Chapter 35
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, maintaining sleep, or waking up too early despite adequate opportunity and circumstances 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, an estimated 35–50% of adults present symptoms of insomnia, with about 5–15% having chronic insomnia [2, 3]. The prevalence is higher in older adults [4]. Risk factors for insomnia include female sex, increased age,

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low socioeconomic status, unemployment, homelessness, being a veteran, and the marital status of divorced, widowed, or separated [3, 5–7]. Patients with comorbid medical or psychiatric conditions are at even higher risk [5, 8, 9].

Insomnia is classified as short-term when it has a duration of <3 months and chronic when ≥3 months [1]. Short-term insomnia is typically precipitated by stressful life changes such as personal loss and changes in sleep environment and may recur when new or similar stresses present. Once the patient adapts to the new stressor or it resolves, the insomnia is expected to resolve as well. However, for some patients it becomes a chronic problem [1].

Although chronic insomnia may be associated with several medical and psychiatric conditions, the third edition of the International Classification of Sleep Disorders (ICSD-3) moved away from subclassifying chronic insomnia as primary and secondary (comorbid). One concern with the old classification was that the management of patients diagnosed with "secondary" insomnia focused on treating the underlying condition without adequate management of the sleep disorder. Another consideration was that patients with chronic insomnia, regardless of associated comorbidities, usually develop cognitive processes and behaviors that perpetuate the condition, which must be addressed in a targeted way [1, 10].

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, medication use, and higher healthcare costs [11, 12]. Insomnia is associated with losses of quality-adjusted life-years [13], and some work-related impacts include lost productivity, lower work performance, higher rates of absenteeism, and increased errors [12, 14]. 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. It is important to assess for a potential association to medical or psychiatric conditions, medication effect, substance use history, and recent stressors.

History

Patients should be asked about their sleep history to determine the type of symptoms (i.e., issues with sleep initiation, maintenance, or early awakening), the duration (i.e., short-term or chronic), the frequency, and the course (i.e., recurrent or persistent). Questions regarding alleviating versus provoking factors, sleep schedule, activities prior to bedtime, and daytime dysfunction should also be solicited. Examples of questions to ask patients may include [3, 15, 16]:

- How long has this problem been occurring? How often does it happen?
- Do you have problems falling asleep? How long does it take you to fall asleep?
- Do you have problems staying asleep? How often do you wake up at night and for how long?
- Do you wake up too early in the morning? What time do you usually wake up?
- How is this impacting the way you feel and function during the day?

Assess sleep hygiene:

- What time do you go to bed every night and get out of bed every morning? (weekdays versus weekends).
- How long do you typically sleep?
- What kind of work hours do you have? Are you a shift worker?

- Describe your sleeping environment in regards to noise, temperature, light, etc.
- Describe your activities before bedtime. How do you unwind?
- Do you watch TV or read in bed prior to going to sleep?
- Do you take daytime naps?
- What do you do if you cannot fall asleep?

Patients should be asked about daytime consequences of poor sleep. Common symptoms they may experience include fatigue, decreased energy, lack of concentration, mood disturbances, and concern about sleep [1]. The Epworth Sleepiness Scale questionnaire may be administered to better assess patient complains of excess daytime sleepiness, as these may indicate a different sleep disorder from insomnia [3, 17]. 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, number and duration of awakenings, quality of sleep, wake-up time, time getting out of bed, use of sleep aids, nap times, and daytime symptoms [3, 15, 18]. The diary may later be used as a baseline for comparison when treatment is initiated. If patients have a sleeping partner, they should be asked about patient behaviors (e.g., snoring, limb movements, episodes of apnea).

Social History

Patient's alcohol, caffeine, tobacco, and drug history should be evaluated. One should inquire about occupation and work/school hours and determine if the patient is a shift worker. Recent stressors should be assessed (e.g., new job, change in location, change in relationship, financial or social stressors), especially in cases of short-term insomnia.

Medical History

A thorough review of systems and medical history should be obtained to reveal any psychiatric or medical conditions that may be present. Specifically, patients should be evaluated for mood and anxiety disorders which account for a large proportion of psychiatric disorders associated with chronic insomnia [3, 16]. Patients with posttraumatic stress disorder also frequently report insomnia [19].

Common medical comorbidities associated with insomnia include pulmonary disease, neurologic disease, heart disease, hypertension, diabetes, malignancy, gastrointestinal conditions, and chronic pain [5, 8, 9, 18]. 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 contribute to insomnia include [3, 5, 9, 18]:

- 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).
- Allergy medications (i.e., pseudoephedrine, phenylephrine).
- Hormones (i.e., glucocorticoids, thyroid medication).

Withdrawal of sedatives, hypnotics, opioids, 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 (e.g., high blood pressure). Certain exam features that should be specifically addressed include obesity, neck circumference, and upper airway obstruction to diagnose sleep apnea [3, 18].

Differential Diagnosis

Diagnoses to consider in the differential for insomnia include [1, 3, 18]:

- Medication-induced insomnia.
- Sleep-related breathing disorders (e.g., obstructive sleep apnea, Cheyne-Stokes breathing).
- Short-duration sleep (normal short sleepers).
- Chronic volitional sleep restriction (insufficient sleep syndrome).
- Sleep-related movement disorders (e.g., restless leg syndrome, periodic limb movement disorder).
- Circadian rhythm sleep-wake disorders.
- Sleep-disruptive environmental circumstances.

Decision-Making

Insomnia is a clinical diagnosis and is based on sleep history. Diagnosis of insomnia includes meeting the following criteria per the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) and the International Classification of Sleep Disorders, Third Edition (ICSD-3) [1, 20]:

- Difficulty in initiating sleep, maintaining sleep, or early-morning awakenings.

- Occurs despite ample opportunity for sleep.
- Daytime impairment in function due to sleep difficulty.
- The sleep difficulty is not better explained by another sleep disorder.
- For chronic insomnia, the symptoms occur at least 3 days per week, for at least 3 months.

No specific workup is needed to diagnose insomnia. As mentioned above, patients should maintain a sleep journal for 2 weeks in order to aid in the diagnosis, and it may be used during treatment to evaluate progress.

Polysomnography is not routinely indicated, but patients may benefit from this test if there is concern for sleep apnea or for patients with suspected restless leg syndrome/periodic limb movement disorder [1, 3]. Actigraphy is another test modality that may help in documenting patients' sleep patterns and circadian rhythms. It is measured at home and it works by monitoring a patient's movement. Actigraphy may be useful when there is concern for the reliability of the clinical history or the sleep journal or when there is suspicion for a circadian rhythm disorder [3, 21]. Other tests that may be beneficial include psychiatric screening tools to assess for depression and anxiety. There are no routine laboratory or imaging tests that should be obtained, unless a medical comorbidity is suspected (e.g., echocardiogram, thyroid function tests, hemoglobin A1c, iron studies).

Treatment

The goal of treatment is to improve sleep quality and daytime functioning [18, 22]. Comorbid conditions, including medical, psychiatric, and substance abuse, should all be addressed and treated, as they may be contributing to the symptoms of insomnia. See Fig. 35.1.

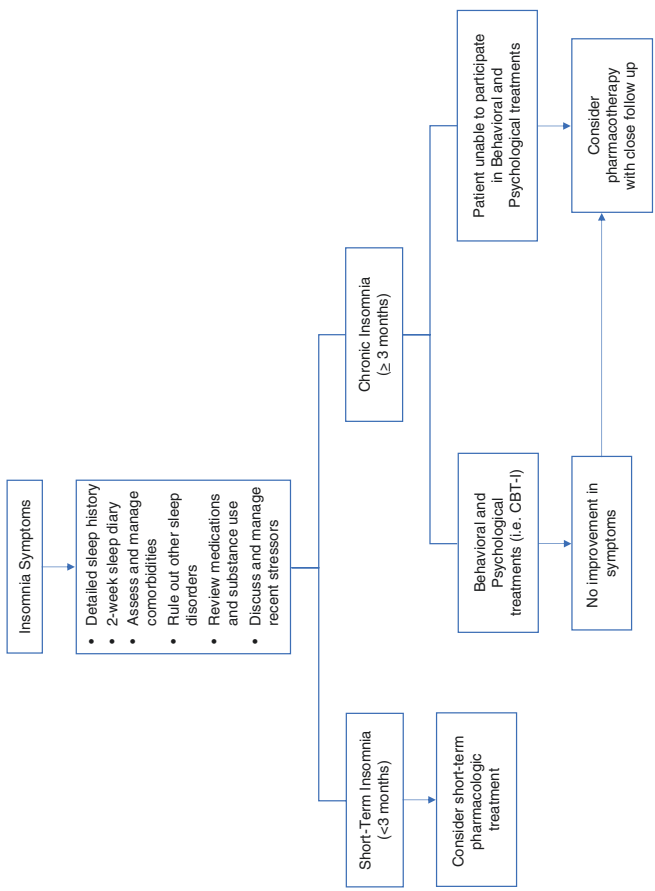

FIGURE 35.1 Insomnia algorithm

Behavioral and Psychological Therapies

The American Academy of Sleep Medicine (AASM) and American College of Physicians both endorse the use of behavioral and psychological therapies, specifically cognitive behavioral therapy for insomnia (CBT-I), as first-line treatment in chronic insomnia [2, 22, 23]. However, AASM acknowledges that not all patients with chronic insomnia are able to receive behavioral treatments or benefit from them; therefore, pharmacotherapy should continue to be considered as adjunct or stand-alone treatment [24].

Cognitive Behavioral Therapy for Insomnia (CBT- I)

Multicomponent CBT-I involves combining several of the therapies mentioned below (stimulus control, sleep restriction therapy, education about sleep hygiene, relaxation strategies, among others) along with cognitive strategies that help patients recognize and change unhelpful beliefs and anxieties about sleep. It is typically delivered by trained professionals over 4–8 weeks. The AASM strongly recommends CBT-I, explaining that almost all patients should receive it given evidence for important clinical improvements. The effects of CBT-I seem to be sustained long-term, and the need for medications may be reduced. The limitations include a lack of clinicians trained to deliver the therapy and the amount of time required [2, 18, 23, 25, 26].

Multicomponent Brief Therapies

Similar to CBT-I, these brief therapies are multicomponent and draw from several of the therapies listed below. However, unlike CBT-I, brief therapies typically only last 1–4 weeks. The body of evidence is not as robust as for CBT-I, but sufficient for AASM to suggest that patients receive this therapy [2, 23].

Stimulus Control

Patients undergoing stimulus control therapy are provided with strategies to associate their bed with sleeping time, as opposed to arousal time. For example, they are instructed to use the bed only for sleeping and sexual activity, only getting in bed or staying in bed if sleepy, and waking up at the same time every day. AASM supports using stimulus control as an element in multicomponent therapies or as a single therapy [2, 18, 23].

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. Sleep restriction therapy entails limiting the time the patient spends in bed, in order to increase the sleep drive. 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 or decreases every week, based on the patient reports of sleep efficiency (sleep efficiency = time asleep/time in bed). AASM supports using sleep restriction as an element in multicomponent therapies or as a single therapy [2, 18, 23].

Relaxation Therapy

Patients are taught techniques to help reduce arousal prior to bedtime or during nighttime awakenings. These include abdominal breathing, tension and relaxation of muscle groups, guided imagery, and meditation. AASM supports using relaxation as an element in multicomponent therapies or as a single therapy [2, 18, 23].

Sleep Hygiene

Sleep hygiene should be part of a multicomponent approach; however, AASM has recommended *against* using sleep hygiene as a single therapy for chronic insomnia due to data showing low benefits. It includes rectifying behaviors that are incompatible with sleep such as avoiding caffeine, alcohol, and nicotine before bedtime. It also involves lifestyle changes (e.g., diet, exercise) and correcting nighttime environmental factors (e.g., noise, lighting, temperature) [2, 18, 23].

Other Behavioral and Psychological Therapies

Several other therapies are available, including cognitive, biofeedback, paradoxical intention, intensive sleep retraining, and mindfulness therapies. However, AASM did not identify enough evidence to provide a recommendation in favor or against them in their latest guideline [2, 23].

Medications

Pharmacotherapy may be considered in patients with chronic insomnia who do not have access or cannot participate in behavioral and psychological treatments for chronic insomnia and in patients who do not improve despite such treatments [24]. Patients with short-term insomnia may also benefit from pharmacological treatment. The decision to start pharmacotherapy should be individualized and a shared decision-making approach should be used [22]. FDA-approved medications that are currently recommended by the AASM for the treatment of insomnia include benzodiazepines, "Z-drugs" (nonbenzodiazepine receptor agonists), ramelteon, doxepin, and suvorexant [24] (Table 35.1).

Table 35.1 FDA-approved medications clinically recommended by AASM for the treatment of insomnia

Drug name	Classification	Dosage (mg)	Indication	Most common side effects [27]
Temazepam	Benzodiazepine	7.5–30	Sleep onset and maintenance	Drowsiness, headache, fatigue, nervousness, lethargy, dizziness
Triazolam	Benzodiazepine	0.125–0.5	Sleep onset	Drowsiness, dizziness, lightheadedness, coordination disorder/ataxia
Eszopiclone	Z-drug	1–3	Sleep onset or sleep maintenance	Headache, unpleasant taste, somnolence, dry mouth, nausea, dizziness, nervousness, respiratory infection, dyspepsia, depression
Zaleplon	Z-drug	5–20	Sleep onset	Headache, dizziness, abdominal pain, nausea, somnolence, asthenia, eye pain, dysmenorrhea

Zolpidem	Z-drug	5–10	Sleep onset	Headache, drowsiness, dizziness, sinusitis
Zolpidem controlled release	Z-drug	6.25–12.5	Sleep onset or sleep maintenance	
Ramelteon	Melatonin agonist	8	Sleep onset	Dizziness
Suvorexant	Orexin receptor agonist	10–20	Sleep maintenance	Headache, somnolence
Doxepin	Tricyclic antidepressant	3–6	Sleep maintenance	Somnolence/sedation, upper respiratory tract infection

The selection of a pharmacological agent must consider several factors, including characteristics of insomnia (i.e., sleep onset versus sleep maintenance), prior treatment responses, comorbid conditions, patient preference, patient-specific concerns for adverse outcomes, characteristics of the medication such as duration of effects, side effects, drug interactions, and cost [18, 24]. AASM does not recommend one particular drug over another as there are few clinical trials comparing the efficacy of specific medications [24].

When pharmacotherapy is used, patients should be assessed regularly to evaluate treatment response, potential side effects, and the ongoing need for medications. Medications should be used at the lowest effective dose and tapered whenever possible [18]. The frequency of administration can be nightly or intermittently, and an assessment 2–4 weeks after treatment initiation is usually appropriate to decide whether to continue with the current therapy [18]. Chronic pharmacotherapy should be reserved for patients who are followed regularly, continue to demonstrate benefits, and were properly screened for contraindications and when nonpharmacologic therapies are not effective or not an option [24].

AASM recommends against the use of trazodone, tiagabine, diphenhydramine, melatonin, tryptophan, and valerian due to lack of evidence of clinically significant benefit. Data were insufficient for AASM to provide clinical recommendations for the use of several other medications that are used off-label in the treatment of insomnia, including gabapentin and quetiapine [24]. Benzodiazepines and Z-drugs should be avoided in the elderly due to increased risks (e.g., cognitive impartment, delirium, falls) [28]. Over-the-counter agents such as antihistamines are often used as self-remedies; however, they have the potential for serious side effects including anticholinergic symptoms [18].

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 and

circumstances 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 clinical evaluation to identify medical or psychiatric conditions potentially contributing to insomnia and should maintain a sleep diary for 2 weeks as part of the diagnostic evaluation.
- 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, particularly CBT-I.
- If patients are unable to participate in behavioral and psychological interventions, or if these are ineffective, then pharmacologic methods are recommended. Medications may be used as first-line treatment of short-term insomnia.

Do Not Miss This!
- Cognitive behavioral therapy for insomnia is the first-line treatment for insomnia. It is effective, provides long-term benefits, and reduces the need for medications.

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