

Assessment and Treatment OF SLEEP PROBLEMS

An important area to investigate in patient management is sleep patterns. Sleep problems are common in the general population and can be a prominent symptom in psychiatric patients. Sleep disorders can impair performance at work or in school, contribute to accidents at work or while driving, and can contribute to mood disturbance, social adjustment, and marital dissatisfaction. Because of this, clinicians need to pay attention to sleep complaints from their patients.

Generally, patients complain of one or more of three types of problems: insomnia; abnormal movement, behavior or sensation during sleep, or excessive daytime sleepiness. Nighttime symptoms can occur during sleep and during nocturnal awakenings. Those problems are often reported by the bed partner, as the patient is not aware of them. Problems during awakenings are usually events or sensations, such as headaches, shortness of breath, palpitations, leg cramps, or feelings of fear, paralysis, numbness or tingling. A sleep history should include what a “normal” pattern of sleep has been for the patient and how the sleep pattern might have changed recently. An overview of a sleep history assessment is shown in Sidebar 1 (see page 865). Specific questions that may be used are list-

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ed in Sidebar 2 (see page 866). There are many published sleep assessment tools that can be used. *The Principles and Practice of Sleep Medicine*, 3rd edition, lists a number of published assessment scales and scales available upon request and how to find them in the literature.¹ They categorize them as sleep quality questionnaires, sleep history questionnaires, assessment of specific causes, and sleep diaries. Just gathering the information may allow the patient to connect certain behaviors with the difficulty getting a good night's sleep.

The concept of "Sleep Quality" is an important clinical construct, but it is difficult to define and measure. The aim of the questions in Sidebar 2 is to make some objective determination of the patient's sleep quality through the history of sleep latency, duration, number of arousals, total sleep time, and subjective measures, including the perceived restfulness of the sleep. By doing this initially, it will allow objective comparisons later after an intervention has been tried. Subjective interpretations of sleep are not the most accurate or comprehensive measures for certain disorders. Sleep diaries for a 2-week period can be helpful initially. Not only do patients record their amount of sleep and awakenings, but also they record what medications they took and when; the amount of caffeine, alcohol or street drugs and when; and their activities before going to bed.

Treatment of insomnia involves six areas:² cognitive-behavioral, pharmacological, sleep hygiene education, environmental change, medical treatment, and psychiatric treatment. It is important to consider the benefits of each area when constructing a treatment plan. Often, the plan will use more than one area. It will be important to engage the patient in a plan that has definite objectives, a clear ratio-

nale, and concrete measures for progress. A sleep diary is often needed to measure progress along the treatment plan, and compliance with the diary gives an indication of the patient's motivation and level of engagement in the plan.

With short-term insomnia, hypnotics can be useful for a few weeks (1 to 4 weeks) to prevent behavioral changes that might perpetuate the problems. With neurological problems, chronic pain, and psychiatric disorders, medication maintenance may be necessary to manage chronic insomnia. The long-term maintenance with sedative hypnotics brings the risk of a sleep treatment that evolves into physiological dependence upon the sedative and the resultant withdrawal symptoms. This is not simply the return of the original symptoms but the emergence of more severe symptoms. Tolerance to the effectiveness of the sedative and dose escalation are early signs that the neuroadaptation is occurring. People with a history of alcohol and sedative dependence will be at high risk for this neuroadaptation, and collaboration with an addiction medicine specialist is advised for clinicians who are not familiar with addiction treatment.

Multimodal interventions can be more effective than medications alone. A medical history and physical exam are recommended when there are physical complaints or medical conditions that contribute to the insomnia or daytime fatigue. A psychiatric evaluation is extremely important since co-occurrence is common.

TREATMENT OF SLEEP PROBLEMS IN PATIENTS WITH PSYCHIATRIC ILLNESS INCLUDING SUBSTANCE DEPENDENCE

Treatment of sleep problems in patients with psychiatric illness can involve both pharmacologic and nonpharmacologic measures. Treatment of the illness itself

may resolve the patient's issues when sleep disorders are secondary to a psychiatric illness; however, sometimes sleep remains a problem. The first step in treatment should always involve a simplified sleep history, as described in Sidebar 1 and Sidebar 2. Several sleep journal templates in the public domain are available on the Internet.^{3,4,5} These sleep journals allow more specific patterns to be determined and help the patients own the solution and avoid the automatic idea of medication management, which the patient receives passively. Review of a patient's sleep journal also allows assessment of his sleep hygiene. If there is a sleep disorder secondary to a medical illness, a medical

CME EDUCATIONAL OBJECTIVES

1. Describe an array of behavioral interventions for sleep disorders.
2. List the questions that should be included on a sleep history.
3. Discuss when to order a polysomnogram in a patient with sleep disorder.

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TABLE 1.

Medications Used to Treat Sleep Problems

Medication Class and Examples	Effect on Sleep
Over-the-Counter Preparations	
Diphenhydramine, dimenhydrinate	Sedating, reduces latency, disrupts sleep architecture, (decreased REM, increased SWS), morning drowsiness caused by anticholinergic effect
Sedative-Hypnotics	
Benzodiazepines (triazolam, lorazepam, oxazepam, diazepam, chlordiazepoxide, flurazepam)	Sedating, reduced latency, problems with memory, concentration, dependency liability, withdrawal phenomena
Benzodiazepine-like medications	
zolpidem, zaleplon, zopiclone	Sedating, reduced latency, reduced dependency liability, similar to benzodiazepines at higher doses
Antidepressants	
Mirtazapine, nefazodone	Reduced latency, improved sleep architecture, increased total sleep time, improved sleep efficiency
Nefazodone	Possible liver toxicity, withdrawn from Canadian market, ¹⁸ lower doses of mirtazapine may be more sedating than higher doses due to greater H1 effect at lower doses
Trazodone	Low abuse potential, reduced latency, morning drowsiness, titration of dose often necessary to maximize benefit to sleep but minimize morning drowsiness
Atypical Antipsychotics	
Olanzapine, quetiapine	Sedation, reduced latency, reduced anxiety, stabilization of mood, restless leg syndrome, weight gain, therefore risk of exaggerating obstructive sleep apnea, tardive dyskinesia
Mood Stabilizers/Anticonvulsants	
Gabapentin, topiramate	Useful in nocturnal sleep/eating disorder

exam or collaboration with a primary care physician may be important. Patients should be encouraged to use the simple measures of sleep hygiene as described in Sidebar 3 (see page 866); however, many psychiatric patients will not make these efforts. The doctor may have to prescribe a medication while negotiating use of the sleep hygiene measures. If a sleep disorder based on *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV)⁶ is diagnosed, then an appropriate intervention can be added to the formal treatment plan. Sleep EEGs are useful to diagnose sleep ap-

nea and restless leg syndrome.

PHARMACOLOGIC STRATEGIES IN TREATING SLEEP PROBLEMS

Pharmacologic management can be broken down into two large groups: over-the-counter preparations and prescription medications. It has been reported that 85% of insomniacs do not receive treatment, and that one-third of those who receive treatment use an over-the-counter medication, usually an antihistamine. The other two-thirds usually get a benzodiazepine prescription.

Over-the Counter Preparations

The over-the-counter preparations include diphenhydramine, dimenhydrinate, melatonin, and valerian. Diphenhydramine is an antihistaminic agent marketed in a variety of forms, including Excedrin PM, Benadryl, Tylenol Allergy Sinus, Tylenol Flu, and Tylenol PM. Antihistamines have a general effect of causing sedation in individuals. However, these medications tend to disrupt sleep architecture by lessening REM sleep and increasing slow wave sleep (SWS), and their anticholinergic effects can lead to morning drowsiness in individuals. The other commonly available over-the-counter agent is dimenhydrinate. This drug is commonly marketed under a number of brand names, including Dramamine, Gravol, Calmx-oral, and Triptone. Dimenhydrinate is an antiemetic agent, and the general hypnotic effect will be to decrease sleep latency. With dimenhydrinate there is a disruption of sleep architecture in a manner identical to diphenhydramine. Other over-the-counter preparations include melatonin and valerian. The efficacy of these medications appears to be highly subjective and variable.

Prescription Medications

Prescription medications include the benzodiazepines and benzodiazepine-like medications, but also some of the antidepressant drugs, especially trazodone. Benzodiazepines remain the most commonly prescribed sedative-hypnotic medication.⁷ They have a GABA-ergic effect acting on both the w1 and w2 receptors. In addition to causing sedation, these medications can cause problems with memory, concentration, and mood. Generally speaking, benzodiazepines with short half-lives have a higher abuse potential. The benzodiazepine-like medications have more selectivity with respect to the GABA receptor, targeting primarily the W-1 receptor. These include zolpidem, zaleplon, and zopiclone. At higher dosages, however, the

drugs' effects become indistinguishable from benzodiazepines and, theoretically, are abuseable.⁸ Two antidepressants, mirtazapine and nefazodone, are both 5-HT₂ (serotonin) agonists and appear to alleviate insomnia and improve sleep architecture. Mirtazapine has an effect of decreasing sleep latency, increasing total sleep time and increasing sleep efficiency.⁹ No data are available on use of these medications or other sedating antidepressants among individuals who use/abuse psychoactive substances, even though they are the preferred treatment to avoid addiction and drug diversion. Trazodone is the most widely prescribed antidepressant medication used for its sedating side effect to assist with sleep.¹⁰ It is thought that trazodone has less abuse potential than benzodiazepines, and is a viable alternative to the use of benzodiazepine hypnotics in individuals with a history of drug or alcohol dependence.¹¹ The main adverse events with trazodone include morning drowsiness and the significant, although rare (1/5,000), risk of priapism.

OTHER PRESCRIPTION MEDICATIONS USED IN THE MANAGEMENT OF INSOMNIA

The atypical antipsychotic agents, especially olanzapine and quetiapine, have been used in an off-label manner to assist with sleep. These medications can produce sedation and also may reduce anxiety or stabilize mood. Quetiapine appears to have a more sedating effect and appears to be more widely used to assist with sleep.

The other medications that have been used in individuals to assist with sleep include the mood stabilizer/anticonvulsant category, gabapentin, and topiramate. Gabapentin has been described as the "ideal pharmacotherapy" for insomnia among alcohol-dependent individuals and substance users, although the results vary with co-occurring psychiatric disorders. Individuals begin at a dosage of 300 mg at bedtime with a dosage increase based on treatment response, in-

creasing by 300 mg/day to reach a maximum of 1,800 mg at bedtime. The average dosage used in patients was 900 mg in one study, with no abuse of the substance. Table 1 (see page 864) summarizes the Food and Drug Administration-approved medications and off-label medications frequently used to treat sleep problems.

BEHAVIORAL THERAPY

Behavioral therapy should be seen as an important component in management of patients who have sleeping problems. Options include stimulus-control therapy, progressive muscular relaxation, sleep restriction therapy, imagery training, paradoxical intention therapy, bio-feedback, cognitive therapy (CBT), and sleep hygiene education (see sidebar 4, page 867). Some behavioral therapy packages include more than one technique, and may be considered multicomponent programs. Although the American Academy of Sleep Medicine¹² did not consider cognitive behavioral therapy alone a basic intervention supported by the research in 1999, recent articles report glowing results for CBT in the treatment of primary insomnia, better than pharmacotherapy alone and only slightly worse than CBT and medications combined.¹³

Stimulus Control Therapy

The objective of stimulus control therapy¹⁴ is to train the patient with insomnia to re-associate the bed and bedroom with

relaxation and rapid sleep onset. This therapy attempts to break the association between wakefulness/stimulated thinking and the individual's sleep environment by emphasizing the need not to engage in any behavior incompatible with sleep in the bedroom. Specifically, the bedroom is targeted as the place to associate drowsiness with the person's desire to sleep. Doing other things that stimulate the mind, like reading or watching television, is counterproductive and discouraged.

Progressive Muscular Relaxation

Progressive muscular relaxation teaches patients how to recognize physi-

SIDEBAR 1.	
Overview of the Sleep History in Insomnia Patients	
Type of Insomnia	Transient, short term, or acute Persistent, long term, or chronic Intermittent
Sleep Patterns	Sleep-onset insomnia Difficulty maintaining sleep Early morning awakening Nonrestorative sleep
Associated Events	Medical illness, medications Psychosocial stress Mood changes Immediate precipitants
Previous Sleep History	Previous sleep quality Previous episodes of insomnia Similarity to present problem Response to treatment
Sleep Hygiene History	Bedtime and arising time Variations on days off and work days Shiftwork or circadian changes Napping behavior Exercise, lifestyle Caffeine, alcohol, substance use
History from Bedpartner	Snoring, irregular breathing Movements during sleep Estimates of patient's sleep quality and length Changes in mood and performance of patient

SIDEBAR 2.

Questions for a Basic Sleep History (involving the usual sleep period)

1. What time do you go to bed?
2. How long does it take for you to fall asleep?
 - a. What keeps you awake?
3. Do you sleep through the night?
 - a. How many times do you awaken, and why?
4. What time do you wake up in the morning?
5. What time do you get up for the day?
6. How do you feel when you wake up in the morning?
7. How long does it take you to “get going” in the morning?

Questions also should be asked about behaviors that affect sleep:

1. Do you nap during the day, when, and for how long?
2. Do you snore? (Snoring is a common finding in obstructive sleep apnea). Does the bed partner observe episodes of apnea?
3. When you are in bed, do you have an irresistible urge to move your legs?
4. Do you eat at night?
5. Do you take any medication or over-the-counter preparations, herbal remedies, or psychoactive substances to assist with sleep?
6. Where do you sleep, with whom, and what surrounds you in your place of sleep, eg, computer, television, using the bed to do paperwork, room lighting, and outside noise?
7. Do you intake methylxanthine (caffeine, theophylline, theobromine), how much, and how late do you drink coffee, tea, chocolate, and caffeinated colas?

SIDEBAR 3.

Sleep Hygiene Principles

Sleep as much as needed to feel refreshed; excess bed time can result in fragmented/shallow sleep on subsequent nights.

Get up at the same time each day, 7 days/week.

Use the bed only for sleep or sex; no television, eating, or work.

Get a steady daily amount of exercise, preferably at least 40 minutes/day.

Avoid caffeine-containing beverages after 3 p.m. (some say 10 a.m.).

Avoid excess liquids in the evening to avoid nocturia.

If not asleep within 20 minutes, get out of bed and do something boring until sleepy; return to bed only when sleepy.

Avoid being too hungry or full before you go to bed; a light snack might help.

Avoid alcohol (which assists with sleep onset but fragments sleep throughout the night).

Room temperature should be moderate/cool.

Don't clock watch; turn the clock around or cover it up.

ologic tension and control it through relaxation. This involves tensing and relaxing different muscle groups in the body progressively. This type of treatment is useful for patients who develop high levels of arousal during the daytime and who can't “turn it off” at night. Many people will describe the so-called “committee” in their head at the time of sleep, which they find difficult to control. Such relaxation techniques are useful for these patients.

Paradoxical Intention

Paradoxical intention therapy involves persuading a patient to engage in his or her most feared behavior, staying awake. The goal is to eliminate performance anxiety in these individuals.

Biofeedback

Biofeedback provides visual and auditory feedback to patients to help them control some physiologic parameters, such as muscle tension. It seeks to reduce somatic arousal like progressive muscular relaxation.

Sleep Restriction Therapy

Sleep restriction therapy curtails the amount of time in bed to the actual amount of time spent asleep. Initially the number of hours the individual currently sleeps at night is determined, and this becomes the starting total sleep time for the individual. For example, a person who lies in bed for 8 hours but sleeps only 4 of these hours is allowed to spend 4 hours in bed. Over time, there is a progressive lengthening of the individual's sleep time as sleep efficiency improves. This technique acts to consolidate an individual's sleep and to improve his or her sleep hygiene, reducing fragmented sleep and naps.

Imagery Training

Imagery training involves visualization techniques to focus on some pleas-

ant or neutral image or object. This is often considered a sub-category of relaxation therapy.

Cognitive Therapy

Cognitive therapy seeks to alter the patient's faulty beliefs and attitudes about sleep (for example, decatastrophizing the fears of sleep, re-appraisal of the situation, and attention shifting). The objective is to diminish cycles of insomnia by addressing dysfunctional cognitions and emotional stress that interfere with falling asleep or returning to sleep.

Sleep Hygiene Education

Sleep hygiene education is a useful first-line treatment, especially in this age of multitasking. It is convenient to use sleep hygiene education following an initial evaluation using a sleep diary. However, evidence is insufficient to recommend sleep hygiene education as a single therapy. When mixed with other techniques, like stimulus control, relaxation therapy, and imagery, it is considered an intervention supported by the evidence (see sidebar 3, page 866).

Sleep Deprivation Therapy

Sleep deprivation therapy, a technique of altering purposefully a patient's sleep pattern, has been used as a means of treating major depression.¹⁵ Sleep deprivation therapy is an effective treatment in some depressed patients but many patients will relapse following sleep recovery. In some cases concurrent treatment with lithium or antidepressants can prevent relapse in these individuals. Sleep deprivation can also induce manic episodes in those with bipolar disorder. Light therapy can also be used successfully in treating individuals with seasonal affective disorder particularly in individuals with symptoms of hypersomnia and hyperphagia.

WHEN TO ORDER A SLEEP STUDY (POLYSOMNOGRAM)

How valuable is a sleep study in the

SIDEBAR 4.

Behavioral Treatment Strategies for Insomnia

Treatment Strategy: Stimulus Control Therapy
Objective: Train the patient to associate bed and bedroom with sleepiness and rapid onset of sleep.
Useful for: Patients who associate the bedroom with activities other than sleeping, ie, reading, television, etc.
Technique: No behavior that is arousing or stimulating in the bedroom. Patient goes into bedroom when drowsy or about to fall asleep.

Treatment Strategy: Progressive Muscular Relaxation
Objective: Teach patients how to recognize physiologic tension and to control it, thus improving sleep efficiency.
Useful for: Patients who develop a high level of arousal/tension at night and during the day.
Technique: Progressive tensing and relaxing of muscle groups beginning in facial area and progressing down to the toes.

Treatment Strategy: Sleep Restriction Therapy
Objective: Consolidate patient's sleep.
Useful for: Fragmented (frequent arousal) sleep patterns or difficulty falling asleep.
Technique: Progressive lengthening of sleep time after first improving sleep efficiency.

Treatment Strategy: Imagery Training
Objective: Teach patients how to recognize and dissipate psychophysiologic tension.
Useful for: Patients who develop a high level of arousal at night and during the day.
Technique: Involves a visualization technique to focus on some pleasant or neutral stimulus.

Treatment Strategy: Paradoxical Intention Therapy
Objective: Eliminate sleep-related performance anxiety.
Useful for: Patients who become anxious or fearful that they will not fall asleep.
Technique: Patient remains awake as long as possible.

Treatment Strategy: Biofeedback
Objective: Teach patients how to recognize and dissipate stress and tension.
Useful for: Patients who develop a high level of somatic arousal at night.
Technique: Patient learns to recognize involuntary/subthreshold biological processes and changes them into more adaptive levels of arousal. It includes electromyography, galvanic skin response, and EEGs.

Treatment Strategy: Cognitive Therapy
Objective: Eliminate faulty beliefs and attitudes about sleep.
Useful for: Patients who have distorted sleep cognitions that exacerbate insomnia by elevating psychophysiologic arousal. These patients may have been diagnosed with psychophysiologic insomnia and their PSGs are normal.
Technique: Patients recognize, challenge, and change distorted sleep cognitions through reappraisal and attention shifting.

Treatment Strategy: Sleep Hygiene Education
Objective: Ensure that patient's behaviors and lifestyle are optimized to improve sleep efficiency.
Useful for: All patients can benefit from this education regardless of diagnosis.
Technique: Involves educating patients about the interaction between lifestyle, environment, and sleep physiology.

assessment and treatment planning of the patient with insomnia, and how cost-effective is it?¹⁶ Although patients with chronic insomnia may demonstrate abnormal polysomnogram (PSG) findings, how helpful are such findings clinically? Will the findings result in diagnosis that leads to a different treatment than a good history and careful sleep diary? A polysomnogram can be useful in diagnosis and treatment of the following sleep-related disorders:

1. Sleep-related breathing disorders (for example, sleep apnea).

2. Periodic limb movements in sleep.

3. Sleep state misperception (in this case, the patient has a complaint of prolonged sleep latency but demonstrates a normal PSG).

4. Measuring and validating sleep continuity, fragmentation, arousals (the duration and number of awakenings may have little diagnostic use, but the nature of the awakenings, length, or when they occur within the sleep cycle can have diagnostic implications).

5. Patients with circadian system abnormalities (requires concurrent body temperature monitoring during the PSG).

Overall, the use of a polysomnogram has a limited role in the evaluation of patients with insomnia complaints. It should not be substituted for a thorough clinical evaluation by a knowledgeable sleep specialist. Unless there is strong presumptive evidence based on the clinical evaluation that the patient has a sleep-related breathing disorder or periodic limb movements, conventional PSGs contribute little additional useful information. The American Sleep Disorders Association indicated in its 1997 Standards of Practice that when there is reason to suspect a sleep-related breathing disorder, PSGs are cost effective and should be done.¹⁷ In the absence of evidence to support a sleep-related breathing disorder or a periodic limb movement disorder, the clinician should treat the patient's sleep problem with behavioral and/or pharmacological therapy. If the patient does not respond as expected, a PSG might be considered. In

addition, PSGs may be useful to document narcolepsy if there is concern about misprescribing stimulants.

SUMMARY

The assessment in medicine has always been the crucial piece. Laboratory information is confirmatory and not diagnostic for the most part. Sleep medicine is no different. The use of laboratory tests should not take the place of a good history and a good physical. The DSM sleep diagnoses are a simple, straightforward beginning for the general psychiatrist and primary care specialist. However, making a diagnosis does require a comprehensive sleep history and a physical exam. This takes time and attention. It is much faster to prescribe a sleeping medicine or a sedating medication that is safe for off-label use as a hypnotic, and get feedback later. Disciplined consistency and attention to detail are the hallmarks of good medicine.

Like many other disorders, sleep disorders are biopsychosocial in their etiology, impact, and treatment. The assessment needs to cover all three sectors and the treatment does too. Without the psychosocial pieces to the assessment, we miss the impact on the patient's life and miss the people and stresses that may be helpful resources or barriers to recovery from the sleep disorder. The combination of the primary and secondary disorders covers much of internal medicine and psychiatry. As the population ages, these disorders are frequent. The behavioral techniques have tremendous power for our multitasking lifestyles. To give only medication for treatment is to miss the opportunity to teach someone good self-care and enhance their self-efficacy. To offer only sleep hygiene instructions is to miss those disorders that will require continuous positive airway pressure or medication, and miss the chance to have a significant impact on someone's life.

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