sup>

- difficulty initiating and maintaining sleep despite adequate opportunities
- duration of at least 3 months
- frequency of at least three times per week
- resultant distress
- not explained by any other cause or disorder.

The National Sleep Foundation recommends adults (ages 26 to 64) sleep 7 to 9 hours a day and older adults (age 65 and older) sleep

7 to 8 hours a day.<sup>6</sup> Despite this recommendation, 25% of US adults report insufficient sleep at least 15 out of every 30 days.<sup>1</sup> In addition, the occurrence of shorter reported sleep has increased over the past 30 years. Insomnia, or the difficulty initiating and remaining asleep, occurs in 33% to 50% of the adult population, and insomnia accompanied by distress occurs in 10% to 15%.<sup>1,7</sup> To better assess and manage patients with insomnia and other sleep-wake disturbances, it is essential that nurses understand the chronobiology of the sleep cycle.

### Sleep cycle

Although the exact purpose of sleep is still poorly understood, researchers agree that most humans spend one-third of their lives sleeping. Sleep is essential for health, and the functional consequences of poor sleep are multifaceted and deleterious.

The current understanding of sleep stages comes from studying brain wave activity (electroencephalography [EEG]), eye movement (electrooculography), and muscle tone (electromyography). Sleep is divided into two stages, rapid eye movement (REM) and non-rapid eye movement (NREM). NREM is further divided into Stages 1, 2, 3, and 4. More recently, some sleep researchers have been using the American Academy of Sleep Medicine terms *N* for NREM and *R* for REM; for example, clinicians may encounter the terms *N1* and *N2*.<sup>8</sup> This article uses the traditional terminology.

The normal onset of sleep for adults is through Stage 1 NREM sleep, a brief, light phase that quickly transitions to Stage 2 NREM sleep. Stage 1 usually lasts only a few minutes. Individuals can often be wakened easily during this phase before transitioning to the deeper



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NREM sleep Stages 3 and 4, where greater stimulus is required to wake the individual. Stages 3 and 4 are often combined and called *N3*, delta, or slow-wave sleep (SWS) because it is characterized by large, slow delta waves on EEG. REM sleep follows and is characterized by side-to-side eye movement, muscle atonia, and often vivid dreams. This pattern of REM and NREM sleep occurs in approximately 90-minute cycles throughout the night, with REM sleep occupying longer periods later in the night, so that SWS dominates the first third of the night and REM sleep occupies most of the last third.

It is essential that healthcare professionals understand the normal distribution of the sleep stages to understand changes that occur to sleep related to disease, cognitive changes,

and reactions to medication.<sup>8</sup> Describing changes in sleep architecture and circadian rhythm related to aging is a challenging area of research because interrelated factors must be considered, including medical, psychiatric, and cognitive comorbidities, as well as the use of sedatives and hypnotics. Most research is based on observational studies, further challenging conclusions. Earlier bedtimes and wake times as well as awakenings related to nocturia contribute to research on changes in sleep architecture for older adults. Nurses should remember that numerous factors can contribute to sleep stage distribution and circadian cycle disruptions.<sup>9</sup>

### Associated medical conditions

Insomnia is associated with multiple comorbidities; however, the temporal order is not always clear. Insomnia is commonly related to psychiatric disorders, such as depression, anxiety, panic, and personality disorders. It has also been linked to hormone level alterations, hypertension, and numerous comorbidities, including arthritis, hyperthyroidism, cancer, heart failure, asthma, diabetes mellitus, gastroesophageal reflux disease, chronic pain, pain due to arthritis, restless leg syndrome, and sleep-disordered breathing such as obstructive sleep apnea syndrome (OSAS).<sup>10-12</sup>

Insomnia remains a secondary consequence of several medications, including both prescription and over-the-counter (OTC) options. The redistribution of sleep stages can occur when patients take benzodiazepines, which suppress SWS, or antidepressants, which suppress REM sleep.<sup>8</sup> Alcohol, caffeine, and nicotine are also related to insomnia. For example, alcohol induces sleep initially but may result in waking



within a few hours with the inability to return to sleep. In addition, insomnia may be the result of external shifts to the sleep cycle such as jet lag and shift work sleep disorders, both of which affect the biological clock and circadian rhythm.<sup>13</sup>

When patients are hospitalized, disruptions to the sleep cycle can occur due to near-constant interruptions, noise, and overhead lighting. This can be particularly disorienting for older adults and those with cognitive impairment, and it has been linked to measurable adverse physiologic outcomes.<sup>14,15</sup> These include alterations of homeostatic function, glucose metabolism, cortisol regulation, and acute decline in executive and other cognitive processes.<sup>16</sup>

Sleep is an important modulator of the body's immune response.<sup>17</sup> In the ICU, sleep disruption has been linked to modulation in immune function, and sleep deprivation can alter the immune response, which may influence a patient's ability to recover from serious infection.<sup>17</sup>

### **Insomnia, delirium, and dementia**

Sleep disorders are a common complaint among older adults in both community and hospital settings. More than 50% of noninstitutionalized adults over age 65 have reported some chronic sleep disorder, such as difficulty falling asleep, early morning awakening, nighttime awakenings, or not feeling rested during the day.<sup>10</sup> In hospital settings, the rate is even higher, with two-thirds of general medicine patients reporting sleep disturbances.<sup>18</sup>

Sleep disturbances are commonly encountered in older adults with dementia. Dementia is included in the category of neurodegenerative dis-

eases, and there are specific subtypes of dementia, such as Alzheimer disease and Lewy body dementia. The subtypes of dementia have their own unique characteristics and manifestations, which are often amplified by various sleep disorders and cited as a major strain by caregivers.<sup>16</sup> Circadian rhythm changes seen in dementia may lead to excessive daytime sleepiness.<sup>19</sup> Compounding this are the associated cognitive and behavioral changes seen in dementia, which may further exacerbate the sleep-wake cycle. Excessive daytime sleepiness may lead to prolonged daytime napping, which may interfere with sleep hygiene.

In contrast to dementia, which is a major neurocognitive disorder that interferes with daily functional activities, delirium is defined as an acute change in cognitive status characterized by inattention, disorganized thinking, and/or change in level of consciousness. Delirium develops over a course of hours to days rather than the slower progression (months to years) characteristic of dementia. Unlike dementia, however, delirium is reversible. The manifestation of delirium is theorized as a complex interaction of predisposing factors (age, cognitive impairment, functional decline) and precipitating risk factors (infection, metabolic derangement, hypoxia).<sup>20</sup> Disrupted sleep-wake cycles in hospitalized older adults and critically ill patients has been a noted hallmark in those who eventually develop delirium.<sup>21,22</sup>

### **Sleep assessment**

Sleep assessment, including sleep history, should be a high priority during patient assessments; it is easily incorporated into the initial physical exam. Both patients and sleep partners can be reliable informants

about sleep health. Ask patients about their normal sleep patterns, starting with their lights-out time until their wake-up time. Do not assume that a patient's normal sleep period is at night, which may not be the case for shift workers. Although an estimate, ask patients about the time it takes to fall asleep from their lights-out time and how often they wake up at night (or in a normal sleep period for shift workers), as well as the causes of these awakenings (to use the bathroom, room too warm). Inquire about how long it takes to return to sleep to get an indication of wake after sleep-onset duration. Be sure to discuss daytime napping and ask about any medications (prescription, herbal, or OTC) taken for sleep.

The patient's sleep partner can provide valuable information about snoring or restlessness that may indicate a more serious problem such as sleep-disordered breathing and OSAS. These will require referral to a sleep specialist. If recall is difficult, a sleep diary is a useful tool for patients to complete prior to the next appointment.

The functional assessment of sleep can begin by asking patients how well rested they feel upon awakening. Gather details about the patients' daytime sleepiness while sitting, watching TV, driving, or riding in a car. With recent attention to how electronic devices negatively affect sleep, it is useful to ask about screen time (smartphone, computer, or tablet) in the hours before sleep.

Numerous tools are available to assess sleepiness, and health-care professionals should choose a well-validated, brief measure. The Epworth Sleepiness Scale (ESS) is a brief and useful tool to assess for sleepiness. It consists of eight items asking the patient to self-report the

likelihood of dozing off during daily situations, such as riding in a car, watching TV, or sitting quietly after lunch. Although originally tested with healthy subjects, the ESS has been validated in numerous clinical populations. A systematic review of the properties of the ESS revealed good internal consistency (with a Cronbach's alpha of 0.73 to 0.86), but little evidence of test-retest reliability, so it is not recommended for individual-level comparisons over brief intervals.<sup>23</sup> Despite these shortcomings, the ESS remains the most widely used scale to assess for daytime sleepiness due to its ease of use and brevity (less than 5 minutes), but further high-quality studies are needed.<sup>23,24</sup>

The functional assessment should also include questions about daily routines, mood, energy, and fatigue. Many screening tools are available to assess functional qualities of sleep such as the Pittsburgh Sleep Quality Index (PSQI). The PSQI is a 19-item self-report of the patient's sleep during the previous month and measures sleep disturbances, latency, duration, and efficiency, as well as



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daytime dysfunction. The PSQI continues to be one of the most widely used measures of sleep quality and has been tested in both clinical and nonclinical settings, demonstrating sensitivity (89.6%) and specificity

(86.5%) ( $\kappa = 0.75$ ,  $P = \text{less than } .001$ ) in distinguishing “good” sleepers from “poor” sleepers. The PSQI takes 5 to 10 minutes to administer and incorporates questions for the patient's sleep partner.<sup>25,26</sup>

### **Nonpharmacologic management**

Recently, a greater emphasis has been placed on sleep hygiene, or an individual's set of sleep promotion behaviors, as a first step in the management of insomnia. Treatment for chronic insomnia in older adults begins with nonpharmacologic interventions. The recommended initial intervention involves behavioral or cognitive-behavioral therapy (CBT) strategies geared toward older adults, which can take place in the primary care office setting.<sup>27</sup> These strategies include patient education on using a sleep diary, methods to avoid excessive sleep during the day, and sleep hygiene practices at night to help sleep onset. Older adults with moderate to advanced cognitive impairment may not be able to undergo CBT independently; however, caregivers may implement some of the strategies by carefully prompting and cuing the patient in select behavioral interventions. For example, caregivers can exercise daily with their loved ones by gently guiding them to a safe and suitable location for a 30-minute walk while remaining at their side.

Components of a sleep hygiene protocol may include advising the patient to: adhere to the same bedtime each night; avoid caffeine late in the day; and allow at least 1 to 2 hours after mealtime before going to bed. Alcohol should not be consumed within 1 to 2 hours before bed. Patients should be advised to power off electronic devices such as phones or tablets at least an hour before sleep, read a print book

### **Nonpharmacologic interventions for insomnia<sup>34</sup>**

Share the following techniques for sleep hygiene and behavioral therapies with patients, families, and caregivers.

- Maintain a regular schedule of waking and going to bed, even on weekends.
- During the day, avoid naps longer than 30 minutes. Napping does not make up for the lack of adequate sleep time, but a short nap of 30 minutes or less during the day can help improve mental alertness and mood.
- Engage in regular exercise, and participate in social activities.
- During the day, avoid stimulants such as tobacco and caffeine, especially as evening approaches.
- Create a regular bedtime that minimizes exposure to bright light, excessive noise, and stimulation. The bedroom should be kept dark and slightly cool.
- Use the bedroom for sleep and intimacy rather than for eating, watching TV, or engaging with other electronic devices.
- Avoid large meals and alcohol before bedtime.
- Educate family members of patients with cognitive dysfunction about the elements of good sleep hygiene, as they will need to guide their loved ones in these therapies.

before going to sleep, and use the bed only for intimacy or sleep. Adherence to a bedtime routine enhances sleep, and many patients benefit from a warm, decaffeinated drink such as herbal tea or a warm bath or shower.<sup>13</sup> (See *Nonpharmacologic interventions for insomnia*.)

Efforts to enhance sleep hygiene in older adults in both primary care and hospitalized populations consist of interventions carried out by family members and nursing staff. Specifically, for patients with dementia, chronic sleep problems (OSAS, pain, medications) must be addressed.<sup>20</sup> Behavioral interventions can be carried out in a consistent and structured manner. Encouraging a regular morning wake-up, which may take prompting from a caregiver, will help prevent sleeping into the early afternoon. Regular or “timed” voiding at specific intervals throughout the day prevent nighttime awakenings because of a full bowel or bladder. Exercise, such as moderate walking or an activity suited to the patient’s cognitive level, will help burn excess energy during the day and lead to a feeling of tiredness as bedtime approaches. Dietary changes primarily include avoiding caffeine intake past the morning hours as well as alcohol intake before bedtime. Finally, as bedtime approaches, family members can create an environment that optimizes rest and restoration by minimizing excessive stimulation: turning off the TV and electronic devices, reducing ambient noise, and turning down the lights.<sup>28</sup>

### Pharmacologic management

Pharmacologic options may be considered if insomnia persists after nonpharmacologic treatments and behavioral interventions have been implemented. Do not discontinue

## Common pharmacologic therapies for insomnia<sup>27,29,35,36</sup>

Class	Examples	Notes
Nonbenzodiazepine receptor agonists	Zolpidem	<ul style="list-style-type: none"> <li>May cause dizziness, associated with falls in older adults</li> <li>May cause hallucinations, sleep walking, and other unusual sleep-related activities.</li> </ul>
	Zaleplon	<ul style="list-style-type: none"> <li>Adverse reactions include headache, nausea, dizziness, somnolence, abdominal pain</li> </ul> <p>Note: Both medications are on the Beers Criteria.</p>
Hypnotics	Eszopiclone	<ul style="list-style-type: none"> <li>Recommended for short-term (7- to 10-day) use</li> <li>Adverse reactions include headache, daytime somnolence, gastrointestinal upset</li> <li>On the Beers Criteria.</li> </ul>
Melatonin receptor agonist	Ramelteon	<ul style="list-style-type: none"> <li>May be associated with sleepwalking, decreased inhibition, and bizarre behavior</li> <li>Recommended for short-term (7- to 10-day) use.</li> </ul>
Antidepressants	Doxepin	<ul style="list-style-type: none"> <li>Must be used cautiously in patients with psychiatric disorders</li> <li>On the Beers Criteria.</li> </ul>
	Trazodone	<ul style="list-style-type: none"> <li>Not FDA-approved for insomnia.</li> <li>Anticholinergic effects may cause daytime somnolence</li> </ul>
	Mirtazapine	<ul style="list-style-type: none"> <li>Not FDA-approved for insomnia.</li> </ul>
Natural hormone	Melatonin	<ul style="list-style-type: none"> <li>Dietary supplement, nonprescription</li> <li>Generally safe in physiologic dosages</li> <li>May cause excessive sleepiness in higher dosages or when combined with other sleep agents</li> <li>Not FDA-approved for insomnia.</li> </ul>

Note: Per the American College of Physicians 2016 *Guidelines for Management of Chronic Insomnia Disorder in Adults*, there was insufficient evidence to recommend the use of complementary and alternative treatments, such as melatonin. It is included in this table because clinicians may encounter its use in their patients.

nonpharmacologic interventions in place of medications; rather, a judicious use of appropriate medications may enhance a healthy night’s sleep. Current guidelines provided by the American Academy of Physicians explain the use of pharmacologic therapies based on their efficacy in collected evidence.<sup>27</sup>

Because most, if not all, pharmacologic therapies are of low-quality evidence, healthcare providers must first create an open dialogue with their patient regarding the benefits and potential harms of pharmacologic agents. Current guidelines suggest starting with the nonbenzodiazepine hypnotic agents, such as

eszopiclone, zaleplon, or zolpidem, when considering pharmacologic therapy for the general population. However, the 2019 Beers Criteria for Potentially Inappropriate Medication Use in Older Adults recommends clinicians avoid this class of medications in older populations because of potential adverse reactions.<sup>29</sup>

Melatonin supplements taken 1 to 2 hours before bedtime have been shown to improve sleep in older adults with insomnia.<sup>30</sup> Trazodone may be used in low dosages as an off-label prescription for insomnia in older adults. It is currently approved by the FDA for depression, but lower dosages than those used for depression treatment have been shown to induce and maintain sleep while avoiding excessive daytime somnolence.<sup>31</sup> Magnesium is another common sleep aid, with a 2019 study demonstrating promise in the use of a combination magnesium and vitamin B supplement.<sup>32</sup> (See *Common pharmacologic therapies for insomnia*.)

Although short-term use of select medications for sleep in certain patients may be beneficial, clinicians should remain cautious when prescribing sleep medications to older adults. In primary care clinics, a report of insomnia and a prescription for sleep aids both independently predicted falls in older adults.<sup>33</sup>

### Case study

MR is an 82-year-old female who presents to her healthcare provider, an NP, at the clinic as a follow-up to a recent 3-day hospitalization. MR was admitted to the hospital for weakness, fatigue, and “not doing well at home.” She had a urinary tract infection (UTI) and was treated with I.V. antibiotics. Although she



### Pharmacologic options may be considered if insomnia persists after nonpharmacologic interventions.

was discharged free of UTI symptoms, her daughter explains that the hospital course was “rough.” Her mother became very confused at night, did not sleep “at all,” and is now even more forgetful and confused than usual. She reports that her mother’s sleep cycle is still disrupted and that she is “still taking long naps during the day and just won’t sleep at night.”

The NP reviews MR’s discharge summary and medication list. MR has a history of type 2 diabetes mellitus, hypertension, heart failure with preserved ejection fraction, probable dementia, and osteoarthritis. Her discharge oral medications are listed as: acetaminophen three times a day as needed, metformin twice daily, amlodipine once daily, hydrochlorothiazide once daily (in the afternoon), lisinopril once daily, clonazepam

twice daily (for panic disorder), and aspirin once daily.

On exam, MR has a frail appearance with a pleasant demeanor. She answers questions politely but defers to her daughter for more complex questions. Additionally, she is awake and attentive but appears fatigued and deconditioned. Her daughter wonders if zolpidem could be prescribed “to let my mom finally get some sleep.” The NP formulates an assessment and plan and includes disordered sleep in her problem list.

### Case discussion

For experienced clinicians who work with older adults, MR’s case is all too familiar. As her healthcare provider, the NP begins by reviewing the discharge summary with MR’s daughter and explains that she developed delirium in the hospital, which contributed to a reversal in her sleep-wake cycle. Although her UTI was successfully treated, she still has residual sleep disturbance at home. The NP performs a thorough history and physical assessment. MR’s cognitive testing shows significant deficits and her history of progressive decline in functional status makes a neurocognitive disorder likely. MR’s sleep disturbance is likely multifactorial in nature, a combination of chronic pain from osteoarthritis and neurocognitive impairment.

The NP suggests follow-up cognitive testing in 3 months to evaluate the stated history of probable dementia more formally. In the interim, the NP discusses strategies to assist in the sleep-wake cycle with both MR and her daughter. The NP suggests home physical and occupational therapies and encourages her to practice these exercises daily. The NP reviews important sleep hygiene practices, which MR’s



daughter admits neither of them practice. The NP also suggests creating a formal structured daily routine, such as an adult day program, or an informal one in which MR wakes up at the same time each day and engages in physical and social activity followed by an evening routine to wind down into sleep. Caffeinated beverages, if used, should be kept to a minimum and not consumed in the afternoons.

During the medication review, the NP notes that clonazepam may cause significant serious adverse reactions in older adults, such as daytime somnolence, falls, dizziness, and confusion. The NP also reviews the need to continue hydrochlorothiazide and schedules it to be taken in the morning to avoid middle-of-the-night bathroom visits. Similarly, zolpidem can contribute to adverse reactions in older adults, and the NP explains that MR should avoid this medication. The NP suggests a slow tapering off of the clonazepam, provides a drug tapering schedule, and reviews nonpharmacologic methods to help with anxiety. Additionally, MR may be experiencing pain from her osteoarthritis, further contributing to the burden of impaired sleep. If elements from the patient history and physical assessment suggest pain from osteoarthritis, the NP recommends acetaminophen three times daily as a safe and effective pain management protocol.

The NP reassures MR and her daughter and plans a follow-up visit after 2 weeks. During this time, MR and her daughter should maintain a sleep diary to record bedtime, wake time, and any instances of waking in the night. The NP concludes the visit by mentioning that, should MR's sleep not improve (or worsen) over the next several days, they can

reach her by phone to discuss other medications to help improve sleep.

Upon MR's return visit 2 weeks later, her daughter is pleased with her mother's recovery overall. MR has been participating in home physical and occupational therapy services, and she is regaining her strength. Per the NP's recommendations, MR has been slowly tapering off the clonazepam, has avoided caffeinated beverages in the afternoon, has continued regular exercise activities (even on nonphysical and occupational therapy days), and admits that her sleep has improved. MR continues to state that there are two to three times a week in which falling asleep is difficult. The NP recommends an OTC product at night as needed.

## Conclusions and future directions

Insomnia remains a common complaint reported to healthcare providers in both community and inpatient settings. Nurses can incorporate sleep assessments in patient care and are ideally suited to assess patients for insomnia or identify sleep symptoms that may require further investigation.

Hospitalized and community-dwelling older adults are especially subject to altered sleep-wake patterns from both environmental issues and dementia; therefore, they represent a specialized at-risk population. Future opportunities for research include investigation of nonpharmacologic sleep-promoting strategies. ■

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**TEST INSTRUCTIONS**

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- You'll need to create (it's free!) and log in to your personal CE Planner account before taking online tests. Your planner will keep track of all your Lippincott Professional Development online CE activities for you.
- There's only one correct answer for each question. A passing score for this test is 13 correct answers. If you pass, you can print your certificate of earned contact hours and access the answer key. If you fail, you have the option of taking the test again at no additional cost.
- For questions, contact Lippincott Professional Development: 1-800-787-8985.
- Registration deadline is **September 2, 2022**.

**PROVIDER ACCREDITATION**

Lippincott Professional Development will award 1.5 contact hours for this continuing nursing education activity. Lippincott Professional Development is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. This activity is also provider approved by the California Board of Registered Nursing, Provider Number CEP 11749 for 1.5 contact hours, and the District of Columbia, Georgia, and Florida CE Broker #50-1223.

**Payment:** The registration fee for this test is \$17.95.