

Chapter 34

Insomnia

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Introduction

Insomnia is one of the most common patient complaints in the ambulatory setting. It is defined as difficulty with initiating sleep (i.e., taking longer than 30 min to fall asleep), maintaining sleep (i.e., waking up more than three times per night), or waking up too early (i.e., staying asleep for fewer than 6 h) despite adequate opportunity for sleep, which results in some form of daytime impairment [1]. The prevalence of insomnia varies based on the criteria used to define insomnia; however, the general consensus is that about 30–50% of adults present with this complaint at some point, with about 20% having a persistent problem [2]. Risk factors for insomnia include female sex, increased

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age, low socioeconomic status, unemployment, and the marital status of divorced, widowed, or separated [3–5]. Patients with comorbid medical or psychiatric conditions are at even further increased risk with rates as high as 50–75% [6–8].

Insomnia is classified as acute or chronic. Acute insomnia is defined as insomnia present for less than 1 month. It is typically caused by changes in sleep environment, stress, or severe depression and may recur when new or similar stresses present [1]. Once the patient adapts to the new stressor or it resolves, the insomnia is expected to resolve as well [1]. Chronic insomnia is defined as insomnia that persists for more than 1 month. Although once thought that all insomnia was related to a comorbid condition, it is now recognized that chronic insomnia may be either primary or comorbid. Primary chronic insomnia is diagnosed when no underlying etiology or cause for the insomnia is determined. It should be noted though that some patients may have primary insomnia in the setting of a comorbid condition [9]. Comorbid insomnia, previously referred to as secondary insomnia, may be related to a wide variety of medical and psychiatric conditions and is the most common cause of chronic insomnia.

Patients with chronic insomnia are at higher risk for health consequences, in addition to reporting a poorer quality of life and impaired occupational and social life. They have higher rates of healthcare utilization including hospitalizations, primary care visits, and medication use, as well as having higher rates of absenteeism and work-related errors [10]. Thus it is important to identify and treat insomnia in a timely manner.

Key History and Physical Exam

A detailed history and physical exam should be performed at the time of presentation to assess if insomnia is due to a medical or psychiatric condition, medication effect, or substance use.

History

Patients should be asked about their sleep history to determine the type of insomnia (i.e., issues with initiation versus maintenance), the duration (i.e., acute or chronic), and the course (i.e., recurrent or persistent). Questions regarding alleviating versus provoking factors, sleep schedule, alcohol and drug use, caffeine intake, and activities prior to bedtime should also be solicited. Examples of questions to ask patients may include [11–13]:

- How long has this problem been occurring? How has your sleep been?
- Do you wake up frequently at night? Have problems falling asleep? Have problems staying asleep?
- What kind of work hours do you have? Are you a shift worker?

Assess Sleep Hygiene:

- What time do you go to bed? Do you go to bed at the same time every night? (i.e., weekends versus weekdays); How long do you typically sleep?
- Is your sleeping environment conducive to sleep? (i.e., noise, temperature, light)
- How do you unwind before bedtime?
- Do you watch TV or read in bed prior to going to sleep?
- Do you take daytime naps?

Patients should be asked about daytime consequences of poor sleep. Common symptoms they may experience include fatigue, decreased energy, tiredness, lack of concentration, mood disturbances, and concern about sleep. The Epworth Sleepiness Scale questionnaire may be administered if a patient complains of excess daytime sleepiness, as this would indicate a different sleep disorder from insomnia [13]. These patients should also be evaluated for safety and advised to avoid driving or operating heavy machinery when they are drowsy.

All patients should maintain a sleep diary for about 2 weeks. It should include their bedtime, time until sleep onset, length

of sleep, wake time after sleep onset, number of awakenings, any sleep aids (including medications), quality of sleep, nap times, and daytime symptoms [12]. The diary may be later used as a baseline for comparison when treatment is initiated.

Social History

Patient's alcohol, caffeine, tobacco, and drug history should be evaluated. If a patient presents with acute insomnia, questions regarding recent stressors (e.g., new job, change in location, change in relationship) should be addressed.

Medical History

A thorough review of systems and medical history should be obtained to reveal any underlying psychiatric or medical conditions that may be present. Specifically, patients should be evaluated for mood and anxiety disorders which account for the majority of psychiatric disorders causing chronic insomnia [11, 12]. Major depressive disorder may be quickly excluded if the patient responds “no” to both of the following questions: In the past 2 weeks, (1) have you felt down, depressed, or hopeless, and (2) have you had little interest or find no pleasure in doing things? [14]. Post-traumatic stress disorder is another common psychiatric etiology for insomnia.

Common medical comorbidities associated with insomnia include pulmonary disease, neurologic disease, heart failure, hypertension, diabetes, malignancy, and chronic pain [1, 15]. Evaluation for sleep apnea, covered in another chapter, should be considered in patients with obesity and a history of snoring.

Medication History

Medications that can lead to insomnia include [1, 6–8]:

- Central nervous system stimulants (i.e., caffeine, methylphenidate, amphetamine, modafinil)

- Respiratory stimulants (i.e., theophylline, albuterol)
- Cardiovascular agents (i.e., beta blockers, diuretics, alpha agonists and antagonists, calcium channel blockers)
- Antidepressants (i.e., selective serotonin reuptake inhibitors, monoamine oxidase inhibitors, norepinephrine and dopamine reuptake inhibitors, selective serotonin and norepinephrine reuptake inhibitors)
- Hormones (i.e., glucocorticoids, thyroid medication)

Withdrawal of sedatives, hypnotics, or glucocorticoids may precipitate insomnia.

Physical Exam

There is no specific physical exam finding consistent with diagnosing insomnia; however, the physical exam may reveal findings consistent with an underlying medical condition. Certain exam features that should be specifically addressed include obesity, neck circumference, and upper airway obstruction to diagnose sleep apnea.

Differential Diagnosis

Diagnoses to consider in the differential for insomnia include [6–8, 13]:

- Underlying psychiatric/medical condition (i.e., comorbid insomnia)
- Medication-induced insomnia
- Sleep-related breathing disorders (i.e., obstructive sleep apnea, Cheyne-Stokes breathing)
- Short duration sleep
- Chronic sleep restriction
- Movement disorders (i.e., restless leg syndrome, periodic limb movements during sleep)
- Sleeplessness and circadian rhythm disorder
- Sleep-disruptive environmental circumstances

Decision-Making

Insomnia is a clinical diagnosis and is based on sleep history. Diagnosis of insomnia includes meeting the following three criteria per the DSM-5 and International Classification of Sleep Disorders, Third Edition (ICSD-3) [1, 11]:

- Difficulty in initiating sleep, maintaining sleep, or early-morning awakenings
- Occurs despite ample opportunity for sleep
- Daytime deficits in function occur due to impaired sleep

No specific work-up is needed to diagnose insomnia; however patients should maintain a sleep journal for 1–2 weeks in order to aid in diagnosis. Further, the sleep diary may be used before and during treatment to evaluate for success.

Patients may benefit from polysomnography if there is concern for sleep apnea or for patients with suspected restless leg syndrome/periodic limb movement disorder. Actigraphy is another test modality that may help in documenting patients' sleep patterns and circadian rhythms. It works by monitoring a patient's movement. Therefore, if there is a prolonged period of no movement then the patient is considered to be sleeping, while periods of prolonged movement indicate activity. Actigraphy may be used in correlation with the sleep journal to determine length of sleep [16]. Other tests that may be beneficial include psychiatric screening tools to assess for depression and anxiety, echocardiogram, thyroid function tests, hemoglobin A1c, and iron studies.

Treatment

The goal of treatment is to improve sleep quality and daytime functioning [1]. Comorbid conditions, including medical, psychiatric, substance abuse, should all be addressed and treated, as they may be precipitating or provoking the insomnia. See Fig. 34.1.

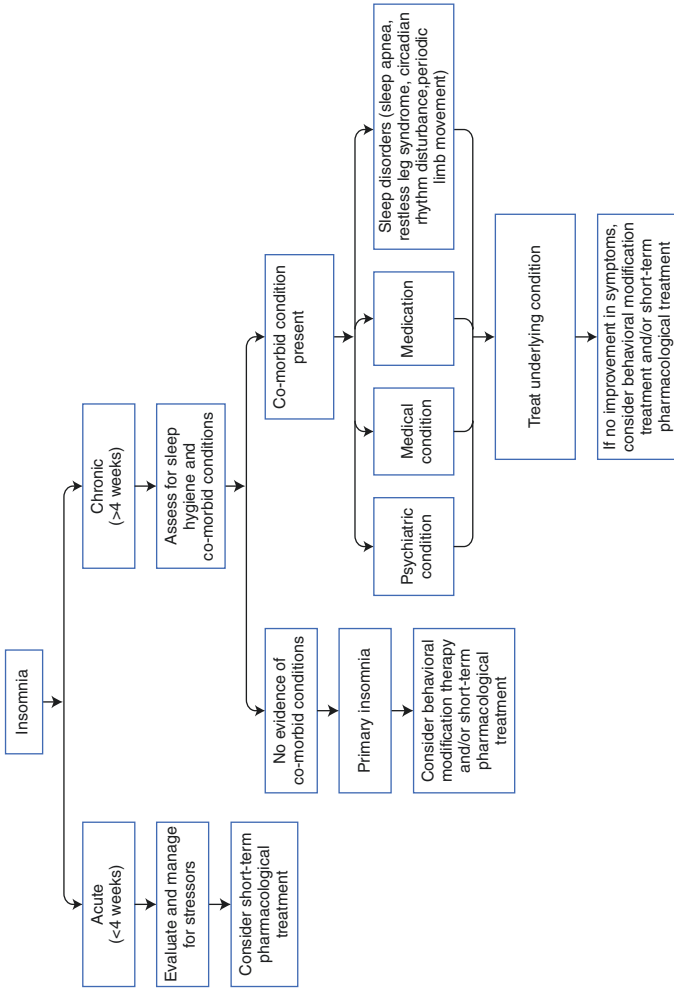


FIG. 34.1 Insomnia algorithm

The American Academy of Sleep Medicine and American College of Physicians both endorse the use of behavioral therapy, specifically cognitive behavioral therapy (CBT), as first-line treatment in chronic insomnia, regardless of primary or comorbid etiology [1, 17]. Patients who do not improve with behavioral therapy may benefit from pharmacological treatment as an adjunct or as stand-alone treatment. Patients with acute insomnia may benefit from medication as first-line treatment, as this type of insomnia is typically self-limited.

Behavioral Therapy

Behavioral therapy includes sleep hygiene education, stimulus control, relaxation, sleep restriction therapy, cognitive therapy, and CBT. Patients are initially educated about sleep hygiene and stimulus control; however, if symptoms persist then cognitive therapy and CBT may be employed. The success of treatment is based on the patient implementing the behavioral therapy.

Sleep Hygiene

Sleep hygiene consists of addressing and rectifying behaviors that are incompatible with sleep. These include avoiding caffeine, alcohol, and nicotine before bedtime, decreasing stimuli (i.e., noise, lighting), avoiding daytime naps, exercising daily, not forcing sleep, and maintaining a regular sleep schedule [13, 18, 19].

Stimulus Control

Patients undergoing stimulus control therapy are educated on associating their bed with sleeping time, as opposed to arousal time. Therefore, they are instructed to use the bed for sleeping and sexual activity purposes only [13, 19].

Relaxation Therapy

Patients are taught biofeedback techniques to help reduce tension and relax muscle groups. This therapy consists of utilizing guided imagery and meditation to help relax the patient prior to bed.

Sleep Restriction Therapy

Patients with insomnia may be prone to spend more time in bed to compensate for lack of sleep, which may further perpetuate the problem, as it may have an effect on the circadian rhythm. Sleep restriction therapy entails limiting the time the patient spends in bed. The patient is instructed to spend the same amount of time in bed as they do sleeping, but no less than 5 h. The time interval increases by 15–30 min every week, as the patient reports a sleep efficiency of greater than 85% (sleep efficiency = time asleep/time in bed) [13, 19].

Cognitive Therapy

As patients tend to have a lot of worrying surrounding trying to achieve sleep, with cognitive therapy, they are educated to correct their inaccurate thoughts to reduce stress and worry [13, 19].

Cognitive Behavioral Therapy

CBT involves combining the previously mentioned therapies over the course of several weeks. It has been shown to be superior to medication use in the treatment of primary insomnia, as patients with primary insomnia have been shown to have physiologic, emotional, and cognitive arousal in bed [13, 19–21]. It may also be used in patients with comorbid insomnia. The advantage of CBT is that it provides

TABLE 34.1 FDA-approved medications in the treatment of insomnia

Drug name	Dosage (mg)	Onset of action (h)	Indication	Half-life (h)	Side effects
<i>Benzodiazepine receptor agonists</i>					
Benzodiazepines					
Estazolam	1–2	0.5–1	Sleep maintenance	10–24	Daytime sleepiness
Temazepam	7.5–30	0.5–1	Sleep maintenance	8–15	Daytime sleepiness
Triazolam	0.125–0.25	0.25–0.5	Sleep onset	2–5	Anterograde amnesia, rapid eye movement sleep rebound, rebound anxiety
Non-benzodiazepines					
Zaleplon	5–15	0.5	Sleep onset	1	Altered color perception
Zolpidem	5–10	0.5	Sleep onset	2–3	Abdominal pain, rebound insomnia
Zolpidem Controlled Release	6.25–12.5	0.5	Sleep onset or sleep maintenance	1.5–4.5	
Eszopiclone	1–3	1	Sleep onset or sleep maintenance	6–9	Unpleasant taste, amnesia, hallucinations, worsening depression

<i>Melatonin receptor agonist</i>					
Ramelteon	8–16	0.3	Sleep onset	2–5	Suicidal ideation, dizziness, headache, prolactinemia
<i>Orexin receptor antagonists</i>					
Suvorexant	10–20	0.5	Sleep onset or sleep maintenance	12	Suicidal ideation, hallucinations, amnesia
<i>Antidepressants</i>					
Doxepin	3–6	–	Sleep maintenance	15	QT prolongation, arrhythmias, tardive dyskinesia, hallucinations, anticholinergic symptoms

patients with the tools to improve their sleep quality; however, it is limited by the amount of time required (several 20–40-min sessions over the course of 6 weeks) and the lack of clinicians trained in CBT. The effects of CBT may be sustained for months after completion of sessions [22].

Medications

Patients whose chronic symptoms do not improve with behavioral therapy and those with acute insomnia may benefit from pharmacological treatment. Decisions regarding which pharmacological agent to prescribe include characteristics of insomnia (i.e., sleep onset versus sleep maintenance), duration of effect, patient preference, cost, prior treatment responses, comorbid conditions, and drug interactions [19]. FDA-approved medications for use in the treatment of insomnia include benzodiazepine receptor agonists (BDZRA), melatonin agonists, doxepin, and suvorexant (Table 34.1). There are few clinical trials comparing the efficacy of these medications to one another; however, no significant difference has been found [23].

Short-/intermediate-acting BDZRA or ramelteon should be used as first line. As previously mentioned, the choice of drug depends on several factors. For instance, zaleplon or ramelteon may be preferred in patients with difficulty initiating sleep, given their shorter half-lives, compared to using eszopiclone or temazepam, which may be preferred in those with difficulty maintaining sleep, given their longer half-lives. Triazolam is no longer used as a first line because of associated rebound anxiety. Some patients may prefer to use ramelteon, as it is not a controlled substance [19]. If a patient does not respond to the initial medication, or has complaints of side effects, a different drug from the same class may be utilized [19]. Patients who fail treatment with BDZRA or ramelteon or who have comorbid depression may benefit from low-dose sedating antidepressants including trazodone, mirtazapine, doxepin, amitriptyline, or trimipramine [19]. Data are insufficient to support the use of several other medi-

cations that are used off-label in the treatment of insomnia, including gabapentin, tiagabine, quetiapine, and olanzapine. Over-the-counter agents such as antihistamines may be used as self-remedies; however, they have the potential for serious side effects including anticholinergic symptoms. Herbal supplements such as valerian and melatonin have been shown to have a small benefit in the treatment of insomnia [19].

There are no specific guidelines regarding the dosing frequency in which these pharmacological agents should be used. Some physicians will recommend nightly use, while others recommend intermittent use to prevent tolerance, abuse, and dependence. Minimal treatment time is 2–4 weeks before deciding to continue with treatment or to change the treatment regimen. Similar to dosing frequency, there are no guidelines regarding length of treatment. If patients are using BDZRA for long periods of time they should be monitored frequently for efficacy, side effects, tolerance, abuse and/or dependence, and attempts should be made to decrease the dose and frequency [19].

Clinical Pearls

- Insomnia is a clinical diagnosis made when a patient presents with complaints of initiating or maintaining sleep, or waking up too early despite adequate opportunity for sleep, which results in some form of daytime impairment.
- A thorough medication review should be completed, as many medications may impact a patient's sleep pattern.
- All patients should undergo a medical/psychiatric evaluation to determine underlying etiology and should maintain a sleep diary for 2 weeks as part of the diagnostic evaluation for insomnia.
- No diagnostic test needs to be performed to diagnose insomnia; however, polysomnography may be indicated if a breathing or movement disorder is suspected.
- Behavioral and psychological interventions are recommended as first-line treatment of chronic insomnia. If these are ineffective then pharmacologic methods are recommended. Medications may be used as first-line treatment of acute insomnia as this tends to be self-limited.

Don't Miss This!

- Insomnia is a clinical diagnosis and is typically associated with an underlying psychiatric or medical condition, so be certain to rule out underlying conditions before proceeding to treat insomnia!

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