Sleep Health and Falls Risk

Written by Dr Michael G Prichard, Respiratory and Sleep Physician

Sleep is defined as a reversible behavioural state of decreased responsiveness and interaction with the environment.

Sleep onset occurs as a result of cumulative increase in sleep pressure (tiredness), under the influence of a biological clock (circadian rhythm), and in the absence of alerting stimuli (anxiety, mental activity, physical activity, pain etc.). Sleep is entered through non-REM sleep and follows a regular cycle pattern with progressively increasing REM sleep during the night. Average normal sleep duration is 7-8 hours.

Figure1. Sleep architecture is regular and organised with alternating non-REM (stages 1-4) and REM states.

Normal sleep is restorative. Insufficient or fragmented sleep often results in morning tiredness and daytime sleepiness, memory impairment, reduced concentration and mental acuity, reduced work performance, increased accident rate and risk of falls in the elderly.
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It is generally believed that the elderly require less sleep; however that is an incorrect interpretation of the facts. Reduced sleep time is more common in the elderly; however it is usually due to underlying medical or psychological disorders, poor sleep hygiene or behaviours and in some cases, medication.

Sleep quality can be improved with specific interventions:
1. Optimise sleep hygiene
2. Treat underlying sleep disorders
3. Manage medical and psychological problems
4. Medication

Tips for optimum sleep hygiene:
2. Ensure that your sleeping environment is secure.
3. Use your bedroom only for sleep and intimacy.
4. Avoid napping during the daytime. Avoid sleeping in front of TV.
5. Regular exercise during the daytime, although not for four hours before bed.
6. Go to bed only when you are tired or drowsy.
7. Regular time to bed and time out of bed
8. Reduced alcohol intake in the evening. Alcohol is not effective night sedation.
9. Limit time in bed to sleeping time as much as possible. Don't lie in bed worrying.
10. Manage thinking or worrying time: no later than 2-3 hours before bed. Write notes for problem and to do lists for the next day.
11. Foster pleasant relaxing pastimes in the hour or two before bed. TV may not always be the best option.
12. Avoid caffeine and other stimulants in the second half of the day.
13. If relaxation is difficult before bed, take a warm bath; try reading something not too mentally stimulating, listen to relaxing music.

Some sleep conditions may increase movement in sleep, or the need to get up during the night. Visits to the bathroom are more common in obstructive sleep apnoea, diabetes, and treated heart failure. In lowlight and half awake conditions, the risk of falling during the night is increased. A movement disorder in sleep, REM sleep behaviour disorder ("acting out dreams"), occurs more commonly in the elderly and in association with neurological disorders, and is a recognised cause of falls and injury during the night. It is readily treatable.

Many sleep and medical conditions become more common in the elderly. These include obstructive sleep apnoea, chronic neurological disorders, restless legs syndrome, arthritis, other causes of chronic pain, anxiety and depression, diabetes, heart and lung disease. If a client has one of these problems, it is important that they discuss the condition and the impact on sleep with their doctor, as well is the potential impact of treatment on sleep. A common cause of difficulty getting to sleep is restless leg syndrome, and a number of medications increase the frequency and severity of this disorder, including antihistamines and antidepressant medications.

Finally, while medication is available to treat insomnia, night sedation should be used with caution in the elderly because of the increased risk of falls while taking sedatives.
What is insomnia?

Insomnia is a subjective problem with falling or staying asleep, waking up too early or having sleep of poor quality, which translates into impaired daytime function. \(^1\) Insomnia is also a common problem with up to 25% of Australians reporting trouble getting enough sleep. \(^1\)

Insomnia can be classified as acute or chronic and there is not always a clear distinction. Acute insomnia commonly occurs in otherwise healthy individuals for whom a short-term stress (e.g. grief) causes a temporary disruption to sleep. Chronic insomnia is generally regarded as disruption to sleep of duration greater than 30 days. \(^1\)

Often insomnia is secondary to another cause, which should be addressed during treatment. Secondary causes include:

- Medicines
- Medical conditions (including psychiatric disorders)
- Poor sleep hygiene
- Stress - environmental, physical and psychosocial
- Substance use (e.g. caffeine)

It can also be important to address patient attitudes towards sleep as they may have unrealistic expectations. Especially if daytime impairment is not an issue the patient may simply require reassurance.

There are many non-pharmacologic measures that should be explored and employed before considering drug treatment for insomnia. In the first instance behavioural and cognitive therapies are recommended for chronic insomnia as they have similar efficacy to hypnotic medicines but produce more sustained improvements. \(^1\)

Hypnotics: Benzodiazepines and Non-Benzodiazepines

In some cases of insomnia it may be necessary to initiate pharmacological treatments. Generally pharmacological treatments may be indicated for:

- Short-term treatment of acute insomnia.
- Chronic insomnia where non-pharmacologic treatments have proved ineffective. \(^3,4\)

Hypnotic medications include benzodiazepines and non-benzodiazepines (zolpidem and zopiclone). Benzodiazepines have been in clinical use for many years with a well-known side effect profile. Initially the newer, non-benzodiazepine drugs were thought to produce similar hypnotic effects to benzodiazepines but with fewer side effects. However clinical experience over the years has shown these drugs also pose concerns and have the potential for dependence like the traditional hypnotics. \(^5\)
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Benzodiazepines are a large class of drugs, which all have similar actions in terms of sedative, anxiolytic, anticonvulsant, muscle-relaxing and amnesic effects and differ mainly in their pharmacokinetic profiles (e.g. half life). Long-term use of benzodiazepines may result in tolerance and dependence. Common side effects include:

- Drowsiness
- Over-sedation
- Lightheadedness
- Memory loss
- Hyper-salivation
- Ataxia
- Slurred speech

Ideally benzodiazepines and the other hypnotics should not be prescribed for more than two weeks and their use should be intermittent.

Medication and Falls Risk

Prolonged use (>4 weeks) of hypnotic medications can lead to dependence yet the hypnotic benefits are generally considered to be temporary. Most long-term use of these medications is seen in older people, and whilst this is hard to avoid because of co-morbidities and long standing dependence, these people are also at greatest risk of harm.

Careful consideration needs to be given in prescribing these medications to older patients (>65 years) due to increased risks of continued use with aging.

Long half-life benzodiazepines (e.g. diazepam, and nitrazepam) are considered inappropriate to treat insomnia in older people because they can lead to increased frequency of confusion, drowsiness, memory loss, unsteadiness, falls and incontinence. However more recently it has been found that care should also be taken with short-acting benzodiazepines as they can have the same effects. Falls studies have found an increased risk of hip fractures with benzodiazepines, both long and short acting, and almost double the risk with zolpidem.

Due to the risks associated with the use of hypnotics, best practice should be adhered to when initiating medication. Consideration should also be given to introducing a stepwise approach to discontinuing medication in existing chronic users. This may be especially relevant to older patients with other risk factors for falls and fractures.

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The WA Falls Prevention Summit – Staying on Track

The Summit attracted over 290 people working across the sectors in falls prevention. A/Professor Terrence Haines, key note address, spoke about behaviour change in falls prevention. The day provided an array of presenters highly recognised in their fields. If you were not able to attend or you wish to view the presentations again copies of the presentation slides and a DVD will be made available. For more information contact the Stay On Your Feet WA® team on (08) 9420 7212 or soyfwa@iccwa.org.au.
## Diary Dates

### June

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<td>23-24</td>
<td>WA Active Ageing Conference</td>
<td>Council on the Ageing&lt;br&gt;Phone: (08) 9321 2133&lt;br&gt;Tradewinds Hotel, Western Australia&lt;br&gt;<a href="http://www.cotawa.asn.au">www.cotawa.asn.au</a></td>
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### July

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<td>7</td>
<td>WA Primary Health Care Strategy Consultation Document</td>
<td>Written feedback is open to all primary health stakeholders.&lt;br&gt;Strategy document can be downloaded from: <a href="http://healthnetworks.health.wa.gov.au/network/future.cfm">http://healthnetworks.health.wa.gov.au/network/future.cfm</a>&lt;br&gt;For copies of the consultation document:&lt;br&gt;Phone: (08) 9222 0200&lt;br&gt;Email: <a href="mailto:jenny.goyder@health.wa.gov.au">jenny.goyder@health.wa.gov.au</a></td>
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## Have an Event Coming Up?

To include your event, contact:

Stay On Your Feet WA®

## ICCWA Contact Details

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Telephone: (08) 9420 7212<br>Fax: (08) 9486 7955

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