

Insomnia in Cancer Patients

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Insomnia affects up to 50% of patients with cancer, but has received little attention from the oncology community compared with other symptoms such as pain and fatigue. Insomnia and subsequent sleep disturbances can lead to fatigue, mood disturbances, and contribute to immunosuppression, which can have a profound impact on quality of life and perhaps affect the course of disease. Insomnia in cancer patients must be distinguished from cancer-related fatigue. Although they are 2 distinct conditions, insomnia and fatigue are interrelated. Insomnia often leads to daytime fatigue that interferes with normal functioning. Conversely, daytime fatigue can lead to behaviors such as napping, which result in insomnia. The primary goal of insomnia treatment should first be to relieve any underlying disorder (eg, cancer pain, depression, anxiety) that may be causing the sleep disturbance. Because insomnia in this patient population may be due to a variety of causes, treatment must be multimodal and include both pharmacologic and non-pharmacologic therapies. A plan that combines attention to sleep hygiene and cognitive-behavioral therapy with prescription of hypnotic medications can help relieve the symptoms of insomnia in cancer patients and improve their quality of life. (*Clinical Cornerstone*. 2004;6[Suppl 1D]:S6-S14) Copyright © 2004 Excerpta Medica.

Sleep disturbances are one of the most frequently encountered problems among patients with cancer yet, ironically, they have received little attention in the oncology literature or in the processes of oncology training and education. Although the prevalence of sleep disturbances in cancer patients has been estimated to be almost twice that in the general population,¹ the fundamental principles of sleep medicine may need to be emphasized. In addition, cancer patients often may not report symptoms of insomnia, often dismissing them as a minor problem compared with the cancer itself. As a result, insomnia and

other sleep disturbances remain undertreated in cancer patients. Sleep disorders in the presence of cancer can have a profound impact on quality of life and may even affect the course of disease. It is paramount, therefore, to address the problem of insomnia in cancer patients through appropriate evaluation, screening, and treatment.

FUNDAMENTALS OF SLEEP MEDICINE

The sleep/wake cycle is a highly regulated process that involves 2 distinct types of sleep: nonrapid eye movement (NREM) sleep and rapid eye movement (REM) sleep.² Normal sleep at bedtime for young adults begins with a period of NREM sleep, or quiet sleep, during which physiologic functions are gradually slowed down in 4 successive stages. This is followed by a return from stage 4 to stages 3 and 2, leading to the first period of REM sleep. REM sleep, the active phase of sleep, is characterized by electroencephalographic activity, REMs, and dreams.² The NREM-REM cycle lasts ~90 minutes and repeats 4 or 5 times during the night, with REM sleep increasing in duration as the night progresses.²

KEY POINT

Sleep disorders in the presence of cancer can have a profound impact on quality of life and may even affect the course of disease.

Insomnia is a sleep disturbance that may involve difficulty falling asleep, difficulty maintaining sleep, early morning awakening with difficulty resuming sleep, or nonrestorative sleep.² It may be transient, short term or, more often in cancer patients, chronic.² Insomnia in cancer patients must be distinguished from cancer-related fatigue, which is defined as a “persistent, subjective sense of tiredness related to cancer or cancer treatment that interferes with normal functioning.”³ Although they are 2 distinct conditions, insomnia and fatigue are interrelated. Insomnia often leads to daytime fatigue that interferes with normal functioning. Conversely, daytime fatigue can lead to behaviors such as napping, which result in insomnia.

KEY POINT

Although they are 2 distinct conditions, insomnia and fatigue are interrelated.

PREVALENCE AND EPIDEMIOLOGY

Prevalence

Estimates of the prevalence of insomnia in the cancer population vary considerably, from ~30% to >50%,² because of differences in the definitions of insomnia and sleep disorders. In general, however, the prevalence is considerably higher than that in the general population. Malone et al⁴ reported a 40% prevalence of sleep difficulties in cancer patients compared with 15% in control subjects with no severe illness. Similarly, Kaye et al⁵ found that 45% of cancer patients had difficulty in maintaining sleep versus 14% of healthy controls. In a study by Anderson et al,⁶ 62% of cancer patients reported moderate to severe sleep disturbance. In this study, the mean sleep disturbance scores of the cancer patients were significantly worse than those of community-dwelling adults and depressed patients, despite the fact that the cancer patients slept more hours per night. In another study, Savard et al⁷ found that 51% of a sample of 300 patients with nonmetastatic breast cancer reported insomnia, even though only 19% met the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, diagnostic criteria of insomnia. This suggests that insomnia related to cancer may present as a discrete disorder or as a symptom of the cancer itself.

Etiology and Comorbid Psychologic Conditions of Insomnia in Cancer Patients

The disruption in sleep patterns in cancer patients may be due to various factors, including the physiologic effects of cancer, the psychological impact of an often traumatic disease, pain and/or depression associated with cancer, and sleep-disrupting hospital routines, as well as side effects of chemotherapy and other treatments.² Savard and Morin² have classified these etiologic factors into 3 types: (1) predisposing factors, which increase a patient’s susceptibility to insomnia; (2) precipitating factors, which trigger the onset of insomnia; and (3) perpetuating factors, which contribute to the maintenance of insomnia over time.

Predisposing Factors

Predisposing factors for insomnia in cancer patients include female gender, older age, personal or familial history of insomnia, and concomitant psychiatric symptoms such as depression or anxiety.² Women are twice as likely as men to have insomnia. The prevalence of insomnia also increases with age. Insomnia is a common symptom of many depressive and anxiety disorders, and it is estimated that ~50% of cancer patients have these psychiatric disorders.² However, the high prevalence of insomnia in cancer patients cannot be explained entirely by the high prevalence of psychiatric disorders in this population.

Precipitating Factors

Insomnia is often precipitated by stressful life events. A diagnosis of cancer is in itself a stressful event, and this stress continues throughout the disease process. The important contribution of stress to insomnia will be discussed in detail later in this article. Symptoms associated with cancer, including pain, delirium, and depression, can also contribute to insomnia.² Treatments for cancer can induce insomnia through direct physiologic effects (eg, corticosteroids, hormone ablation therapy), their emotional impact (eg, invasive or psychologically traumatic surgery such as mastectomy), and/or side effects of the cancer therapy itself.² Hospitalization for cancer treatment can also result in insomnia because medication dosing schedules and hospital routines such as phlebotomy may disrupt sleep patterns.²

Perpetuating Factors

Factors that help perpetuate insomnia in cancer patients include aspects of the disease and treatment, such as fatigue, pain, and nausea/vomiting, as well as poor sleep habits that develop during the course of the disease.² Cancer patients often experience fatigue as a result of either the disease or the treatment and are encouraged to get plenty of rest. Although resting during the daytime can help relieve fatigue, it may also lead to disruptions in the sleep/wake cycle and insomnia. Insomnia causes further daytime fatigue, leading to a vicious cycle of sleep disturbances. Anderson et al⁶ found that sleep disturbance in cancer patients was a significant predictor of fatigue. Cancer patients with sleep disturbances were more likely to report fatigue and to report more severe fatigue than cancer patients without sleep disturbances.⁶ Similarly, untreated pain can lead to insomnia, but treatment of cancer-related pain with opioids can cause daytime sedation, which may again lead to difficulty maintaining sleep at night.⁶

KEY POINT

Insomnia causes further daytime fatigue, leading to a vicious cycle of sleep disturbances.

Insomnia in Specific Types of Cancer

In the cancer population, the prevalence and nature of sleep disturbances may vary by tumor type and by the stage of disease. The prevalence of insomnia has been found to be the highest in patients with breast cancer.⁸ This may be due to several reasons. As discussed, women are more susceptible to insomnia than men. Many women with breast cancer are postmenopausal, and the sudden decrease in estrogen that occurs after menopause is known to result in symptoms such as hot flashes that can lead to insomnia. Many of the treatments for breast cancer involve the ablation of female hormones or include the use of corticosteroids such as dexamethasone, which are also known to cause insomnia.⁷

Other cancers in which insomnia is common include colorectal cancer, prostate cancer, ovarian cancer,⁸ lung

cancer,⁹ hematologic cancers, and malignant melanoma. This is most likely due to the types of therapies that are used to treat these cancers. For example, lung cancer is treated with radiation, hematologic cancers with bone marrow transplantation, and malignant melanoma with biological response modifiers, all of which can cause severe fatigue. As discussed, severe fatigue can lead to excessive daytime sleepiness and insomnia at night.

The nature of insomnia may vary according to the cancer stage. In early-stage cancer, anticipatory insomnia may occur as a result of the anxiety and distress regarding prognosis and treatment. During treatment, side effects of medications and cancer-related fatigue may lead to insomnia. In advanced stages of cancer, tumor invasion into the bone and liver can cause severe pain, which can also cause sleep difficulties. The nature of insomnia at these stages differs and warrants treatment with appropriate agents. For example, insomnia in patients with early-stage cancer may be treated effectively with antidepressants, sedatives, or hypnotic agents, whereas treatment of insomnia in patients with advanced or metastatic cancer may first require appropriate management of cancer pain followed by insomnia-specific therapies.

Cancer Treatment as a Cause of Insomnia

Chemotherapy, radiation, hormone ablation, and biological therapy, as well as adjuvant medications, can cause insomnia. Use of corticosteroids is a common cause of insomnia in cancer patients. In the short-term, these agents cause a rise in cortisol levels, which leads to insomnia. For example, patients receiving dexamethasone for prophylaxis of radiation-induced emesis experienced more insomnia than patients who did not receive dexamethasone.¹⁰ Biological response modifiers, such as interferons, interleukins (ILs), and tumor necrosis factor, which are often used in the treatment of malignant melanoma, can also affect the sleep/wake cycle. Other cancer therapies that may cause insomnia are listed in **Table I**.

CANCER, INSOMNIA, AND THE STRESS RESPONSE SYSTEM

In the last 2 decades, much has been learned about the relationship between the sleep/wake cycle and the stress response system. Sleep, particularly stages 3 and

4 NREM sleep, is known to inhibit the hypothalamic-pituitary-adrenal axis and cortisol secretion.¹¹ Conversely, administration of glucocorticoids has been shown to cause arousal and sleeplessness.¹² This may explain why insomnia is one of the most common side effects of short-term steroid use.¹³

Cortisol Levels and Disease Course

In healthy individuals, cortisol levels normally peak in the early morning on awakening and decrease gradually throughout the day.¹² In a series of studies, Sephton et al¹⁴ have shown that altered patterns of cortisol secretion (a pattern found in those with sleep disturbances) may have adverse effects on the immune system. In their study of 104 patients with advanced breast cancer, patients with abnormal cortisol patterns (ie, consistently high levels of cortisol during the day) had a much higher mortality rate than patients with normal patterns of cortisol secretion. These women also had lower counts and suppressed activity of natural killer (NK) cells, immune cells that play a role in tumor suppression. The results of the study suggest that abnormal cortisol levels may affect the course of disease and prognosis in cancer patients.

This theory is also supported by several other studies in which cancer patients who received psychosocial support had better outcomes than patients who did not.¹⁵ Cancer patients experience high levels of psychological stress as a result of their diagnosis and during treatment and recovery. This stress can increase

cortisol levels, leading to insomnia. The continuing stressors involved in the management of cancer may contribute to the maintenance of elevated levels of cortisol, which help perpetuate chronic insomnia. The cortisol elevations, through their effect on NK cell activity, may also contribute to an increased risk of morbidity and mortality. These studies highlight the fact that sleep and stress have a profound influence on the body’s response to cancer and underscore the importance of treating insomnia and normalizing the sleep/wake cycle in cancer patients.

Cancer, Cytokines, and Sleep

In recent years, research has focused on the role of specific cytokines in regulating the sleep/wake cycle. Levels of IL-6 and tumor necrosis factor-alpha (TNF-α) have been shown to peak during sleep, and daytime IL-6 levels are inversely related to the amount of nocturnal sleep.¹² Vgontzas et al¹⁶ found that although mean 24-hour IL-6 and TNF-α secretions were not significantly different between patients with insomnia and healthy controls, chronic insomnia was associated with a shift in IL-6 and TNF-α secretion from nighttime to daytime. Cancer—as well as the treatments for cancer—can have a profound effect on secretion of the cytokines that play a role in the sleep/wake cycle. Thus, the sleep disturbances associated with cancer may also be related to the abnormalities in cytokine levels caused by cancer and cancer treatment.⁶

TABLE I. CANCER AND ADJUVANT THERAPIES THAT CAN CAUSE INSOMNIA.

Therapy Class	Example	Possible Mechanism
Corticosteroids	Dexamethasone	Increase serum cortisol levels
Biological response modifiers	Interferon, tumor necrosis factor, IL-1, IL-6	Cause profound daytime fatigue
Radiation therapy		Can cause severe fatigue
Bone marrow transplantation		Can cause severe anemia, which can lead to daytime fatigue
Antiemetics	Prochlorperazine, metoclopramide, granisetron	
Antiestrogens	Tamoxifen	Causes menopause-like symptoms such as hot flashes and nocturnal sweats
Antiandrogens	Leuprolide acetate, flutamide	Can cause hot flashes and nocturnal sweats

IL = interleukin.
Data derived from Savard and Morin.²

ASSESSMENT OF INSOMNIA IN CANCER PATIENTS

Because insomnia in the setting of cancer is often overlooked, screening cancer patients for sleep disturbances is an important first step in managing insomnia in this population. The Pittsburgh Sleep Quality Index (PSQI) has been used to screen for sleep disturbances in cancer patients.¹⁷⁻²¹ The PSQI is a 19-item self-rated inventory of symptoms of sleep disturbance and yields a global score (range, 0–21), with higher scores indicating poorer quality of sleep. However, lengthy assessments such as the PSQI may be difficult to administer due to financial or time constraints. The Zung Self-Rating Depression Scale (ZSDS) has been used to screen for depression in cancer patients.²² Passik et al²³ attempted to use a single question from the ZSDS to screen cancer patients for insomnia, but found that it had poor sensitivity and specificity for detecting insomnia in this population. An alternative to questionnaire-type screens is testing evening cortisol levels. Cortisol levels may be a good endocrine marker of insomnia since inadequate sleep has been shown to cause elevations in evening cortisol levels the next day. However, no studies have been conducted to determine whether PSQI scores might correlate with evening cortisol levels. Finding a brief screening tool for insomnia that is easy to administer in cancer patients remains an active area of study.

Management of insomnia in cancer patients begins with a careful assessment of sleep disturbances to determine the possible underlying cause(s) of the condition and to identify factors that can be modified during the course of treatment. The assessment should include probes for risk factors for insomnia, sleep patterns, psychologic disturbances (eg, anxiety, depression), comorbid conditions, exercise and activity levels, diet, symptoms, current medications, and caregiver and hospital routines.¹ **Table II** lists some of the disease-related, treatment-related, and environmental factors, as well as the psychosocial and physical disorders that may increase the risk of insomnia in cancer patients.

One of the most important components of the sleep assessment is characterizing the sleep pattern. Physicians should ascertain the patient's normal bedtime routine before sleeping, time to fall asleep, duration of sleep, number of awakenings per night, ability to resume sleep after awakening, and normal waking

time.¹ A patient history can help determine whether this sleep pattern changed after the cancer diagnosis, treatment, or hospitalization.¹

TREATMENT OF INSOMNIA IN CANCER PATIENTS

Regardless of etiology, insomnia can have a profound impact on morbidity, quality of life, and the disease course in cancer patients. When cancer patients get adequate sleep, their stress is reduced, cortisol levels decrease, and the immune system is reactivated. Thus, treatment of insomnia can significantly improve quality of life and may even help slow the progression of disease.^{11,14}

Because insomnia in this patient population may be due to a variety of disease-related, cancer treatment-related, psychological, and environmental factors, treatment must be multimodal and can include both

**TABLE II. RISK FACTORS FOR INSOMNIA IN
CANCER PATIENTS.**

Disease factors
Tumors that increase steroid production
Symptoms of tumor invasion (eg, pain, dyspnea, fatigue, nausea, pruritus)
Treatment factors
Frequent monitoring
Corticosteroid treatment
Hormonal fluctuations
Fatigue
Medications
Narcotics
Chemotherapy
Neuroleptics
Sympathomimetics
Sedatives/hypnotics
Steroids
Caffeine/nicotine
Antidepressants
Diet supplements
Environmental factors
Disturbing light and noise
Temperature extremes
Psychosocial disturbances
Depression
Anxiety
Delirium
Stress
Physical disorders
Headaches
Seizures
Snoring/sleep apnea

Adapted from Sleep Disorders (PDQ®) Health Professional Version.¹

KEY POINT

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nonpharmacologic and pharmacologic therapies. Treatment of the underlying cause (eg, pain, anxiety, depression, hormonal fluctuations) can often help relieve insomnia. Chemotherapy regimens that include corticosteroids (eg, dexamethasone) can be expected to cause insomnia. The concomitant use of appropriate hypnotic drugs may help counter this expected side effect. Environmental disruptions (eg, excessive lighting, noise, heat) can be reduced to facilitate uninterrupted sleep.¹ Cognitive-behavioral therapy (CBT), including relaxation therapy, can help reduce stress and anxiety, thereby improving sleep quality.

Nonpharmacologic Therapy

CBT has been proven in numerous controlled studies to improve the quality and quantity of sleep in patients with primary insomnia.²⁴ CBT has several components, which can be used alone or in combination (**Table III**). Stimulus control involves reinforcing the association between sleep and the bedroom environment. The purpose of the sleep restriction component is to make the amount of time spent in bed as close as possible to the amount of nighttime sleeping. Sleep hygiene involves engaging in behaviors that are compatible with sleep and avoiding behaviors that interfere with sleep. Relaxation therapy is designed to reduce psychological and physiological stress.²⁴

Although CBT is a safe and effective form of treatment for insomnia, many of its components may be difficult to implement in cancer patients. For example, cancer patients who are hospitalized may spend all their sleeping hours as well as waking hours in bed, making it difficult to implement stimulus control, sleep restriction, and sleep hygiene techniques. The hospital environment frequently is not conducive to sleep, with its bright lights, noise, and frequent interruptions for procedures and monitoring, and it

may be difficult to modify. Cancer treatment–related fatigue or nausea may make it difficult to avoid sleeping during the day. Therefore, pharmacotherapy may be required for a substantial proportion of cancer patients with insomnia.

Pharmacologic Therapy

Before initiating pharmacotherapy to treat insomnia in cancer patients, the possible underlying causes of insomnia should be treated with appropriate agents. For example, management of cancer pain with appropriate use of opioids and/or nonopioid analgesics can

TABLE III. COMPONENTS OF COGNITIVE-BEHAVIORAL THERAPY.

Stimulus control	Patient is instructed to: Go to bed only when tired Limit activities in bed to sex and sleep Get out of bed at the same time every morning When sleep onset does not occur within 10 minutes, get up and go to another room
Sleep restriction	Time spent in bed is restricted to the patient's estimated average nighttime sleep time Time spent in bed may be increased or decreased to optimize sleep quality
Sleep hygiene	Patient is instructed to: Avoid caffeine, alcohol, and nicotine Avoid daytime napping Keep a consistent sleep schedule Curtail time in bed Never try too hard to sleep Exercise in the late afternoon or early evening Eat a light bedtime snack Eliminate bedroom clock
Relaxation training	Progressive muscle relaxation Diaphragmatic breathing Autogenic training Biofeedback Meditation Yoga Hypnosis
Thought stopping	Patient is instructed to repeat the word "the" or "stop" every 3 seconds
Paradoxical intention	Patient is instructed to try to stay awake when in bed
Cognitive restructuring	Patient identifies irrational beliefs about sleep and rehearses alternate belief statements
Imagery training	Patients are instructed to imagine 6 common objects (shape, color, movement, texture) when they cannot fall asleep

KEY POINT

Cancer treatment–related fatigue or nausea may make it difficult to avoid sleeping during the day. Therefore, pharmacotherapy may be required for a substantial proportion of cancer patients with insomnia.

often help cancer patients sleep better. Insomnia in cancer patients is often a symptom of clinical depression or anxiety, and treatment of these underlying disorders with antidepressants or anxiolytics may help resolve the sleep disturbance. Treatment of nausea/vomiting (with antiemetics), dry mouth (with salivary stimulants), or other side effects of cancer therapy may help relieve insomnia.

If insomnia persists despite adequate management of side effects, pain, and depression, additional hypnotic pharmacotherapy may be required (**Table IV**). Both benzodiazepine and short-acting nonbenzodiazepine hypnotic agents are available for the treatment of insomnia.² Although benzodiazepines are effective agents, they have several side effects that may complicate use in cancer patients. Long-acting benzodiazepines may produce daytime drowsiness, dizziness, or light-headedness and/or cognitive impairments, whereas short-acting agents may be associated with

TABLE IV. HYPNOTIC MEDICATIONS COMMONLY PRESCRIBED FOR THE TREATMENT OF INSOMNIA.

Benzodiazepine anxiolytic agents
Clonazepam
Lorazepam
Oxazepam
Benzodiazepine hypnotic agents
Estazolam
Flurazepam
Temazepam
Triazolam
Quazepam
Nonbenzodiazepine hypnotic agents
Zaleplon
Zolpidem
Zopiclone

Adapted from Savard and Morin.²

tolerance, dependence, rebound insomnia, and daytime anxiety.^{1,2} The elderly (age >65 years), who make up a significant proportion of the cancer population, may be especially vulnerable to the side effects of benzodiazepines.² Benzodiazepines may also potentiate the respiratory depression associated with opioid analgesics and must therefore be used with caution in cancer patients who are receiving these pain medications.² Sleep experts do not recommend use of these agents for >4 weeks to avoid the development of tolerance and dependence.² Nonbenzodiazepine hypnotic agents (eg, zaleplon, zolpidem) are thought to have more receptor selectivity than the traditional benzodiazepines and fewer residual side effects the next day.² Zolpidem, a member of the imidazopyridine class, has not been found to be associated with the development of tolerance, dependence, alterations in sleep cycle architecture, or rebound insomnia.²⁵ Although nonbenzodiazepine hypnotic agents are not indicated for chronic use, studies have shown that they do not lead to tolerance even when used nightly for ≥ 6 months.²⁶ In a study of “as-needed” zolpidem use,²⁷ patients with primary insomnia did not increase their pill taking, consistent with the fact that zolpidem has little tendency to cause dependence. A long-acting, sustained-release formulation of zolpidem, designed to avoid nightly use, is under development.²⁸ It should be noted that tolerance and dependence may not be serious issues in the cancer population, particularly patients in the palliative care setting. In cancer patients, chronic use of hypnotic agents may be justified as appropriate supportive care, since these drugs can significantly improve quality of life. If chronic use is deemed appropriate, the drugs with the fewest side effects and the lowest risk of tolerance and dependence should be selected.

Other classes of drugs have been used off label to treat insomnia in cancer patients (**Table V**).¹ Tricyclic antidepressants such as amitriptyline or doxepin may provide sedation in depressed as well as nondepressed patients, and may be appropriate in patients who have insomnia due to neuropathic pain.¹ Trazodone, a second-generation antidepressant, is frequently used in low doses to promote sleep and combined with other antidepressants such as fluoxetine in depressed patients with insomnia.¹ However, there are limited data on the efficacy and tolerance of trazodone to support the use of this agent in nondepressed patients with insomnia.²⁶ Mirtazapine, an antidepres-

sant, induces sleep, stimulates appetite, and can decrease nausea when given in low doses at bedtime.^{1,29}

Antihistamines such as diphenhydramine and hydroxyzine are often used for their sedative properties in cancer patients with insomnia.¹ These agents also have anticholinergic properties, which can help relieve nausea and vomiting. However, they must be used with caution since they can cause daytime sedation and delirium, particularly in elderly patients.¹ They also may be associated with constipation, urinary retention, and confusion.

Atypical antipsychotic agents (eg, danzapine, quetiapine) have sedating effects (likely via high affinity for histamine receptors³⁰) and may also help relieve opioid-induced nausea and improve appetite. However, the high cost of these drugs and the associated adverse effects may limit their use as interventions for cancer-related insomnia.

Psychostimulants such as methylphenidate have been used to treat daytime sleepiness as well as opiate-induced daytime sedation, which can lead to insomnia. However, these agents can themselves cause insomnia. Donepezil, a cholinesterase inhibitor, has been used successfully to treat daytime sedation due to opioid therapy in cancer patients.³¹ Modafinil, a nonamphetamine stimulant, has been shown to

TABLE V. NONHYPNOTIC DRUGS USED FOR THE TREATMENT OF INSOMNIA IN PATIENTS WITH CANCER.

Drug Class	Medications
Tricyclic antidepressants	Doxepin Amitriptyline Nortriptyline
Second-generation antidepressants	Trazodone Nefazodone Mirtazapine
Antihistamines	Diphenhydramine Hydroxyzine
Neuroleptics	Thioridazine Chlorpromazine
Antipsychotic	Olanzapine
Psychostimulants	Methylphenidate Modafinil
Cholinesterase inhibitor	Donepezil

Adapted from Sleep Disorders (PDQ[®]) Health Professional Version.¹

KEY POINT

The focus of therapy should be to treat underlying disorders that may be causing insomnia.

reduce daytime sleepiness in patients with primary insomnia.³²

CONCLUSIONS

Insomnia is common among cancer patients but it remains undertreated. Left untreated, insomnia can lead to fatigue, psychological disorders, and decreased immune function, which can have a profound impact on quality of life and perhaps affect the progression of cancer. Management of insomnia in cancer patients starts with a careful assessment to determine the etiology of the symptoms (eg, cancer pain, depression, anxiety, environmental factors). The focus of therapy should be to treat underlying disorders that may be causing insomnia. If symptoms persist, a treatment plan that combines CBT and sleep hygiene approaches with prescription of hypnotic medications can help relieve insomnia symptoms in cancer patients and improve their quality of life.

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