



Canadian Geriatrics Society

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INSOMNIA IN THE ELDERLY: UPDATE ON ASSESSMENT AND MANAGEMENT

Abstract

Insomnia disorder is one of the most common sleep-wake disorders seen in the geriatric population, and is associated with multiple psychiatric and medical consequences. Insomnia is a subjective complaint of difficulty falling and/or staying asleep, or experiencing non-restorative sleep, associated with significant daytime consequences including difficulty concentrating, fatigue and mood disturbances. There is no single diagnostic tool to assess insomnia. Consequently, an insomnia assessment requires thorough history taking including a sleep inquiry, medical history, psychiatric history, substance use history and a relevant physical examination. Insomnia is often multifactorial in origin, and routinely is associated with multiple other psychiatric and medical disorders. Therefore, predisposing, precipitating and perpetuating factors must be carefully examined in the context of an evaluation of insomnia symptoms. Other specific sleep assessments (e.g., overnight polysomnography) can be completed to rule out other sleep-wake disorders. For management, a cognitive-behavioural approach (including sleep restriction therapy, stimulus control therapy) is commonly accepted as an effective, first-line treatment for insomnia disorder. A brief version of CBT-I focusing on behavioural interventions (Brief Behavioural Treatment of Insomnia, BBT-I) has also demonstrated efficacy in the geriatric patient population. Pharmacological treatments can be considered if cognitive-behavioural approaches have failed.

L'insomnie est un des troubles les plus fréquents du sommeil et de l'éveil rencontré chez la population âgée et est associée à de multiples conséquences tant psychiatriques que médicales. L'insomnie est une plainte subjective de difficulté à initier ou maintenir le sommeil ou de sommeil non réparateur, associée à des conséquences diurnes telles que les troubles de la concentration, la fatigue et les troubles de l'humeur. Il n'y a pas d'outil diagnostique simple pour évaluer l'insomnie. En conséquence, l'évaluation de l'insomnie requiert une évaluation globale comprenant un questionnaire concernant le sommeil, l'histoire médicale, l'histoire psychiatrique et les habitudes de vie, ainsi qu'un examen physique ciblé. L'insomnie est souvent multifactorielle, associée à plusieurs comorbidités médicales et psychiatriques. Ainsi, il est important de s'attarder aux facteurs prédisposant à l'insomnie, ainsi qu'à ceux qui précipitent et perpétuent celle-ci. D'autres évaluations ciblées (par exemple une polysomnographie nocturne) peuvent être nécessaires pour éliminer d'autres causes de troubles du sommeil et de l'éveil. En ce qui concerne le traitement, une approche cognitivo-comportementale (incluant par ex. la restriction de sommeil ou le contrôle des stimuli) est favorisée comme approche thérapeutique initiale. Une version brève de cette approche ciblant les aspects comportementaux (Brief Behavioural

Treatment of Insomnia, BBT-I) a aussi été prouvée efficace chez les personnes âgées. Les traitements pharmacologiques ne devraient être considérés qu'en cas d'échec des approches cognitivo-comportementales.

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Key points

1. Insomnia is common in the elderly; about 40% of patients over the age of 65 will complain of this symptom.
2. The etiology can be complex, with age, biological and psychosocial factors playing a role.
3. Evaluation should consist of a full history and physical exam, including screening for common sleep disorders such as obstructive sleep apnea, restless legs syndrome and periodic limb movement disorder. If there is a clinical suspicion of a sleep disorder, a referral to a sleep specialist and subsequent polysomnogram should be strongly considered.
4. For insomnia disorder, where there is no suspicion of an underlying sleep disorder or other medical or psychiatric disorder causing insomnia, a non-pharmacological approach, including cognitive-behavioural therapy is preferred.
5. Benzodiazepines and non-benzodiazepine benzodiazepine receptor agonists (Z-drugs) can have acute benefits for insomnia BUT are associated with significant side effects with long term use; consequently long-term use should be avoided.

Case

A 68-year-old male is referred for an evaluation of insomnia. He reports waking up 2-3 times during the night for the last 3 years ever since his mother passed away and his family had been conflicted about the estate. His wife says that he moves around a lot at night and makes funny noises with his breathing. He says: "doesn't everybody do this when they get to my age doctor?"

Introduction

Insomnia is one of the most common sleep-wake disorders with multiple psychiatric and medical comorbidities and consequences. Population-based estimates indicate that one-third of adults report insomnia symptoms¹ and 12-20% have symptoms that meet criteria for insomnia disorder². The prevalence of insomnia increases to up to 40% of people older than 65^{3,4}.

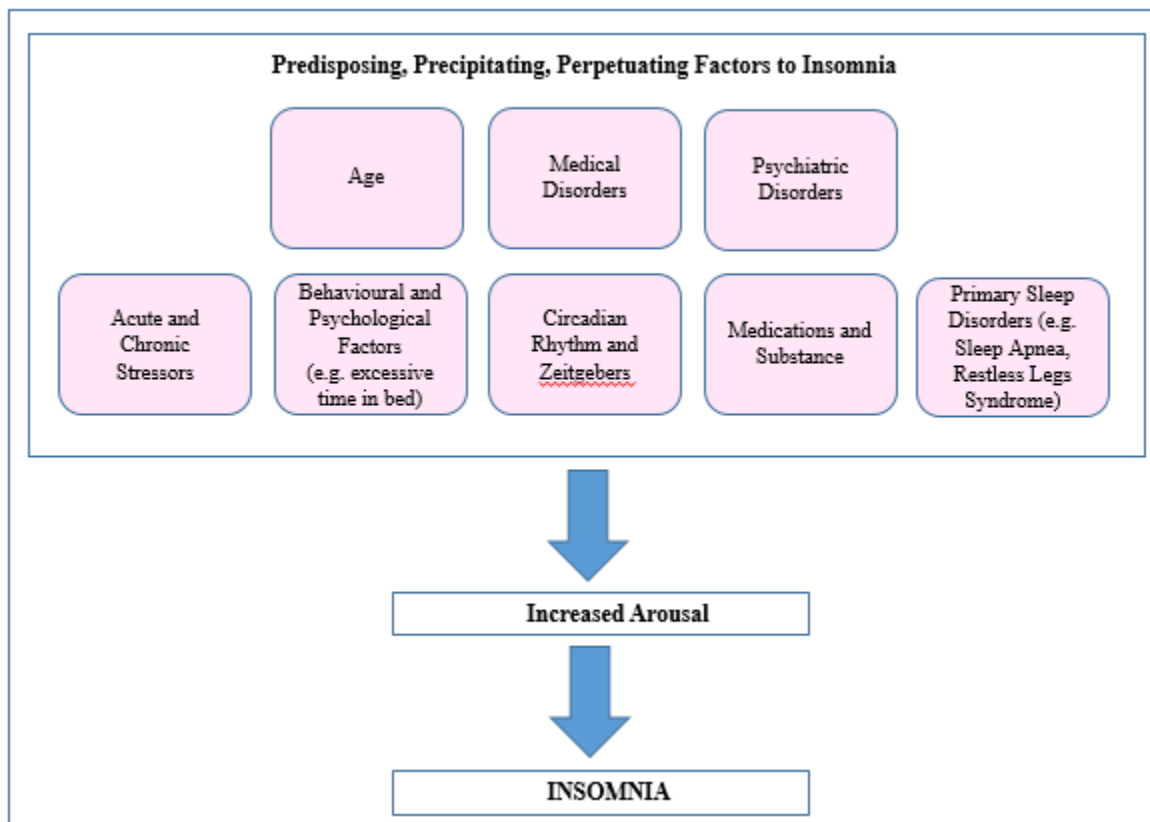
Insomnia disorder presents as a predominant complaint of dissatisfaction with either sleep quantity or quality. Problems may include difficulties with initiating sleep (initial insomnia), maintaining sleep (middle insomnia) or early morning awakenings with an inability to fall back to sleep.¹ DSM-5 also specifies that the sleep difficulty must occur at least 3 nights per week for at least 3 months, that the disorder result in significant distress or functional impairment and that there be no other etiologies (e.g., no other sleep-wake disorder, substance use or mental health/medical conditions that could explain the symptoms)¹. For a complete review of DSM-5 criteria go to www.dsm5.org/Pages/Default.aspx. Insomnia disorder is diagnosed only if it is severe enough to warrant independent clinical attention, as various medical or psychiatric comorbidities can present with insomnia as a symptom. Most older people with insomnia have one or more comorbid conditions; a review by Foley⁵ et al. (1995) demonstrated that

among 6800 elderly patients with insomnia, 93% had one or more comorbid conditions. Common conditions include depression, chronic pain, cancer, chronic obstructive pulmonary disease (COPD) and cardiovascular disease⁵.

Untreated insomnia has numerous consequences, including interpersonal, social and occupational problems¹. These problems may develop as a result of lack of sleep or excessive concern with sleep, increased day time irritability and poor concentration. Older patients with insomnia are more likely to experience impaired daytime functioning and psychomotor impairment. Negative consequences associated with chronic insomnia include an increased risk of depressive disorder, hypertension, myocardial infarction, falls, reduced productivity at work and decreased quality of life^{1,6}. Furthermore, recent studies even suggest an association between poor sleep quality and the subsequent development of a neurocognitive disorder.⁷ Investigators conjecture that increased beta-amyloid deposition associated with sleep fragmentation may play a role in the development of cognitive impairment⁷.

Insomnia frequently is multifactorial in origin. Consequently, a holistic approach is recommended for addressing insomnia, with consideration given to predisposing, precipitating and perpetuating factors (Figure 1)⁸. These factors may directly or indirectly contribute to the hyperarousal that is inherent in insomnia disorder². For example, aging can predispose a person to have insomnia but acute stressors (e.g., recent death of loved one or acute illness) may trigger the onset of the disorder (i.e., precipitating factor). The insomnia disorder of an individual may be perpetuated by factors such as increased cognitive arousal, preoccupation and frustration with lack of sleep as well as ongoing medical and psychiatric conditions.

Figure 1: Predisposing, Precipitating and Perpetuating Factors to Insomnia (medications and substances contributing to insomnia include alcohol, caffeine, nicotine, cholinesterase inhibitors, analgesics, antihypertensives, psychotropics, anti-Parkinsonian medications, bronchodilators etc.)^{11,12}



Aging and sleep

Significant changes occur in sleep and circadian rhythms with aging. One of the most striking differences in the sleep of older patients is their frequent nocturnal awakenings (i.e., sleep fragmentation)¹⁰. Other changes that occur with age include decreases in total sleep, reduced sleep efficiency (time spent asleep as a percentage of time in bed), decreased slow-wave (Stage N3 or deep sleep) and rapid eye movement (REM) sleep and increased stage N1 and N2 sleep^{9,10}.

The 24-hour sleep-wake cycle becomes less robust with aging and is accompanied by a decreased diurnal 24-hour body temperature rhythm^{13,14}. Older adults are more likely to have a temporally advanced sleep phase (falling asleep early and waking up early¹⁵). Furthermore, earlier awakening may result in frequent naps during the day, which may further perpetuate nocturnal insomnia⁹.

In addition to the inherent biological changes that occur with aging, elderly patients may experience a deterioration of their daily routines that entrain an individual's biological day-night rhythm. Important *zeitgebers* ("time makers") for the circadian rhythm may erode (e.g., no fixed work schedule, irregular meal time) with aging, which may contribute to further sleep difficulty.

Evaluation/investigation

Diagnosis of insomnia is based on a thorough clinical interview of both the patient and their bed partner. Important sleep questions include: onset and duration of the insomnia, sleep routine (time of sleep onset, wake up time, number of awakenings at night), daytime somnolence, and impact on functioning, including the effect on driving. In many instances the history provided by the partner is dramatically different from the patient, underlining the importance of the bed partner history. History can include a review of the **6 Ps**: **P**ain, **P**aroxysmal Nocturnal Dyspnea (**PND**), **P**harmaceuticals/Pills (see Figure 1), **P**ee (ensure the patient is not on a late day diuretic and is restricting PM oral fluids), **P**artner (with sleep issues), **P**hysical environment not conducive to sleeping. The clinical evaluation should include screening questions for obstructive sleep apnea and restless legs syndrome (see Table 1). Any precipitating factors, such as acute stressors and acute/chronic pain should be reviewed. It is important to include an inquiry for any psychiatric disorders, such as major depressive disorder and any anxiety disorder as well as for medical/neurological disorders (e.g., Parkinson's disease). Medications should be reviewed as certain medications are known to contribute to insomnia, including cholinesterase inhibitors, analgesics, anti-Parkinsonian medications, antihypertensives, psychotropics and bronchodilators (Figure 1). Additionally, it is important to obtain a substance use history, evaluating the consumption of alcohol, cigarettes, caffeinated drinks and any over the counter medications that can affect the quality and quantity of sleep. Other habits and social history can provide additional information – for example, excessive nightly use of electronic devices (e.g., i-Pad, computer games) at bedtime can suppress nocturnal melatonin production and adversely affect circadian rhythm¹⁶. Sleep diaries can be helpful to assess circadian patterns as well as helpful and detrimental sleep habits. Collateral information from the bed partner is important particularly to rule out any other sleep disorders (see Table 1).

Table 1. Common sleep disorders, screening tools/questions and action plans for positive screening

Sleep Disorder	Screening Questions/Assessment	If Screen is Positive...	Extra Comments
Obstructive sleep apnea (OSA)	<p>STOP BANG¹⁷ ≥2/4 in STOP, or ≥3/4 of STOP BANG has high sensitivity/specificity for OSA S – Do you SNORE? T – Are you TIRED in the day? O – Any OBERVED apneas? P – Do you have high blood PRESSURE?</p> <p>BMI >35 kg/m² Age >50 NECK circumference over 40 cm? GENDER – Male</p>	<p>Referral to a sleep clinic for a polysomnogram to confirm suspicions</p> <p>Consider driving safety as per CMA driving guidelines</p>	<p>Important to ask patient’s partner if the patient snores, and if they have evidence of any unusual breathing. Patients themselves are often unaware of potential issues.</p>
Restless Legs Syndrome (RLS)	<p>URGE Criteria^{18,19} (4/4 symptoms strongly suggests RLS) U – Do you have the URGE to move your legs at night? R – Are they worse at REST? (e.g. prolonged inactivity, long car rides, airplane, sitting in a theatre) G – Do symptoms GET BETTER with movement? E – Are symptoms worse in the EVENINGS?</p>	<p>Check ferritin – if <50 mcg/L, initiate iron replacement. If no contraindications, and no secondary causes of RLS are seen, and symptoms are occurring ≥3 x per week, consider pramipexole at 0.125 mg by mouth 2 hours before bedtime, and increasing by 0.125 mg by mouth every 2 days until symptoms resolve, or until maximum of 0.5 mg. Common potential side effects include nasal congestion and stomach upset. Rare, but more serious side effects include impulse control problems (e.g., pathological gambling, sexual indiscretions), sleep attacks (caution for driving) and psychotic symptoms. If problems persist, consider referral to a sleep specialist.</p>	
Periodic Limb Movement Disorder (PLM-D)	<p>Does your partner ever complain that you kick your legs at night? Are your covers messy in mornings?</p>	<p>Referral to sleep specialist for possible polysomnography.</p>	<p>Important to ask the patient’s partner if they notice any kicking.</p>

If indicated, a focused physical exam (see Table 2) should be performed along with appropriate investigations (e.g., blood work to rule out thyroid disease). No investigation is gold standard or diagnostic. Overnight sleep assessment (polysomnography) and other studies can be used to rule out other sleep disorders but are never solely indicated to diagnose a patient with insomnia. While the level I (attended, in laboratory, >7 channel) polysomnography is considered the gold standard for assessing for sleep disordered breathing, level III polysomnography studies ("home sleep studies") have been assessed to have reasonable sensitivity and specificity for screening for sleep disordered breathing when the pretest probability is considered high for moderate or severe obstructive sleep apnea and there are no significant comorbidities. For more information regarding home sleep studies see www.aasmnet.org/resources/clinicalguidelines/030713.pdf and www.ncbi.nlm.nih.gov/pmc/articles/PMC2975504/. The point about the absence of significant medical comorbidities may limit the utility of the level III polysomnography study in the elderly population, since this group frequently has significant medical comorbidities. See Table 1 for screening questions for common sleep disorders associated with insomnia and action plans.

Treatment

Although changes in sleep are known to occur with age, insomnia is not an inevitable consequence of aging. Untreated persistent insomnia may lead to multiple medical and psychosocial consequences – therefore, treatment of insomnia is not only encouraged but warranted. There are two main types of treatment for insomnia: 1) psychological treatments for insomnia, including cognitive behavioural therapy for insomnia (CBT-I) and 2) pharmacological approaches. Due to the paucity of data on pharmacological soporific agents and their known side effects, a cognitive-behavioural approach is accepted as the first-line treatment for insomnia at any age according to the most recent practice parameters published by the American Academy of Sleep Medicine (AASM – www.aasmnet.org/PracticeGuidelines.aspx)²⁰.

Psychological Treatments for Insomnia, including Stimulus Control, Sleep Restriction and Cognitive-Behavioural Therapy for Insomnia (CBT-I).

Psychological approaches are summarized in Table 3. Behavioural and cognitive approaches to insomnia are safe and effective ways to treat insomnia in older adults^{20,21}. One of the most common first steps in addressing insomnia is called stimulus-control-therapy (SCT). SCT is especially useful for those who have a cycle of excessive daytime napping and resultant night time insomnia. See Table 3 for specific techniques and instructions for patients. Instructions can be given in one visit but a follow-up visit should be scheduled to assess compliance and to solve problems. Many elements of SCT are commonly referred to as "sleep hygiene."

Sleep-restriction-therapy (SRT)²² is another common approach to insomnia in older adults. Elderly patients have a reduced homeostatic sleep drive and may spend excessive time in bed "trying to sleep." SRT aims at minimizing time spent in bed awake and helps patients accumulate sleep debt (see Table 3). This therapy requires multiple follow-up visits to adjust time-in-bed (TIB) prescriptions and ensure patient compliance.

More recently, the term cognitive-behavioural therapy for insomnia (CBT-I) has been used to refer to a combination of SCT, SRT and cognitive strategies to address maladaptive sleep-related beliefs (i.e., cognitive distortions). Some common sleep related cognitive distortions include, "everyone should sleep at least 8 hours every night, otherwise there will be serious day time consequences," and "poor sleep is normal in older adults."

Table 2. A focused physical exam for the assessment of sleep disorders (Note: physical exam must be personalized considering the individual's medical history)

Systems	Focused Examination
General	Body weight and height (calculate Body Mass Index (BMI); ≥ 35 kg/m ² has high risk for OSA, but in the elderly, BMI may be poorly predictive for OSA ²³)
Head, Nose and Neck	Nasal patency and alignment Mouth exam (assess for tonsillar hypertrophy and tongue enlargement, +/- mallampati score (emedicine.medscape.com/article/2172419-overview), overbite, loose teeth, dentures) Neck circumference, goitre or any mass Micrognathia/retrognathia
Cardiovascular including peripheral vascular disease	Hypertension Arrhythmia, murmurs Peripheral edema
Neurological	Gait (Parkinsonism), evidence of peripheral neuropathy

Cognitive approaches will identify these maladaptive beliefs about sleep and help patients generate more balanced or alternative beliefs about sleep using techniques such as thought records. This treatment is ideally administered by trained psychologists, though several elements can be delivered by primary care physicians and/or psychiatrists. Access to CBT-I can be challenging due to financial constraints and a paucity of available psychological resources. Due to these limitations, a shorter form of CBT-I called Brief Behavioural Therapy for Insomnia (BBT-I) has been developed²⁴ as a simplified and shortened version of CBT-I that focuses on the behavioural elements of CBT-I based on the circadian and homeostatic regulation of sleep. BBT-I can be delivered over 2 sessions by a nurse, and has been shown to be effective for insomnia treatment in the geriatric population, with benefits persisting even after 6 months²⁴. Several online resources and applications ("apps" – see Table 4) have been developed recently in an effort to improve accessibility.

Pharmacological Treatment Options for Insomnia in the Elderly.

There are extensive pharmacological treatment options available for insomnia in the elderly and a full review of these is beyond the scope of this paper. Nonetheless, if other comorbidities are excluded and the insomnia disorder is chronic and persistent, general guidelines regarding pharmacological options should be considered. In the US, 4 medications are FDA approved for the treatment of chronic insomnia: non-benzodiazepine benzodiazepine receptor agonists (e.g., zolpidem), benzodiazepines, melatonin receptor agonists (not available in Canada) and the hypocretin receptor antagonist suvorexant (not available in Canada). Health Canada consequently only has the first 2 agents approved as sleep aids ([Healthy Canadians](#)). Other agents that are frequently considered for chronic insomnia in the elderly include alpha 2 delta drugs, sedating antidepressants, antihistamines, melatonin and atypical antipsychotics.

Non-Benzodiazepine Benzodiazepine Receptor Agonists: Z Drugs – zolpidem, zopiclone.

In general these medications have been shown to be efficacious for the treatment of insomnia in the elderly, but no head to head trials exist regarding comparative efficacy. These medications have more selectivity in targeting the alpha 1 subunit of the gamma amino butyric acid (GABA) receptors compared to benzodiazepines (which target the cleft between the alpha and gamma subunit)²⁵, and this may help explain the decreased potential for some adverse events compared to benzodiazepines. For instance,

these drugs have less liability for falls and fractures compared to benzodiazepines, though they still contribute to elevated risk²⁶. There is also risk for complex sleep related behaviours²⁷ and abuse potential²⁸. Zolpidem has a shorter half-life ($T_{1/2} = 2.5-3$ hours, time to maximal concentration = 1-2 hours*) and consequently may have less potential for residual daytime adverse effects than zopiclone ($T_{1/2}=5-6$ hours, time to maximal concentration = 1.5-2 hours*). Soporific effects for both of these drugs are expected to begin within 15-30 minutes of ingestion and consequently these can be helpful for initial insomnia²⁵. The shorter half-life of zolpidem, however, may limit this drug’s utility for sleep maintenance insomnia, although a controlled release (CR) formulation was recently introduced in Canada modestly addressing this issue ($T_{1/2}=2.5-3$ hours, time to maximal concentration = 1.5-2.5 hours*). Zopiclone has been shown to have more risk for activities requiring daytime vigilance such as driving^{29,30}, and these effects may be greater than those seen with the shorter acting benzodiazepine temazepam³¹. As a result of these concerns, the maximum recommended dose per Health Canada for those over 65 years of age for zopiclone is 5.0 mg as of November 2014, with a recommended starting dose of 3.75 mg ([Health Canada](#)) Some studies suggest zopiclone is less effective than CBT-I for the treatment of chronic insomnia³². Although evidence suggests these drugs have efficacy for insomnia, data for use in the elderly is limited. Consequently these agents should be used cautiously if pursued, with the lowest dose possible, and for the shortest time, preferably less than 4 weeks^{8,33}.

* Numbers are determined for healthy young adults. These numbers may need to be adjusted in the elderly population and so should be considered with caution in the geriatric population.

Table 3. Psychological therapies for insomnia

Therapy	Techniques used
Sleep Hygiene	<ul style="list-style-type: none"> • Maintain a regular sleep pattern • Avoid napping in the day • Avoid substances that can impair sleep, including caffeine, alcohol, nicotine • Establish a relaxing bedtime routine • Associate the bed with sleep (avoid watching TV, working on the computer etc. in bed)
Stimulus-Control Therapy (SCT) (Incorporates elements of sleep hygiene and builds on associating bed with sleep)	<ul style="list-style-type: none"> • Only go to bed when sleepy • Establish a standard wake-up time • Get out of bed whenever he or she is awake for more than 15-20 minutes • Avoid reading, watching TV, eating, worrying and engaging in sleep incompatible behaviours in the bed and bedroom • Avoid clock watching • Maximize daylight exposure and minimize light exposure in evening • Avoid day time napping
Sleep Restriction Therapy (SRT)	<ul style="list-style-type: none"> • Step 1: Sleep log for 2-3 weeks • Step 2: Calculate the average total sleep time (TST) • Step 3: Prescribe initial time-in-bed (TIB) at the average TST or average TST plus amount of time that is deemed to be normal nocturnal wakefulness (e.g., 30 min). TIB should not be more than 7.5 hours per night in the elderly population • Step 4: At follow-up sessions, typically weekly, increase TIB in 15-20 minute increments when sleep efficiency exceeds 85%. Sleep efficiency = time asleep/TIB. Note that wake-up time is fixed, so bedtime is advanced by 15-20 minutes, and bedtime should not be later than 2 a.m.

	<ul style="list-style-type: none"> • Sleep Restriction Therapy • sleepanddreams.com/?p=170
Cognitive-Behavioural Therapy for Insomnia (CBT-I)	<ul style="list-style-type: none"> • Cognitive therapy, sleep hygiene, relaxation training, SCT and SRT are important elements of CBT-I • Cognitive therapy: Identifying sleep-related maladaptive beliefs (cognitive distortion) and evaluating them using various tools, such as thought record <p>CBTI</p>

Health Canada recommends not using zopiclone for more than 7-10 days. The Beers criteria is a list of potentially inappropriate medications for elderly patients that is maintained and updated by the American Geriatric Society. The most recent Beers criteria in 2015 strongly suggest the non-benzodiazepine benzodiazepine receptor agonists should be avoided for treatment of insomnia in the elderly because of their unfavourable side effect profile relative to their effects for insomnia³⁴.

Benzodiazepines

These medications have been used for decades for the treatment of insomnia in the elderly, but have been associated with several adverse consequences including an increased risk for falls, motor vehicle crashes, residual daytime sedation, anterograde amnesia and rebound insomnia³⁵⁻³⁷. Novel studies have even implicated benzodiazepine use in the subsequent development of neurocognitive disorders³⁸. The sleep induction effects of most of the benzodiazepines are expected to begin within 30 minutes, with oxazepam and temazepam having an onset of action of up to 60 minutes²⁵. Although some studies have suggested short or intermediate acting agents such as temazepam are preferred in the elderly compared to longer acting agents such as flurazepam^{20,39}, the recent 2015 Beers criteria strongly suggested avoiding chronic benzodiazepine use altogether in the elderly³⁴, and this has been echoed by others³³.

Sedating antidepressants

Trazodone is perhaps the most frequently used medication among the sedating antidepressants, but data demonstrating efficacy are limited with no evidence of sustained efficacy^{12,40}. Potential side effects including sedation, dizziness, cardiac arrhythmias, orthostatic hypotension and potential priapism can be significant in the elderly population^{40,41}. Mirtazapine, another sedating antidepressant, has demonstrated benefits for insomnia in patients with a major depressive disorder but requires monitoring for somnolence and weight gain^{42,43}. Onset of soporific effects for both of these drugs is expected to begin within 30 minutes of ingestion²⁵. Doxepin, a tricyclic antidepressant with significant sedative properties as a result of significant antihistaminergic actions, has recently been demonstrated to have efficacy without significant adverse events in the treatment of primary insomnia in elderly patients in low doses (1-6 mg)^{44,45}, but further study is needed to replicate these results. Onset of action was seen within 30 minutes of ingestion. Potential complications of tricyclic antidepressants including sedation, weight gain, postural hypotension, cardiac arrhythmias (QTc prolongation), urinary retention and anticholinergic side effects. These effects generally limit the utility of these medications for treatment of insomnia disorder in elderly patients in the absence of a comorbid mood disorder⁴³. Use of other antihistaminergic agents (e.g., dimenhydrinate) including over the counter agents is not recommended in the elderly population^{20,46}.




Other drugs: atypical antipsychotics, alpha 2 delta drugs, melatonin

Although use of the atypical antipsychotics may have some benefits for sleep initiation and maintenance in certain circumstances where a comorbid psychiatric disorder is present⁴⁷, their adverse side effect profile (including increased risk of stroke, sudden cardiac death) and lack of efficacy data in the geriatric

population argue against their use for chronic primary insomnia in this group of patients^{20,33}. Similarly, there are no data available on the use of alpha 2 delta drugs such as gabapentin or pregabalin for treatment of insomnia disorder in the elderly population. However, these medications may have some utility if insomnia symptoms may be related to anxiety⁴⁸, alcohol withdrawal⁴⁹, neuropathic pain⁵⁰ or restless legs syndrome^{51,52}. Our clinical experience has suggested rarely if ever needing to go beyond 600 mg a night with gabapentin for insomnia, or 150 mg at night with pregabalin, and in most instances elderly patients can get benefits from far smaller doses. Onset of sleep induction effects is anticipated to begin within 30 minutes of consumption. Patients should be cautioned about potential cognitive side effects, dizziness and potential psychiatric symptoms including suicidal thoughts^{50,53,54}. Melatonin has been demonstrated to have some modest benefits for primary insomnia in the elderly population^{55,56}. Even a 0.3 mg dose can be effective and provides a physiologic quantity of melatonin⁵⁷. Doses above 3 mg for elderly already result in supraphysiologic melatonin levels, which can persist into the day, leading to potential daytime impairment; therefore, doses above 3 mg are not recommended⁵⁷. Side effects can include daytime sedation, headaches and dizziness, but long-term studies in the elderly are lacking^{58,59}. While generally considered safe, significant adverse events can include impairment in glucose tolerance⁶⁰ and interactions with warfarin⁶¹.

Table 4. Self-help applications (“apps”) available to deliver CBT-I.

Note all apps in Table 4 are free to download.

Application	Comments
<p>CBT-I Coach</p> 	<p>Developed in Stanford for patients with insomnia. Has suggestions for patients troubled by trauma in the past. Ideally used in conjunction with CBT-I. Gives tips on sleep hygiene and strengthening cues for sleep.</p>
<p>Sleepio</p> 	<p>Developed in Oxford. Six week online course offering users personalized feedback based on information inputted by users. Can extract data from tracking devices.</p>
<p>Go!to Sleep</p> 	<p>Developed in Cleveland Clinic. Six week interactive mobile app. Users register and enter sleep data and get a sleep efficiency report and suggestions for sleep improvement.</p>

Case Follow-up

Elderly patients will have age related biological changes, as well as medical issues and psychosocial factors that may predispose patients to experiencing insomnia. Given the wife's recollection of breathing issues and restlessness at night, a polysomnogram would be prudent to consider. A full history and evaluation including an evaluation of the patient's sleep routine as well as an interview with his wife would be indicated. If sleep disordered breathing and other potential sleep disorders such as [restless legs syndrome](#) or [periodic limb movement disorder](#) are treated or ruled out, a non-pharmacological approach including cognitive behavioural therapy is the treatment of choice. Medications can be considered in selected circumstances, and if used are generally indicated for only short-term use. If obstructive sleep apnea is diagnosed then the Canadian Medical Association fitness-to-drive guidelines should be followed with respect to counselling temporary driving cessation (or permanent driving cessation if OSA is severe enough and patient is not responding or resistant to treatment as per CMA guidelines) and reporting to the Ministry of Transportation as per provincial regulations.

Summary

Insomnia disorder is a complex disorder that is common in the elderly. Various factors may play a role including biological, psychiatric and psychosocial factors. Some patients are more predisposed to experiencing chronic insomnia difficulties, including women and those with more psychiatric or medical comorbidities. Diagnostic evaluation should consist of a thorough history, including a detailed sleep enquiry, a partner interview, and focused physical exam. Treatment options should then be directed at the underlying contributing factors to insomnia symptoms. The insomnia disorder diagnosis is a paradigm shift in the DSM-5, in recognition of the fact that insomnia often co-occurs with other medical and psychiatric issues and that it needs to be treated in its own right to assure optimal outcomes. Concurrent treatment of insomnia disorder with comorbid treatment of medical/psychiatric disorders can lead to improved clinical outcomes, while failure to address this disorder can lead to diminished quality of life and increase the risk of (re)lapse to a psychiatric disorder. If the diagnostic suspicion is insomnia disorder, a Cognitive-behavioural approach is generally favored over a pharmacologic approach. Should a pharmacological approach be considered, there is limited data to support use of short acting benzodiazepine receptor agonists (Z drugs), as well as melatonin and doxepin but long term studies are lacking and these agents should be used cautiously if use is necessary. Benzodiazepine use is discouraged due to their unfavourable side effect profile. The paucity of data on other pharmacologic agents with putative sedative properties limits support for utility of other agents though in circumstances with significant comorbidities their use may be helpful (e.g., sedating antidepressant use such as mirtazapine in the presence of a mood disorder). If insomnia problems persist despite treatment efforts, referral to a sleep specialist should be considered, particularly if there is an elevated suspicion for a sleep disorder that contributes to treatment resistance, such as a sleep related breathing disorder or underlying neurologic disorder such as restless legs syndrome.

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