



Insomnia: Asking the Right Questions

By James MacFarlane, PhD, ABSM

Everyone has experienced the profound effects of inadequate or poor sleep. Difficulties initiating sleep (sleep-onset insomnia), difficulties maintaining sleep (middle insomnia) or awakening before the desired rise time (early-morning insomnia) occur with psychological distress or depression. Chronic insomnia, however, may be a symptom of a sleep schedule disorder, primary sleep disorder, or a feature of a medical illness. This article will focus on the questions you need to ask your patient in order to clearly define the problem and the appropriate steps and options to consider for management.

The Etiology of Insomnia

What does insomnia mean for your patient?

Insomnia is associated with a broad range of risk factors, including increasing age, female gender and poor socioeconomic conditions. Certain lifestyle behaviours are thought to predispose a person to insomnia (*i.e.*, sedentary lifestyle, smoking, alcohol and caffeine consumption, obesity, limited education, low income and unemployment). Poor sleep also has been associated with poor physical and mental health, pain and long-term disability.

Dr. Harvey Moldofsky and the Sleep Disorders Clinic of the Centre for Sleep and Chronobiology in Toronto analyzed data from the Statistics Canada General Social Survey. The survey incorporated sleep habits into a general health survey of Canadians. This provided insight to the pervasive adverse effects of insomnia

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on quality-of-life issues. This population survey of approximately 12,000 people over the age of 16 found that 24% of Canadians have difficulties in initiating and maintaining sleep, 27% have unrefreshing sleep all or most of the time, and 5% complain of always being sleepy.¹ Insomnia commonly occurs in conjunction with a chronic illness. It is twice as likely to occur with rheumatic disorders, migraines, digestive disease, respiratory disease, circulatory disease, diabetes and allergies. Where previous reports suggest aging is a risk factor for insomnia, our research shows that age does not predict insomnia after adjusting for the presence of a range of sociodemographic, lifestyle, mental and physical health-risk factors.

What are the Main Causes of Sleep Disorders?

Problems with getting in and out of bed. Sleep scheduling as a cause of sleep disorders sound simple, even banal, however, it is the most important cause of sleep complaints in the general population. Most people do not understand the need for a regular sleep schedule. It is important to understand that each person has a specific sleep requirement that must be attained every day. Getting enough sleep at the wrong time and not getting enough sleep at the right time can lead to significant and sometimes dangerous daytime sleep deficits (*i.e.*, excessive sleepiness, depressed mood, irritability, poor concentration, decreased productivity and increased rates of error).

The timing of the sleep-wake cycle is under the ultimate control of the suprachiasmatic nucleus (SCN). This area of the hypothalamus is about the size of a pea, located about two inches behind the bridge of your nose. There is direct input to the SCN from the retina. This translates incoming light information into meaningful biologic time signals that keep all parts of the body apprised of time of day, month and year. The natural time frame of the endogenous SCN rhythm is slightly longer than 24 hours (*i.e.*, 24.3 hours). In conditions free of external time cues, a person will tend to drift into a progressively later sleep phase (*i.e.*, later bed times and rise times). This is why it is easier for most people to fly west, rather than east.

The SCN can be compared to an orchestral conductor. The various hormonal, immune, enzymatic, digestive and other physiologic functions are members of the symphony, and problems can arise at a number of levels. If the information (the score) provided to the conductor is flawed or inadequate, or if the symphony mem-

bers cannot see the conductor, or if they respond to alternative information, harmony quickly turns to dissonance. Since the sleep-wake cycle is the most visible circadian rhythm, sleep disruption is often the primary presenting complaint.

The inability to attain adequate sleep can be generally considered in three ways:

- Familial/biological;
- Societal; and
- Behavioural.



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Summary

Questions to Ask

- Question 1: How long has your insomnia been a problem?
- Question 2: Do other family members complain of a similar problems?
- Question 3: When do you go to bed?; How long does it take to fall asleep?
- Question 4: Once asleep, do you generally sleep through until the morning?
- Question 5: How many hours of sleep do you get, on average?
- Question 6: Do you work shifts?
- Question 7: Is your schedule different on weekends and holidays?
- Question 8: Which day(s) of the week do you have the most difficulty sleeping?
- Question 9: How much caffeine/alcohol do you consume?
- Question 10: What do you do when you cannot sleep?
- Question 11: How long do you spend in bed each night?
- Question 11: Do you snore?
- Question 12 : Is your sleep delayed by restlessness in your legs; does your partner complain of leg kicks; are your bedcovers in disarray in the morning?
- Question 13: Do you have any health problems that may interfere with sleep?
- Question 14: Are you taking any medications, and at what time of day?

Asking the right questions is the key to identifying the cause of the patient's sleep disorder and determining the proper treatment, if applicable.

Familial/biological. Several questions should be asked to determine whether the patient has a familial/biological cause for insomnia.

Question 1: *How long has your insomnia been a problem?*

Question 2: *Do other family members complain of a similar problems?*

Question 3: *When do you go to bed, and how long does it take to fall asleep?*

Question 4: *Once asleep, do you generally sleep through until the morning?*

Question 5: *Do you awaken feeling refreshed?*

Insomnia related to a disorder of the circadian time-keeping system runs in families. It is sometimes difficult to sort out which aspect is a learned behaviour and which is inherited. From birth, children are subject to the influence of parental schedules, and this influence is strong. There also appear to be genetic biologic anomalies, however, which are manifested as light and fragmented sleep and/or altered sleep schedules. This can be the case even when the child grows up and becomes independent of family influence.

i) Childhood onset insomnia. Some patients describe difficulties with sleep dating back to pre-adolescence. In the absence of family issues (*i.e.*, abuse at night, an alcoholic parent, *etc.*) or other pri-

mary sleep-disorder (*i.e.*, night terrors, enuresis, *etc.*), childhood onset insomnia may represent a true biologic deficit in sleep-controlling brain centres. In most cases, there is another family member with a similar pattern of sleep. It may manifest itself as light sleep or general sleep fragmentation, but may specifically demonstrate one of the patterns listed below.

ii) Delayed sleep phase (DSP). This presents as a persistent inability to fall asleep and arise at a desired time in the morning. Sleep onset can be delayed until the early morning hours. In the absence of social restraints and responsibilities, the patient may choose to stay in bed until the late afternoon. If allowed to freely

choose a schedule, the DSP patient tends to drift to a later sleep period and may eventually arrive back at a more conventional sleep phase. A tendency for DSP appears at the onset of puberty, along with a slight increase in sleep requirement.² This may explain teenagers' increased tendency to sleep longer. DSP, however, is a relatively rare condition. More often, an adolescent (or adult) chooses to adopt this schedule for the sake of convenience, defiance, entertainment or avoidance.

iii) Advance sleep phase (ASP). This presentation is even more rare than DSP. Patients with ASP complain of waking up early in the morning before a desired time. This is accompanied by evening sleepiness, and a need to retire early. This pattern is most likely to occur in the elderly, where a shortening of circadian period length (*i.e.*, < 24 hours) is manifested by a tendency for phase advance. The condition also is noted in patients who are depressed. In such cases, early morning insomnia is a common feature of major affective disorder.

iv) Irregular sleep schedule. This describes patients with no particular pattern to their sleep-wake periods. Although they may attain the desired eight hours of sleep within a 24-hour period, there is no regular bedtime or waketime. Animals show this sleep-wake pattern when the SCN is surgically removed. They are unable to consolidate sleep and wake into organized predictable cycles.

v) Non-restorative sleep: Some patients go to bed at an appropriate time, fall asleep quickly and allow enough time to meet their sleep requirement. Despite this, they arise feeling completely un-refreshed. This condition is noted in patients with chronic fatigue syndrome and fibromyalgia. These patients do not complain of insomnia *per se*, but complain that their sleep has lost its

Sleep restriction or deprivation is the most common cause of shift-work intolerance.

restorative properties.

Researchers at the Sleep Disorders Clinic of the Centre for Sleep and Chronobiology have defined the sleep-electroencephalograph (EEG) markers of non-restorative sleep. These included continuous and periodic EEG arousal phenomena, characterized by waking EEG frequencies intruding into sleep EEG frequencies.^{3,4} This would fit with what patients describe as "vigilant" sleep.

Societal. There are several societal influences that can affect sleep. Questions should focus on how such influences might play a role.

Question 6: *How many hours of sleep do you get, on average?*

Question 7: *Do you work shifts?*

Five inventions have made the most notable differences in the way humans interact with earth's 24-hour circambulation of the sun. These are:

- The electric light bulb;
- The continuous conveyer belt;
- Television;
- The jet-engine; and
- The Internet.

Practice Pointer

- The goal of pharmacotherapy is to augment appropriate behavioural strategies that will continue to benefit the patient after the medication is discontinued.


Artificial light allows people to carry on activities into the night as if it were daytime, and television and the Internet provides the excitement and stimulation that promotes postponing other activities, including sleep.

The continuous conveyor belt, invented by Henry Ford, was the first time “non-stop” production had ever been considered in the workplace, and this marked the beginning of shift-work on a significant scale. People are routinely shuttled to new time zones with trans-meridian travel. Sunrise and sunset used to be the most important influences on our behaviour. Now, these important daily events have been rendered virtually meaningless. Today all First-world citizens turn on their lights with the onset of darkness. Many others report to work. Some sleep at a completely different clock phase after a long plane ride. This gives rise to the two most important sleep disorders related to our modern society — shift-work intolerance and jet lag.

i) Shift-work intolerance. More than 25% of North Americans work shifts, therefore, physicians are faced with an increasing number of patients whose symptoms may be related to a failure to cope with shift work. Disordered sleep, gastrointestinal dysfunction and mood disorders are the major complaints. Some people cannot tolerate shift work from the beginning, but may take a job out of desperation. Others may find they had no problems initially, but over the years, as the biological substrate of the time-keeping system becomes less resilient, they may develop an intolerance. Approximately half of patients presenting with shift-work intolerance are unaware of appropriate strategies required to minimize the negative effects. These strategies require that the following principles be considered:

- **Circadian factors:** This includes consideration of the basic biology of the circadian system. Since most people have a circadian period length > 24 hours, then a “clockwise” rotation of shifts makes for easier adaptation (*i.e.*, days-evenings-nights). Also, rapidly rotating shift schedules are probably easier to tolerate than permanent or infrequent rotations. This allows the circadian system to retain its diurnal orientation, which will eliminate some of the symptoms associated with desynchronization.
- **Sleep factors:** Sleep restriction/deprivation is the most common cause of shift-work intolerance. The sleep diary is an important and easy method of evaluation (Figure 1). Most shift-workers get one to two hours less sleep/24-hour cycle than their daytime-working counterparts. The problem may be related to an inability to sleep during the day. It also may relate to poor time management with inadequate time in bed as a result.
- **Domestic factors:** Most people report difficulty sleeping during the day related to their sleep environment. Family commitments, family tension caused by the absent shiftworker, phone calls, doorbells, *etc.*, all contribute to an inability to attain adequate sleep. Increased awareness and understanding from fam-

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Centre for Sleep and Chronobiology
Sleep Disorders Clinics

Sleep Diary

12 College St.
100 College Street, Suite 100
Toronto, ON M5T 1A9
Tel: 416-928-4111
Fax: 416-928-1383

100 Queen St. W.
100 Queen Street West
Toronto, ON M5H 2N2
Tel: 416-928-4111
Fax: 416-928-1383
www.sleepca.ca

Name _____

Date started _____ Day of week _____

Instructions:

- Please leave diary near your bedside
- It is important that you fill out this chart each morning
- Mark your diary in the following way:

Activities

- A -Each alcoholic drink
- C -Each caffeinated drink includes coffee, tea, chocolate, cola
- P -Every time you take a sleeping pill or tranquilizer
- M -Meals
- S -Snacks
- X -Exercise
- T -Use of toilet during sleep-time
- N -Noises that disturb your sleep
- W -Time of wake-up alarm (if any)

SLEEP TIME (including naps)

- ↓ - mark with a down arrow each time you got into bed
- ↑ - mark with an up arrow each time you got out of bed
- - mark with a line the time you began and the time you ended your sleep; then join the lines to indicate sleep periods.

Please describe (on the back page) any events that influenced your sleep.

Example:

	midnight				noon								
	6	8	10	12	2	4	6	8	10	12	2	4	6
Activities													
Sleep Time													
	Lights out _____ am, pm						Total sleep time _____ hrs						

Figure 1. Example of a sleep diary.

ily and friends can be helpful, and it must start with an active dialogue.

ii) *Jet lag*. Some people are dramatically affected by jet lag. Others adapt quickly. For those who don't, there are a few suggestions to follow:

- Change your watch time, and adhere to the new schedule as much as possible, without reflecting back to "home time";
- Sleep is the most powerful synchronizing influence over the circadian system, therefore, anything that can be done to promote solid sleep at the appropriate time in the new location will facilitate resynchronization;
- Arise from bed at the appropriate time for the new time zone;
- Expose yourself to morning natural light (*i.e.*, go for a short walk); and
- The quantity, quality and timing of meals (especially breakfast) can have an important influence. Don't go for the breakfast buffet if you are accustomed to having cereal and coffee.

Behavioural. Behavioural causes of insomnia range from the patient's sleep schedule to the amount of caffeine he/she consumes.

Question 8: *Is your schedule different on weekends and holidays?*

Question 9: *Which day(s) of the week do you have the most difficulty sleeping?*

Question 10: *How much caffeine/alcohol do you consume?*

Question 11: *What do you do when you cannot sleep?*

Question 12: *How long do you spend in bed each night, and how long do you sleep?*

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Table 1

Caffeine content

Substance	Serving Size	Caffeine dose/serving
Coffee		
Drip	1 cup (5 ozs)	110 mg to 150 mg
Perk	1 cup (5 ozs)	60 mg to 125 mg
Espresso	1 oz	30 mg to 50 mg
Instant	1 cup (5 ozs)	40 mg to 105 mg
Decaffeinated (brewed or instant)	1 cup (5 ozs)	1 mg to 4 mg
Tea (bag or loose)	1 cup (5 ozs)	20 mg to 100 mg
Hot cocoa	1 cup (5 ozs)	10 mg
Carbonated drinks		
Cola (reg or diet)	12 ozs	30 mg to 49 mg
Dr. Pepper (reg or diet)	12 ozs	18 mg to 43 mg
Citrus (reg or diet)	12 ozs	43 mg to 56 mg
Milk chocolate bar	1 oz	6 mg
Bittersweet chocolate	1 oz	5 mg to 35 mg
Guarana	variable	25 mg to 50 mg
Mate	variable	25 mg to 50 mg
Excedrin®	2 tablets	130 mg
NoDoz®	2 capsules	200 mg
Dexatrim®	1 capsule	200 mg

Complaints of insomnia related to sleep schedule are usually a matter of poor choices rather than being due to biological or pathological causes. The excitement of the Internet, staying-up to finish watching a movie, avoiding school, avoiding parents, establishing personal freedom and avoiding social interactions are all reasons why some people (especially adolescents) tend to become more nocturnal.

It is easy to become “jet-lagged” in your own bedroom after a few very late nights and subsequent sleep-ins during the weekend. By Sunday night it may be difficult



to initiate sleep at an appropriate time, since the SCN has been re-programmed over the weekend. Full recovery may not occur until the following Wednesday, which leaves only two days until the cycle begins again. The sleep diary is the most important tool in elucidating the behavioural elements of sleep-schedule disorder.

Another common problem is spending too long a time in bed. When sleep is poor, patients may attempt to make up for lost sleep by spending more time in bed. In fact, what results is a reduction in sleep

efficiency (time sleeping/time in bed), and a conditioned association ensues, with the bed being a place to lie awake rather than sleep. These patients should compress their time in bed. If patients report lying in bed for 10 hours, but only sleep-

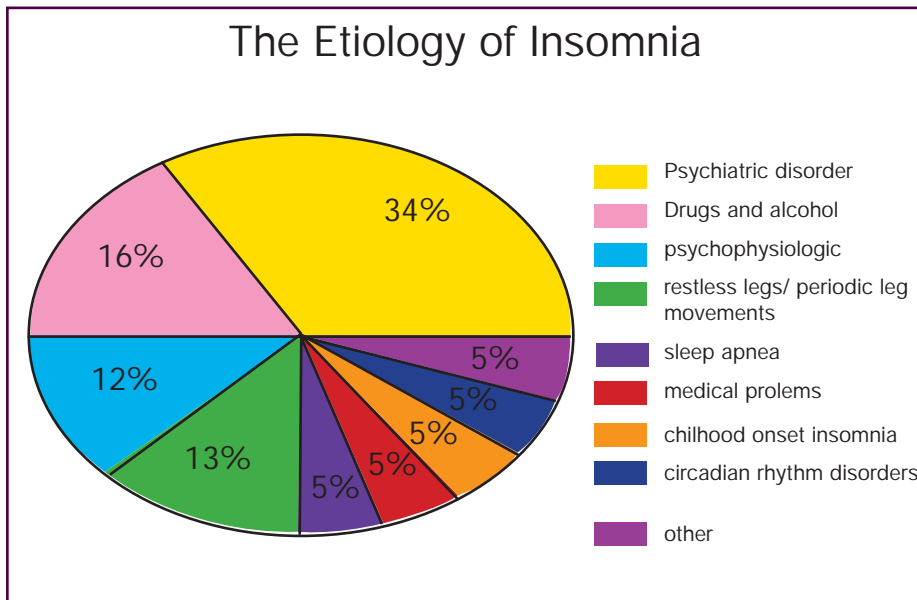


Figure 2. Etiology of insomnia.

ing for an average of six hours, they must compress their time in bed to seven hours per night. They can start increasing time in bed when sleep occupies 90% of that time. This is a difficult transition, and often aided by the short-term use of an appropriate hypnotic medication.

Alcohol is the most commonly used substance to promote sleep. Acute alcohol consumption reduces anxiety and facilitates

sleep onset. The affect on sleep depends on the amount consumed. More than three or four drinks in the evening will result in the suppression of REM sleep in the first half of the sleep period. There is also a degree of selective inhibition of muscle tone in the upper airway, which can worsen snoring and apnea. REM-rebound results in increased dream intensity in the early morning hours as alcohol leaves the system. Increased urinary frequency and headache also can fragment sleep. In addition, there is a rebound effect on the autonomic nervous system, with a five to seven hour increase in sympathetic tone. This can result in an increased frequency of heart palpitations and symptoms of mild anxiety.

Caffeine is the most commonly use substance to diminish sleepiness. Many people prop themselves up during the day with caffeine. Caffeine late in the day, however, can interfere with sleep, which will cause the person to consume more coffee the following day. This is where the vicious cycle of becoming addicted to caffeine begins. Also, patients are unaware of the relative amount of caffeine contained within various products. It is helpful to review this with them (Table 1).

What are the Primary Sleep Disorders Causing Insomnia?

Disturbed and fragmented sleep may be the result of a primary sleep disorder. There are approximately 75 specific sleep disorders listed in the International Classification of Sleep Disorders.⁵ The most common primary sleep disorders are sleep apnea and restless-leg syndrome. Sleep apnea affects 4% of men and 2% of women. About 10% of the population have restless legs syndrome (Figure 2).

Question 12: *Do you snore?*

Question 13: *Is your sleep delayed by restlessness in your legs, or does your part-*

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ner complain of leg kicks; are your bedcovers in disarray in the morning?

Obesity in patients with a neck collar size of 17 inches or more, loud snoring, observed interruptions of breathing by the bed partner and restless sleep in a tired or irritable middle-aged male are predictors for sleep apnea. This sleep disorder should be treated in such individuals because they are at increased risk for essential hypertension, coronary artery disease and possible stroke.

The diagnosis of restless-leg syndrome is suspected in individuals, who on careful questioning, describe difficulties falling asleep because of restlessness and an unpleasant sensation in the lower limbs that results in a need to move the legs and feet. Often, the bed partner complains of being awakened because of restlessness and leg kicking. Sleep laboratory investigation confirms restless legs, which is commonly associated with sleep-related periodic limb movements occurring at intervals of about 30 seconds. This may result in hundreds of disruptions of the EEG sleep. In circumstances where the patient has no difficulties in falling asleep but the sleep is disrupted by limb movements, sleep-related periodic involuntary limb movement disorder is diagnosed.

When is Insomnia Secondary To Medical/Psychiatric Disorders?

In some cases, insomnia is secondary to medical or psychiatric disorders. Questions to ask include the following:

Question 14: *Do you have any other health problems that interfere with sleep?*

Question 15: *Are you taking any medications, and at what time of day?*

Insomnia is a common symptom of medical and psychiatric disorders, and may actually be an indicator of an illness. Early morning insomnia is a major affective disorder. It also may be a co-morbid feature of a seemingly unrelated disease. For example, patients with diabetes or end-stage renal disease often demonstrate severe sleep disruption associated with restless-leg activity while awake and periodic leg movements while sleeping. The sleep disruption may be more directly related to other symptoms, such as insomnia related to chronic pain, or asthma which may (and often does) become more troublesome at night.

Insomnia may also be the result of the side effects of treatment (*i.e.*, a drug, biological agent, radiation) that results in disturbed sleep. Some antidepressant drugs may contribute to the development of a primary sleep disorder that interferes with recovery from depression. For example, long-term use of tricyclic antidepressant drugs (*i.e.*, amitriptyline) provoke a craving for sweets, which contributes to obesity, and can, as a by-product, result in sleep apnea. Selective serotonin reuptake inhibitor (SSRI) agents (*i.e.*, fluoxetine) promote restless and fragmented sleep. The resultant sleep-related periodic involuntary movements and restless leg syndrome leads to continuing complaints of poor sleep and fatigue, even though the patient is not depressed.

Which Medications Promote Sleep?

Non-prescription. A myriad of products that claim to improve sleep are available for patients. Many of these products are sold in grocery stores and health food stores. The

Practice Pointer

- The sleep diary is the most important tool in elucidating the behavioural elements of sleep schedule disorder.
- If patients report lying in bed for 10 hours, but are only sleeping for six hours, they must compress their time in bed to seven hours.

claims made about the products are often unsubstantiated. The active ingredient(s) is poorly defined, and the dosing and dose schedules are often ambiguous. There is often no requirement to consult a pharmacist or physician to advise patients

or evaluate the nature of the sleep problem. More research is required to fully evaluate the efficacy of these products. The basic principles of the most commonly used products are discussed below.

- *Diphenhydramine*. This ubiquitous histamine receptor antagonist is marketed as a “sleep aid,” although it is fundamentally no different than the active ingredient of many cold remedies. There are numerous studies validating its efficacy as a sleep aid for mild insomnia. Morning sedation and tolerance appear to be the most common problems.
- *Valerian root*. The active ingredient of this plant extract is a weak agonist at the benzodiazepine receptor. Again, there are several scientific studies validating efficacy for sleep induction, although somewhat less so than with diphenhydramine. No significant side effects have been noted.
- *Melatonin*. This synthetic analogue of the pineal hormone is the most widely used and the most poorly understood of all non-prescription products. Some claim it is a chronobiotic, which aids in the synchronization of the sleep/wake cycle. Others claim it is a mild hypnotic. In most studies, of which there are hundreds, it is administered in doses that far exceed the physiologic range. In lower animals, the function of melatonin is clear. It transduces light information into meaningful biological signals. In humans who have been raised in a world that disregards and overrides the light-dark cycle, the importance of melatonin is likely attenuated to the point of being virtually insignificant. The most important application to date has been in resynchronizing circadian rhythmicity in blind individuals and neurologically impaired children.

Prescription drugs. There are relatively few drugs designed specifically to promote sleep. Many medications list sedation as a side effect, and this is often exploited as a means to treat insomnia. There are some basic principles to consider when choosing a medication for the management of insomnia. First and foremost, treat the symptom, which could be the underlying cause of sleep disruption. For pain, an analgesic; for anxiety, an anxiolytic; for depression, a sedating anti-depressant. If the symptom is unmanageable (*i.e.*, intractable tinnitus), overriding the symptoms with a sleep-promoting medication may be appropriate. For the treatment of primary insomnia, there are relatively few choices:

- Temazepam, 15 mg qhs: two to three hours peak plasma levels; eight-hour half-life; morning hangover at higher doses; suitable for maintenance and early morning insomnia.
- Zopiclone, 7.5 mg qhs: One hour to peak plasma levels; five- to six-hour half-

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life; metallic taste upon awakening; suitable for sleep onset, maintenance and early morning insomnia.

- Zaleplon, 10 mg to 20 mg qhs: 20 to 30 minutes peak plasma levels; one- to two-hour half-life; no significant side effects; the unique pharmacokinetic profile means it can be taken at any time during the night, up to three hours before desired wake time; can be used as a “rescue” medication that the patient takes in response to difficulty sleeping, rather than in anticipation of sleep difficulty; appears to be of limited efficacy in patients who have chronically used other hypnotics; 5 mg has very limited efficacy, except for patients hypersensitive to the 10 mg dose.

The goal of pharmacotherapy is to augment appropriate behavioural strategies that will continue to benefit the patient after the medication is discontinued. Initially, the patient should be advised to use the medication for 10 to 14 consecutive days. This will change the sleep pattern for a long enough period to break the cycle of anticipation of poor sleep, to resynchronise the sleep cycle and to successfully implement changes in behaviour that negatively affect sleep (*i.e.*, caffeine and alcohol consumption, erratic sleep schedules, *etc.*).

For a few patients, long-term intermittent use of sleep medication may be required. Childhood onset insomnia and insomnia with prominent family histories may indicate a basic biologic anomaly that requires long-term management. Allow the patient to decide the best strategy to avoid continuous use (every other day, weekdays only, one month on one month off, *etc.*). Sometimes, just having medication in the bathroom cabinet can ensure a restful night.

Conclusion

Insomnia responds well to appropriate intervention. Early intervention is associated with the best prognosis. Appropriate identification of precipitating and perpetuating factors is essential. Prescribing a medication without delineating the problem is generally not helpful. Lack of intervention has been implicated in the evolution of chronic insomnia, depression or fibromyalgia in some patients. Self-medication with inappropriate substances is always a concern.

The sleep diary remains the most important method by which to begin evaluating a sleep-wake complaint. When this is not available, ask the questions listed through this article (See Summary).

For persistent insomnia, or insomnia possibly related to another specific sleep disorder, referral to a sleep disorders clinic is appropriate. You should request a full assessment for your patient, starting with a consultation with a sleep disorders specialist. Be aware of the following:

- Sleep laboratory investigations are not appropriate for patients presenting with insomnia, unless a specific sleep disorder is suspected;
- A single night to try a medication is adequate. Evaluating a response to

treatment may require a second study at a later date; and

- Daytime testing is only required if the patient has complained of unavoidable daytime sleepiness.

Patients who undergo extensive laboratory procedures without clinical assessment generally derive no significant benefit. Sleep disorders medicine requires a multidisciplinary approach for both assessment and management of sleep disorders. This can provide substantial benefit for any patient with a sleep-wake complaint.

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Suggested Readings

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