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## Managing Insomnia in Older People

Michael C Woodward

### ABSTRACT

Although insomnia is a common problem in older people, there have been few therapeutic advances in the last decade. Benzodiazepines continue to be overused and the newer benzodiazepine-like drugs (e.g. zopiclone) are proving to be no more effective and have their own risk of adverse effects. Non-pharmacological management remains the preferred option, but is poorly taught and infrequently adhered to, especially in hospital and residential care settings. Older people themselves often request drugs. Progress towards improved management of insomnia will require a significant shift in knowledge and attitudes in both health professionals and the community.

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### INTRODUCTION

Sleep is vital for health and quality of life and older people frequently find sleep elusive. Poor sleep interacts with many medical and psychiatric conditions which are more common in older age, thus exacerbating their morbidity. It would therefore be expected that there have been ongoing and major developments in the understanding and management of insomnia in older people. While some progress has been made there is still a long way to travel before older people with insomnia have a good understanding of sleep disorders, are well assessed, are correctly managed, and participate as informed partners in an effective management program.

Changes in the amount and pattern of sleep in older people include spending more time in bed, but less time asleep and easy arousal from sleep, when compared with younger people.<sup>1-5</sup> Average total sleep time actually increases slightly after 65 years of age.<sup>6</sup> Time from retiring to bed and sleep onset increases with age, and there are changes in the quality of sleep. Slow wave (deeper, restorative) sleep reduces with age, there is increased fragmentation of sleep and rapid eye movement (REM) sleep is reduced.<sup>7,8</sup> These changes in sleep and wakefulness with age are in the direction of impaired sleep maintenance and depth. This increased night-time wakefulness is mirrored by increases in daytime fatigue, daytime napping and the likelihood of falling asleep during the day. Advancing age is associated with a tendency to fall asleep by day and to sleep less well at night. These age-related changes in sleep appear to be partly dependent on medical and psychiatric disorders, rather than universal features of normal ageing.<sup>9,10</sup>

### PREVALENCE

Insomnia is a subjective experience of a lack of refreshing sleep and is defined as complaints about the quality, quantity or timing of sleep at least three times a week for at least a month.<sup>11</sup> Epidemiologists use four main definitions of insomnia based on

insomnia symptoms, insomnia symptoms with daytime consequences, sleep dissatisfaction and insomnia diagnoses. Insomnia is a subjective condition, i.e. there are often differences between what people perceive and report about their sleep and what is measured objectively (e.g. during a sleep study) and individuals vary widely in the amount of sleep they require for optimal functioning.<sup>12</sup> Thus, changes in sleep with age do not inevitably cause insomnia.

Studies have reported more complaints of insomnia from older people. In a sample of over 3000 people aged 18 to 79 years, the one-year prevalence of insomnia was 14% in those aged 18 to 34 years but rose to 25% in the 65 to 79 year olds.<sup>13</sup> In another study, the one-week prevalence of moderate to severe insomnia was 13.5% across all adult groups, with a higher prevalence in women and in older people.<sup>14</sup> In those over 70 years the rate was 12.9% in men and 34.8% in women, compared with 4.1% in men and 3.1% in women aged 20 to 29 years. A recent survey in community-dwelling people over 65 years found the prevalence of insomnia to be 36% in men and 54% in women.<sup>15</sup> A study of 8500 people aged 16 to 74 years found that overall insomnia affected 37% but was more common in older people.<sup>16</sup> Sleep disturbance is common in residential care settings and in hospital although those affected may not complain of insomnia.<sup>17,18</sup> Related to insomnia, dissatisfaction with sleep is also more common in older age. In a 7-year study of 297 people aged 70 years at baseline, poor global sleep satisfaction affected 25% at some time over the 7 years, with an annual incidence of 2.4%.<sup>19</sup> A recent meta-analysis of insomnia epidemiology confirmed these higher prevalence rates in older people.<sup>20</sup>

### CONSEQUENCES AND ASSOCIATIONS

While the possibility of adverse effects from drugs used to treat insomnia have been known for some time, the consequences of insomnia have only recently been recognised. Research has associated sleeping difficulty, daytime sleepiness, daytime naps and fatigue with poor health outcomes including impaired function, poor health perceptions, cardiovascular disease, cognitive decline, falls, depression, pain and mortality.<sup>20-28</sup> However, only a small number of studies have evaluated the consequences of well-defined insomnia. In a study of nursing home residents, untreated insomnia was associated with an increased risk of falls (adjusted OR 1.55; 95%CI 1.41-1.71).<sup>29</sup> In a longitudinal study of older community-dwelling people, insomnia predicted cognitive decline in men (OR 1.49; 95%CI 1.03-2.14) but not in women.<sup>30</sup> Insomnia, as opposed to daytime sleepiness or sleep disturbances, was not associated with mortality in a longitudinal study of 778 community-dwelling women.<sup>31</sup> Insomnia, sleeping difficulties and drowsiness are associated with a range of poor health outcomes, but it is not clear whether this is a causal relationship or merely an association. These associations raise the possibility that treatment of insomnia and sleep disorders may reduce the risk of these adverse events.

### CAUSES

It should not be assumed that insomnia is simply due to old age. Hereditary factors partly determine sleep disorders and insomnia, for instance, in a study of twins, genetic factors

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accounted for at least 33% of the variance in sleep quality and 40% of the variance in sleep pattern.<sup>32</sup> Poor sleep is also more common in older people whose parents had sleep problems, compared with those whose parents were good sleepers.<sup>33</sup> There are a large number of factors which are associated with insomnia, and that may be at least partially causative (Table 1). These factors may coexist with or exacerbate genetic factors.

**Table 1. Causes of insomnia**

<b>Physical illness</b>	
Arthritis	Constipation
Other musculoskeletal pain	Nocturia, urinary retention
Other painful conditions	Thyroid disorders
Nocturnal angina	Stroke
Nocturnal breathlessness	Parkinson's disease
Gastro-oesophageal reflux	Pruritus
Peptic ulceration	
<b>Psychiatric and cognitive disorders</b>	
Depression	Delirium
Dementia, including dementia with Lewy bodies	Anxiety disorders
<b>Medications and other substances</b>	
CNS stimulants: sympathomimetics, caffeine, nicotine, antidepressants (e.g. selective serotonin reuptake inhibitors)	
<b>Corticosteroids</b>	
Beta-blockers	Withdrawal from medications
Alcohol (initially promotes sleep then rebound insomnia)	(e.g. benzodiazepines)
<b>Sleep disorders</b>	
Sleep apnoea	Periodic limb movements
Restless leg syndrome	REM sleep disorders
<b>Environmental factors</b>	
Noise, light, ambient temperature	Bedding/bed
Especially in institutions	Lack of exposure to sunlight
<b>Behavioural factors</b>	
Daytime napping	Diet
Early retirement to bed	Lack of exercise
Use of bed for other activities	
<b>Circadian rhythm sleep disorders</b>	
Advanced sleep phase	Time zone change syndrome
Delayed sleep phase	

## ASSESSMENT

Older patients should be routinely asked about their sleep and daytime wakefulness. The assessment of insomnia begins with establishing that the person truly has insomnia. Inquiring about the time of retirement and of rising can eliminate many cases of so-called insomnia, i.e. the person who awakes refreshed at 7 am after 12 hours in bed but is concerned about taking 2 hours to fall asleep does not have insomnia and may respond to simple advice about a later retirement time. A sleep diary, kept over several days, may provide more objective information about sleep patterns. A history from the person's bed partner or carer can also be helpful. It is also useful to distinguish transient from chronic insomnia—chronic insomnia generally requires a more extensive evaluation. The sleep history includes details about general satisfaction with sleep and daytime alertness, description of a typical 24-hour sleep/wake pattern, duration of the sleep complaint, daytime activity including sunlight exposure, physical and psychiatric illnesses (especially painful conditions, nocturnal breathlessness, nocturia), medicines and other substances (including those recently ceased), drugs used to promote sleep, timing and size of meals and environmental factors.

A range of circadian rhythm sleep disorders can cause insomnia. The most frequent in older people is advanced sleep phase syndrome—the major sleep period is advanced in relation to normal clock time, e.g. the patient normally sleeps from 7 pm to 2 am.<sup>34,35</sup> More rarely, sleep phase may be delayed. Other circadian rhythm sleep disorders to consider include time zone change (jet lag), shift work sleep disorder and a non 24-hour sleep-wake syndrome, where patients go to sleep one to two hours later each night and arise one to two hours later each morning. A detailed sleep history, with time to bed and rising time, will usually reveal these disorders.

Further evaluation can include physical assessment, a detailed cognitive and psychiatric evaluation and blood tests (e.g. thyroid function, serum electrolytes, glucose, calcium). If indicated, other tests evaluating cardiac and respiratory function, and evaluation of bladder function (e.g. inadequate emptying, outlet obstruction) may be appropriate. Other tests are more targeted, e.g. iron levels can occasionally reveal the rare case of restless legs syndrome due to iron deficiency. The environment should be assessed, if practicable. Occasionally, (e.g. if sleep apnoea or periodic limb movements are suspected) sleep laboratory testing may be required, which has the added advantage of observing actual overnight sleep, albeit in an artificial environment. A detailed description of an assessment protocol for insomnia has been published.<sup>36</sup>

## NON-PHARMACOLOGICAL MANAGEMENT

When a cause or comorbidity of insomnia is identified, management should first address this factor, e.g. avoiding caffeine after 5 pm. It may surprise patients to know that their evening hot chocolate contains caffeine. Other medications and substances contributing to insomnia should be ceased, where possible. Treatment of nocturnal pain and shifting an evening diuretic to earlier in the day may be very helpful. If sleep apnoea is diagnosed, continuous positive airways pressure may reduce daytime sleepiness. Pharmacological treatment of restless legs syndrome may also treat the insomnia.

Even where no single cause or comorbidity is apparent, or indeed in addition to targeted treatments, a panel of 'sleep hygiene' measures can be very useful (Appendix 1). Sleep hygiene measures are most easily applied in the community setting but can be modified for residential care and hospital settings.<sup>37</sup>

Approaches that incorporate sleep hygiene measures and which have been mainly used in younger people may also be effective in older people, but are best administered by clinicians with expertise in managing sleep disorders. These approaches can be broadly grouped into three categories—stimulus control, temporal control and sleep restriction.<sup>38</sup> Stimulus control refers to the attempt to associate the bedroom with sleep rather than wakefulness. Temporal control measures recommend a constant time of waking with minimal daytime napping, and sleep restriction curtails slightly the time spent in bed and then gradually increases it as long as most of the time is spent sleeping. Cognitive behaviour therapy has been successful in younger people and has been shown in older people with insomnia to have more sustained benefits than pharmacotherapy.<sup>39,40</sup> This latter approach involves identifying dysfunctional beliefs and attitudes about sleep and replacing them with adaptive substitutes. These attitudinal changes minimise anticipatory anxiety and arousal that may interfere with sleep.

In general, there is good evidence for the benefits of non-pharmacological approaches in community, residential care and hospital settings.<sup>37,41-43</sup> Inouye et al. used a sleep protocol consisting of a back rub, warm drink and relaxation tapes administered by nursing personnel to hospitalised elderly

patients (mean age 79.3 years) who complained of difficulty initiating sleep or who requested a hypnotic. The protocol was administered for a mean 4.9 days per patient. Sleep quality improved and the use of sedative-hypnotics fell from 54% to 31% ( $p < 0.002$ ). In the nursing home setting, a program including efforts to decrease daytime time in bed, 30 minutes or more of sunlight exposure, increased physical activity, a structured bedtime routine and efforts to decrease night-time noise and light was found to modestly decrease night-time awakening and decrease daytime sleeping.<sup>43</sup> Tai chi was used in a randomised trial in a community setting and led to reduced sleep-onset latency (18 min less per night than in the comparator group; 95%CI 28.64–7.12) and an increased sleep duration of 48 minutes per night (95%CI 14.71–82.41).<sup>42</sup>

There is good evidence for the benefits of sunlight exposure, even for those who are unable to exercise by day. In a study of older people with at least a one-year history of sleep disturbance, daily exposure to bright light reduced time spent awake during sleep time at night by an hour and improved sleep efficiency from 78% to 90%.<sup>44,45</sup> If sunlight is impractical, bright fluorescent light may partially substitute.

Not all studies have shown beneficial effects of non-pharmacological approaches and this, along with the extra time required of health workers in applying these approaches, may explain why the use of hypnotics remains high in all settings.<sup>5,14,46</sup> In addition, knowledge of how to assess sleep disorders is suboptimal and this is reflected in poor history taking and over-resort to hypnotic prescribing. In a US study of general practitioners evaluating elderly patients with insomnia, 53% neglected to elicit any sleep history and 46% identified a prescription as the best therapy.<sup>47</sup> Older people are open to a 'wait and see' approach to insomnia, believing other approaches are preferable to the use of prescription drugs.<sup>48</sup> Clearly, there needs to be improved education and practice by health workers to improve non-pharmacological approaches to insomnia.

## PHARMACOLOGICAL MANAGEMENT

Despite the increased risks of hypnotics in older people, they are commonly used.<sup>49,50</sup> A 2001 survey of 3860 community-dwelling elderly (mean age 72 years) found 53% used hypnotics, of which 83% were prescribed drugs (66% benzodiazepines, 11% zopiclone), although there is evidence that the use of benzodiazepines is decreasing.<sup>51,52</sup> Long-term, continuous use of benzodiazepines, as opposed to short-term use, is more likely with increasing age.<sup>52</sup> Hypnotic use is frequent in older people in residential care settings despite the high prevalence of dementia and other comorbidities.<sup>53</sup> Guidelines restructuring use of these drugs in this setting appear to have only had minimal effectiveness—in 1990 25% of US nursing home residents were prescribed a benzodiazepine and after the implementation of guidelines this fell only by 3.6%.<sup>54</sup> In hospital settings, the use of benzodiazepines in older people was 36% in an Australian audit and only 20% was deemed appropriate when evidence-based indicators were applied.<sup>55</sup> Thus, it appears that benzodiazepine and other drugs remain frequently and often appropriately used to promote sleep.

### Benzodiazepines

Benzodiazepines are a major advance over earlier drugs used for insomnia, particularly the barbiturates. They cause sedation by acting directly on benzodiazepine receptors. This receptor is part of the gamma-aminobutyric acid (GABA) receptor complex and the effect of this receptor interaction is to potentiate the inhibitory effects of GABA in the CNS. Absorption is not affected by ageing but as some benzodiazepines are highly fat soluble, distribution is affected by the decreased lean body mass

and increase in body fat that occurs with ageing, contributing to a prolonged elimination half-life of certain benzodiazepines. Metabolism occurs primarily through the liver via oxidation, nitroreduction and glucuronidation. Oxidative capacity is reduced with ageing, resulting in a prolonged elimination half-life of benzodiazepines such as flurazepam, flunitrazepam and diazepam. Glucuronidation is not affected by ageing and benzodiazepines metabolised in this manner (e.g. oxazepam, temazepam, lorazepam) do not have longer elimination half-lives in older people. Some metabolites are themselves active (e.g. oxazepam is a metabolite of diazepam) and accumulation may be higher in older people (e.g. demethyldiazepam, a metabolite of diazepam, can be detected in older people many days after a final diazepam dose). Renal excretion of benzodiazepines is minor.<sup>49</sup> It is useful to clinically divide benzodiazepines into those with long, medium, short and very short half-lives (Table 2).

**Table 2. Benzodiazepine elimination half-lives in older people**

Long (> 20 hours)	Intermediate (10 to 20 hours)
Clonazepam	Alprazolam
Diazepam	Lorazepam
Flunitrazepam	Temazepam
Flurazepam	
Nitrazepam	
Short (5 to 10 hours)	Very short (< 5 hours)
Oxazepam	Triazolam
	Midazolam

There are also pharmacodynamic changes with ageing that affect response to benzodiazepines. Older people are more sensitive to benzodiazepines with increased effects for the same blood concentration in younger people. In one study, the plasma benzodiazepine concentration needed to produce the same degree of sedation was 2 to 3-fold less in older than in younger people.<sup>56</sup> Most changes have been observed with psychomotor and cognitive function and include sedation, drowsiness, memory impairment, impaired balance, increased sway and ataxia.<sup>49</sup> These pharmacodynamic changes, and the tendency for longer elimination half-lives, contribute to an increased risk of adverse events from benzodiazepines in older people. Numerous studies have associated benzodiazepine use in older people with an increased risk of falls, hip fractures, injury, car crashes, physical disability and increased mortality.<sup>57-64</sup> Some of these studies may have underestimated the association as benzodiazepines are frequently found in the serum and/or urine of older people with a hip fracture who deny having taken them.<sup>65</sup>

Benzodiazepine use has been associated with tolerance, resulting in the use of increasing doses although there is some evidence that tolerance may also develop to adverse effects such as falls.<sup>56,66</sup> Older people may also become dependent on benzodiazepines, it has been estimated that 35% of patients taking benzodiazepines for more than four weeks develop dependency, and with four months of regular use most users develop dependence.<sup>67,68</sup> It is unclear whether dependency is more likely with long-acting as opposed to short-acting drugs.

Withdrawal symptoms occur in 30 to 40% of patients when long-term use of benzodiazepines is ceased and these symptoms are more likely to occur with sudden cessation compared with a regimen of a gradually tapered dose.<sup>69,70</sup> Symptoms include insomnia, anxiety, tremors, palpitations, dizziness, ataxia, depersonalisation, perceptual disturbance and depression. These symptoms settle within two to four weeks. More serious, but rare withdrawal effects include confusion, psychosis, epileptic seizures and death.<sup>70,71</sup> This paper cannot go into details about how best to cease benzodiazepines; interested readers

are referred to other articles and reviews.<sup>72-74</sup> The best approach is to use benzodiazepines with great caution, and to avoid long-term use and dependency.

The effectiveness of benzodiazepines in the treatment of insomnia has led to doubts about the appropriateness of their use in older people. It is useful to distinguish short-term use for transient insomnia, from long-term use usually for chronic insomnia. Most studies with benzodiazepines have been of short duration—an analysis of 89 trials of benzodiazepine use for insomnia in people of all ages found only 45 were suitable for a meta-analysis, and the duration of these studies ranged from 1 day to 6 weeks (mean 12.2 days; median 7.5 days).<sup>75</sup> Fifteen studies included patients aged 65 years and older and four studies involved exclusively older patients. This meta-analysis of sleep records found that when compared with placebo, benzodiazepines decreased sleep latency by 4.2 minutes (non-significant) and significantly increased total sleep duration by 61.8 minutes (95%CI 37.4–86.2). Interestingly, patient-reported outcomes were more optimistic for sleep latency (decrease of 14.3 min; 95%CI 10.6–18.0). Daytime drowsiness, dizziness and cognitive function decline were reported in the active treatment arm of many of the studies.

Long-term trials of benzodiazepine use are lacking. There are two small studies (less than 75 participants)—one of 2 months of temazepam and another of 6 months with lormetazepam, which showed durable improvements over placebo but a nitrazepam arm of the 6-month study did not demonstrate significant sleep benefits.<sup>76,77</sup>

The evidence for long-term use (over 6 weeks) of benzodiazepines is lacking, and as these drugs have a significant risk of adverse events, tolerance and dependency, long-term use cannot be recommended. There are also risks of adverse effects from short-term use, and there is the risk that short-term use could become long-term use if the planned duration is not initially clearly agreed on. In essence, before initiating benzodiazepine therapy for insomnia, even transient insomnia, the question should be ‘is the mean extra 62 minutes of sleep, for the next few days, worth the risk?’

### **Benzodiazepine Receptor Agonists**

Benzodiazepine receptor agonists (Z drugs) include zopiclone, zolpidem, zaleplon and more recently eszopiclone. They act on benzodiazepine receptors and as such could be expected to have similar efficacy and adverse effects to the benzodiazepines. Early studies and reviews suggested they may be safe in older people and while some studies have supported this safe profile other studies have not.<sup>78-82</sup> In a case-control study of 1222 people with hip fractures, zolpidem use was associated with nearly twice the risk of hip fractures, a risk similar in magnitude to that of benzodiazepines.<sup>82</sup> It seems likely that the Z drugs will be associated with a similar risk to that of the benzodiazepines as long-term experience with them is accumulated. Zolpidem has been associated with unusual night-time behaviours such as eating and driving a car while asleep, and it may be that adverse effects unique to the Z drugs exist.<sup>83</sup>

As with the benzodiazepines, most efficacy studies have been short-term but there have been two long-term studies with large numbers of subjects, and in one of these, subjects were elderly.<sup>80,84-86</sup> A six-month double-blind placebo-controlled trial of eszopiclone (n = 595) found that, compared with placebo, the active treatment improved all measures of sleep and daytime function, including sleep-onset latency, sleep quality, daytime alertness and clarity of thought.<sup>85</sup> A pair of open-label multicentre studies of nightly zaleplon in 486 young-old and old-old patients mainly evaluated safety but also found some evidence for sustained efficacy.<sup>86,87</sup> Data on the

comparative efficacy and tolerability of one of these drugs compared to others is lacking but there is no convincing evidence that one is safer or more effective than another.<sup>88</sup> There is little evidence for favouring a Z drug over the benzodiazepines and if a hypnotic is required, it may be prudent to favour the benzodiazepines which have been better characterised over many years. The frequently encountered marketing of the Z drugs as safer or more effective in older people is spurious.

### **Other Drugs**

A wide range of over-the-counter and prescribed drugs have been used to treat insomnia, such as melatonin, valerian, l-tryptophan, antihistamines, antidepressants and antipsychotics. Older drugs such as chloral hydrate, chlormethiazole, and paraldehyde are now almost never used. Evidence for the efficacy of these drugs is scanty, especially for long-term use, and all have been associated with adverse effects. Melatonin and valerian, have however been favoured by some due to their ‘natural’ and ‘safe’ reputation. It was initially thought that old age was associated with reduced melatonin levels, although this has been disputed.<sup>89</sup> Thus, melatonin was felt to be a partial answer to the problems of benzodiazepines.<sup>90</sup> Two randomised trials (7-week placebo-controlled and 4-week crossover) in older people have failed to show efficacy in improving sleep.<sup>91,92</sup> Melatonin has been associated with coronary vasoconstriction.<sup>93</sup> A review of the efficacy of extracts of valerian for the treatment of insomnia showed inconsistent and inconclusive results.<sup>94</sup>

There are safety concerns about the use of antihistamines, antidepressants and antipsychotics as surrogate hypnotics. Sleep promotion may be a useful secondary effect but they should be used for their primary effects.<sup>95</sup> There is very scant evidence for their efficacy in insomnia. Indiplon, a nonbenzodiazepine GABA potentiator, exhibits pharmacological selectivity for GABA(A) receptors containing the alpha 1 subunit. A recent trial found that 15 mg of modified-release indiplon was well tolerated and significantly improved total sleep time versus placebo by 36 minutes at two weeks (p < 0.0001).<sup>95</sup> More trial evidence is required to evaluate whether this ‘Z-like’ drug is a significant therapeutic advance.

### **Hypnotics**

If a pharmacotherapy is necessary, it should be used in conjunction with non-pharmacological measures. Patients and prescribers should establish clear convergence on the benefits versus risk of therapy and the duration of therapy. Rarely should a duration of more than four weeks be offered. Care should be exerted in hospitalised and institutionalised patients to avoid starting benzodiazepines and other hypnotics and to also avoid discharging them on these drugs. The drugs of choice include temazepam as its half-life is not long and is not prolonged in the elderly and there is a great deal of experience with its use in insomnia, and possibly the Z drugs (beware of adverse effects, which as are being characterised). Long-acting benzodiazepines should be avoided. Patients should be regularly reviewed and repeat prescriptions given only in exceptional circumstances.

Chronic insomnia is best managed non-pharmacologically along with judicious short-term or intermittent use of hypnotics. Often, referral to an expert in sleep disorders (e.g. respiratory physician, geriatrician, psychiatrist) is appropriate. Long-term use of benzodiazepines should always be identified and such patients should be weaned off these drugs whenever possible.<sup>72</sup>

### **Improve Prescribing of Hypnotics**

A number of approaches have been successfully used to improve prescribing in older people and more specifically targeting hypnotics.<sup>97-99</sup> Prescribing indicators coupled with verbal

feedback to the prescribing team reduced inappropriate benzodiazepine prescribing from 80% to 56% in a large Australian study of hospitalised elderly and a similar approach has been used successfully in other countries.<sup>55,99,100</sup> Similarly, audit and introduction of a prescribing policy reduced the monthly consumption of hypnotics from 2392 to 734 doses in a hospital aged-care unit.<sup>101</sup> In New York, the requirement that all prescriptions for benzodiazepines be written on special triplicate prescription forms reduced benzodiazepine prescribing from 60% to 30%, but unfortunately led to partial substitution with less appropriate drugs.<sup>102,103</sup> A computer-based reminder directing physicians to prescribe a non-pharmacological sleep protocol to older hospitalised patients reduced prescribing from 18% to 15% (OR 0.82; 95%CI 0.76–0.87) an 18% risk reduction.<sup>104</sup>

The most effective way to improve the management of insomnia may be to improve community knowledge and expectations. Education through radio and other media is occurring, and may be partly responsible for the overall downward trend in benzodiazepine use.<sup>51</sup> Education also needs to be directed at prescribers as it is currently suboptimal—for instance, the geriatric medical course for students at a major university in Melbourne contains only a single one-hour tutorial on all prescribing for older people, although prescribing is touched upon in other parts of the course.

## CONCLUSION

Insomnia remains a problem for many older people. It is important to detect, assess and manage insomnia. Non-pharmacological approaches can improve and often resolve insomnia, but when pharmacotherapy is required, a short-acting benzodiazepine such as temazepam is the preferred option. Benzodiazepines should generally not be used for more than four weeks. More effective and safer drugs are needed—the Z drugs have not at this time proven to be that. There is a need for further research to improve the overall management of insomnia in older people, but most research in recent times is directed solely at the effects of new pharmacological drugs.

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## Appendix 1. Sleep hygiene measures

Regular sleep hours

Avoid excess time in bed

Avoid daytime naps

Use bed for sleep (and sexual activity) only

Regular pre-retirement routine

Schedule time to relax before bed, and discuss relaxation routine

Encourage physical activity by day

Ensure sunlight exposure

Make the bedroom quiet, comfortable, correct temperature, adequately dark and secure

Minimise stimulants, especially after 5 pm

Avoid large or late evening meal

Provide information about normal sleep patterns