



# I dream of sleep: managing insomnia in adults

*bpac<sup>nz</sup> recognises that the assessment and management of insomnia in general practice can be difficult, especially in relation to managing patients expectations about pharmacological treatments. We hope you will find this summary of the effectiveness of both non-pharmacological and pharmacological intervention of assistance.*

## Part 1: Diagnosis and non-pharmacological treatment

Adults with insomnia have difficulty initiating or maintaining sleep with adverse effects on their daytime functioning. A sleep diary can help with diagnosis and tracking improvements. Non-pharmacological approaches, such as sleep hygiene and bedtime restriction, are preferred first-line treatments; these are effective and provide greater long-term benefits than pharmacological measures.

### KEY PRACTICE POINTS:

- A diagnosis of chronic insomnia can be made based on the patient's sleep symptoms and daytime fatigue after ruling out other conditions such as sleep apnoea, dyspepsia, dyspnoea, restless leg syndrome and parasomnias.
- Non-pharmacological treatment is first-line for all patients: in general, most people who have problems sleeping can benefit from this intervention even if other conditions, such as depression, anxiety or pain, are contributing to their insomnia.
- Non-pharmacological treatment should aim to address lifestyle factors causing sleep disruption, improve the sleeping environment and sleeping routine, and strengthen the link between bed and sleeping (sleep hygiene). It can also include bedtime restriction to maximise sleep efficiency. These behavioural changes form part of cognitive behavioural therapy for insomnia (CBTI).

### How much sleep is enough?

There is a large amount of individual variation in sleep duration and requirement. The optimal recommended sleep duration for adults ranges from seven to nine hours per night, although some people will require more than this, and some will function well with less (Figure 1). Daytime fatigue is a key feature of the diagnosis of insomnia, and is usually regarded as the most important feature, rather than the amount of sleep a person is getting<sup>1</sup>

Almost everyone will have short-term insomnia at some point in their life, for example due to bereavement, stress or worry about family, relationships, work or finances. Sleep problems which have lasted for one to three months are considered chronic insomnia.<sup>2-4</sup> Traditionally, a distinction has been made between secondary insomnia, which arises due

to another condition, and primary insomnia where a patient has problems sleeping but where there is no underlying medical cause.<sup>4</sup> However, this distinction is now considered less important because:<sup>4,5</sup>

- Primary and secondary insomnia may co-exist
- Insomnia does not always resolve when the secondary cause is treated, e.g. if the patient also has poor sleeping habits
- Management principles are the same regardless of diagnosis; research increasingly shows that non-pharmacological approaches can improve sleep in patients who have co-morbid conditions, such as chronic pain, depression or anxiety.

### Assessing adults who report sleep problems

A number of conditions can be associated with disrupted sleep and difficulty staying awake during the day (Table 1).

Chronic insomnia is a diagnosis of exclusion. It is important that treatable conditions which cause sleep disturbances, such as sleep apnoea, restless leg syndrome or parasomnias, are identified and managed accordingly, which may alleviate the patient's insomnia symptoms. However, most people who have problems sleeping can benefit from non-pharmacological approaches even if other conditions are contributing to their insomnia.

### Ask patients about their specific sleep symptoms

Attention to a patient's specific problems with sleep or waking can help guide diagnosis (Table 2). Accounts from partners or room-mates may provide useful information such as witnessed apnoeas, kicking or other movements during sleep.

### Ask about daytime symptoms

In patients with chronic insomnia, physical and mental fatigue are more common than a tendency to fall asleep during the

day, which may suggest an alternative diagnosis such as narcolepsy or sleep apnoea.<sup>7</sup> If patients have problems staying awake or have significant fatigue, assess factors such as safety while driving or using machinery, or while caring for children or others, as reaction times, concentration and judgement may be affected.

### Assess medicine or substance use, lifestyle and home factors which could contribute to poor sleep

Factors related to a patient's lifestyle, prescribed medicines, caffeine intake or sleeping environment could cause or further exacerbate problems with sleep or fatigue.

Smoking increases sleep latency and causes disturbed sleep later in the night.<sup>10</sup> Alcohol may cause initial sleepiness but can disrupt sleep in the later part of the night.<sup>11</sup>

Consider use of medicines that are associated with sleep disruption and whether it is possible to discontinue, change or alter the timing of the medicine, e.g. SSRIs, opioids, beta-blockers (particularly lipid soluble formulations such as bisoprolol, metoprolol or carvedilol), statins and diuretics.<sup>7</sup>

### Ask about mental health issues and psychological stress

Insomnia is associated with an increased risk of mental health problems, such as depression and anxiety. Conversely, underlying depression or anxiety can contribute to problems sleeping and can often be the first presenting symptom of the mental illness. Research shows that improving sleep in these patients benefits their co-morbid depression or anxiety.<sup>13,14</sup>

### Questionnaires may assist diagnosis

The Auckland Sleep Questionnaire can be used to identify patients who would like help with problems with sleep or depressive symptoms. The Epworth Sleepiness Score can assist in the diagnosis of sleep apnoea.<sup>15</sup>

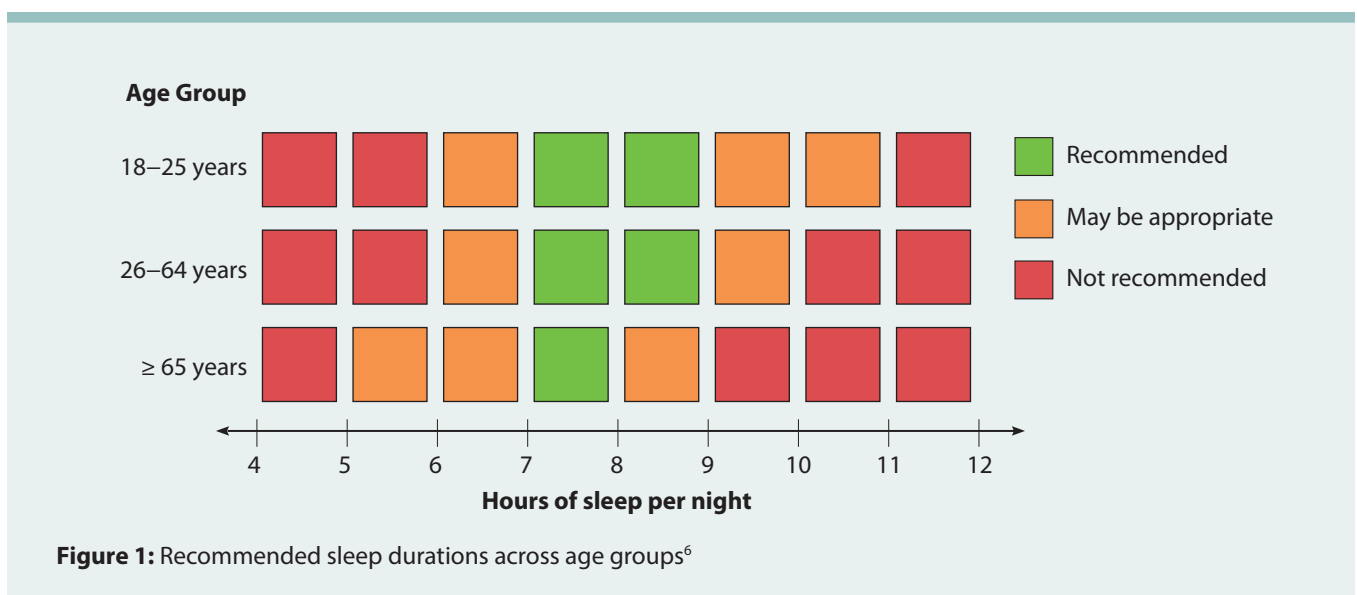



Figure 1: Recommended sleep durations across age groups<sup>6</sup>


**Table 1:** Differential diagnoses which can cause or further exacerbate disrupted sleep, tiredness or non-refreshing sleep.<sup>3,7,8</sup>

<b>Sleep disorders</b>	■ Restless legs syndrome	For further information, see: <a href="http://www.bpac.org.nz/BPJ/2012/december/restlesslegs.aspx">www.bpac.org.nz/BPJ/2012/december/restlesslegs.aspx</a>
	■ Delayed sleep phase disorder	People with this condition have a circadian rhythm where they tend to go to sleep late, e.g. after midnight, and wake late in the morning, which impacts on their social, educational or occupational demands.[9] For further information, see: <a href="http://www.sleep.org.au/documents/item/2683">www.sleep.org.au/documents/item/2683</a>
	■ Advanced sleep phase disorder	People with this condition have a circadian rhythm where they feel excessively tired in the evening, go to bed early, e.g. 8–9 pm, and wake early in the morning. <sup>9</sup> For further information, see: <a href="http://www.sleep.org.au/documents/item/2683">www.sleep.org.au/documents/item/2683</a>
	■ Narcolepsy	For further information, see sidebar in: <a href="http://www.bpac.org.nz/BPJ/2012/november/parasomnias.aspx">www.bpac.org.nz/BPJ/2012/november/parasomnias.aspx</a>
	■ Parasomnias	For further information, see: <a href="http://www.bpac.org.nz/BPJ/2012/November/parasomnias.aspx">www.bpac.org.nz/BPJ/2012/November/parasomnias.aspx</a>
<b>Respiratory problems</b>	■ Sleep apnoea	See: “Risk factors and signs and symptoms associated with obstructive sleep apnoea”. For further information on sleep apnoea, see: <a href="http://www.bpac.org.nz/BPJ/2012/november/apnoea.aspx">www.bpac.org.nz/BPJ/2012/november/apnoea.aspx</a>
<b>Other conditions</b>	<ul style="list-style-type: none"> <li>■ Depression or anxiety</li> <li>■ Chronic pain</li> <li>■ Chronic fatigue syndrome</li> <li>■ Itch (e.g. atopic eczema, chronic urticaria)</li> <li>■ Menopause</li> </ul>	

**Table 2:** Features of disrupted sleep and some associated causes<sup>3,7,8</sup>

In patients with:	Consider:
Difficulty falling asleep when they first go to bed	<ul style="list-style-type: none"> <li>■ The use of stimulants such as caffeine, and medicines with stimulant properties, e.g. pseudoephedrine, methylphenidate</li> <li>■ Restless legs syndrome</li> <li>■ Delayed sleep phase disorder</li> <li>■ Lack of time to unwind, e.g. watching an exciting programme before bedtime</li> <li>■ Anxiety, distress, worry about not getting enough sleep</li> <li>■ Using computers, tablets, phones or reading e-books or books in bed</li> <li>■ Smoking (increases sleep latency and causes disturbed sleep later in the night<sup>10</sup>)</li> <li>■ Working night shifts or alternating shifts</li> </ul>
Frequent arousals during the night (or typical sleeping time), also known as “sleep maintenance insomnia” (see: “Sleep vocabulary”)	<ul style="list-style-type: none"> <li>■ Sleep apnoea</li> <li>■ The need for frequent urination, e.g. due to use of diuretics or prostatism</li> <li>■ Alcohol use (can disrupt sleep in the later part of the night<sup>11</sup>)</li> </ul>
Difficulty getting back to sleep once awake	<ul style="list-style-type: none"> <li>■ Stress, worry and anxiety</li> <li>■ Other health issues: chronic pain, dyspnoea, itch</li> <li>■ Activities such as using a mobile phone or electronic device after waking</li> </ul>
Waking up too early	<ul style="list-style-type: none"> <li>■ Advanced sleep phase disorder</li> <li>■ Too much light or noise</li> <li>■ Stress, worry and anxiety</li> </ul>
Sleeping, but not feeling refreshed or rested when they wake	<ul style="list-style-type: none"> <li>■ Sleep apnoea (see: “Risk factors and signs and symptoms associated with obstructive sleep apnoea”)</li> <li>■ Chronic pain</li> <li>■ Chronic fatigue syndrome</li> <li>■ Going to bed too late or getting up too early by choice</li> </ul>

 The Auckland Sleep Questionnaire (short version) is available at: [www.goodfellowunit.org/sites/default/files/insomnia/ASQshort\\_tool.pdf](http://www.goodfellowunit.org/sites/default/files/insomnia/ASQshort_tool.pdf)

 The Epworth Sleepiness Score is available at: [qxmd.com/calculate/calculator\\_85/epworth-sleepiness-scale](http://qxmd.com/calculate/calculator_85/epworth-sleepiness-scale)

### Investigations or referral may be useful for alternative diagnoses

Most patients with insomnia do not require investigations or referral as the history is usually sufficient to provide a diagnosis. Referral for additional investigations, such as overnight sleep studies, are only likely to be necessary for patients where there is a suspicion of another diagnosis, such as sleep apnoea, limb movement disorders or suspected narcolepsy (see: “Types of sleep study”).<sup>8, 16</sup>

### Management of chronic insomnia

Initial management of insomnia is to address any lifestyle factors influencing sleep and to create healthy sleep habits by encouraging patients to follow sleep hygiene advice (Table 3). This forms part of cognitive behavioural therapy for insomnia (CBTi), which is the recommended first-line treatment.<sup>7, 19</sup> Subsequent consultations can be used to intensify treatment if patients have ongoing problems, such as adding bedtime restriction or additional lifestyle changes.

### CBTi is more effective than medicines in the long term


CBTi consists of behavioural changes to improve sleeping patterns and addressing any unhelpful thoughts or beliefs a patient may have about sleeping. The effects of CBTi will vary, but on average it results in patients getting to sleep approximately 20 minutes earlier, with 20–25 minutes less time awake at night and an improvement in their subjective experience of sleep.<sup>21</sup> These benefits are similar or better than those obtained with pharmacological approaches.<sup>19</sup> A 2012 systematic review concluded that CBTi was at least as effective as medicines in the short-term, and produced more durable results in the long-term.<sup>22</sup> In addition, CBTi is not known to have serious adverse effects.<sup>19</sup>

### Delivering CBTi for insomnia in primary care

CBTi is most successful when delivered over multiple sessions, however, the cost and inconvenience of this may make more in-depth CBTi difficult for many patients. A useful strategy for clinicians in primary care is to focus on behavioural changes such as sleep hygiene and modifications to a patient’s sleeping environment (Table 3); approximately 30% of patients will improve their sleep with sleep hygiene alone.<sup>16</sup> Clinicians can also offer to oversee bedtime restriction (Table 4), which could be done via telephone support, and attempt to identify other cognitive barriers to good sleep.


## Risk factors and signs and symptoms associated with obstructive sleep apnoea<sup>12</sup>

Risk factors	Signs and symptoms
<ul style="list-style-type: none"><li>■ Obesity</li><li>■ Type 2 diabetes</li><li>■ Congestive heart failure</li><li>■ Atrial fibrillation</li><li>■ Treatment refractory hypertension</li><li>■ Nocturnal dysrhythmias</li><li>■ Stroke</li><li>■ Pulmonary hypertension</li></ul>	<ul style="list-style-type: none"><li>■ Witnessed apnoea</li><li>■ Snoring</li><li>■ Gasping/choking at night</li><li>■ Non-refreshing sleep</li><li>■ Frequent waking</li><li>■ Nocturia</li><li>■ Morning headaches</li><li>■ Decreased concentration</li><li>■ Memory loss</li><li>■ Decreased libido</li><li>■ Irritability</li><li>■ Excessive sleepiness not explained by other factors</li></ul>

 For further information on diagnosing and managing patients with sleep apnoea, see: [www.bpac.org.nz/BPJ/2012/november/apnoea.aspx](http://www.bpac.org.nz/BPJ/2012/november/apnoea.aspx)

**Table 3:** Sleep hygiene and lifestyle steps patients can take to improve sleep.<sup>3</sup>

Treatment or technique	Advise patients to:
Keep a routine	<ul style="list-style-type: none"> <li>Go to bed and get up at the same time every day, including weekends or non-work days. Make sure their chosen bedtime is when they feel sleepy.</li> <li>Ideally, avoid napping during the day. If naps are taken, limit them to 20–30 minutes and avoid napping in the late afternoon or evening.</li> </ul>
Avoid substances which could interfere with sleep before bedtime	<ul style="list-style-type: none"> <li>Avoid caffeine and energy drinks for several hours or more before bed (or altogether). Caffeine is found in coffee, black or green tea, energy drinks and some soft drinks, as well as chocolate and guarana.</li> <li>Avoid alcohol near bedtime; alcohol can cause initial drowsiness and reduces sleep latency but disrupts sleep later in the night<sup>11</sup></li> <li>Cut down on smoking as people who smoke have greater sleep disruption.<sup>10</sup> Smoking cessation may be associated with poor sleep during the withdrawal phase.</li> </ul>
Keep the bedroom for sleeping and sex	<ul style="list-style-type: none"> <li>Do not watch TV, use electronic devices or read in bed; the light from screens (including e-readers) may affect sleep by interfering with melatonin production.<sup>16</sup></li> <li>Get out of bed if unable to sleep during the night, and return only when drowsy enough to sleep</li> </ul>
Bedroom environment	<ul style="list-style-type: none"> <li>Keep the bedroom a comfortable temperature and dark. Remove any sources of light such as bright clocks or modems.</li> <li>Restrict bedroom noise or use earplugs</li> <li>Avoid watching the clock if awake at night</li> <li>Consider a separate sleeping environment if partner disturbance causes significant difficulty sleeping</li> <li>Take steps to prevent mosquitoes and other bugs entering the room or clearing them before bed</li> </ul>
Prepare for sleep	<ul style="list-style-type: none"> <li>Avoid exposure to bright light in the later evening and during the night (e.g. keep the lights low before going to bed and do not turn on a bright light to go to the bathroom if you wake in the night), as it may adversely affect sleep<sup>20</sup></li> <li>Engage in relaxing activities, such as listening to music, having a bath or more structured relaxation techniques such as meditation or progressive muscle relaxation<sup>20</sup></li> <li>Write things down to allow the mind to relax, e.g. in the evening create a list of tasks to remember for the next day</li> </ul>
Change daily activities	<ul style="list-style-type: none"> <li>Engage in regular daytime exercise<sup>7</sup></li> <li>Consider mindfulness exercises or meditation. For further information, see: <a href="http://www.calm.auckland.ac.nz">www.calm.auckland.ac.nz</a>; a resource for managing stress and improving mindfulness.<sup>5</sup></li> </ul>

 For a handout version of this table for patients, see: [www.bpac.org.nz/2017/docs/insomnia-patient.pdf](http://www.bpac.org.nz/2017/docs/insomnia-patient.pdf)

## Sleep vocabulary

**Sleep efficiency:** How much time is spent asleep while trying to sleep, usually calculated as:  

$$\text{Total sleep time} \div \text{time spent in bed} \times 100.$$
 E.g.: 5.5 hours asleep  $\div$  8 hours in bed  $\times$  100 = 69%  
 A sleep efficiency of  $\geq 85\%$  is often used as a marker of good sleep.

**Sleep hygiene:** Creating healthy sleep habits, such as regular times for going to bed and waking up, avoiding caffeine at night, watching TV or using electronic devices in bed.

**Sleep latency:** The time taken to first fall asleep


**Sleep maintenance insomnia:** Insomnia due to waking at night and being unable to return to sleep

**Bedtime restriction, also known as sleep restriction:** Creating limits on the time spent in bed, so that time in bed more closely matches time spent asleep. The length of time in bed can be extended until a patient's daytime symptoms are resolved or greatly improved.




**Table 4:** Guiding an adult patient through bedtime restriction.<sup>25</sup>

Steps	Instructions to patients	Example
1. Find out how long the patient is sleeping	Ask patients, or use their sleep diary, to assess how much time they are actually asleep during the night or ask for an approximation	A patient may spend nine hours in bed, but after accounting for the time spent awake at night, only have six hours of sleep
2. Prescribe a new bedtime, wake up time and allowed time in bed	<p>Advise the patient to reduce their length of time in bed by half of the time spent awake at night, i.e. if three hours a night are spent awake, reduce the time in bed by one and half hours.</p> <p>A gradual reduction can be used if the change seems too big, e.g. going to bed 30 minutes later but getting up at the same time.</p> <p>Patients can choose a bedtime and wake up time that works for them. Getting up at the same time as other family members or housemates can make the new routine easier to maintain. Ask patients to set an alarm for the wake up time to develop a routine.</p> <p>Five hours is the recommended minimum time in bed.</p>	<p>Since they spent three hours awake at night, the patient chooses to reduce their time in bed by one and a half hours so in their new sleeping routine they will only spend seven and a half hours in bed per night.</p> <p>They can choose how to do this, e.g. going to bed at 11:00 pm and getting up at 6:30 am, or going to bed at midnight and getting up at 7:30 am</p>
3. Ask patients to stick with it for one to two weeks	An interval of two weeks is often used to allow patients to adjust to a new sleeping pattern before deciding whether further changes are necessary based on any ongoing symptoms. <sup>16,24</sup> Patients can keep a sleep diary to track progress if they wish.	The patient is initially more sleepy, but finds they adapt to the new schedule and after a few days begin sleeping more continuously while in bed.
4. Review progress and adjust timeframe as necessary	<p>Ask patients about their sleep, e.g.</p> <ul style="list-style-type: none"> <li>■ "How long, on average, does it take you to fall asleep?"</li> <li>■ "How long, on average, are you awake overnight after initially falling asleep?"</li> <li>■ "Are you feeling sleepy, sleep deprived, or impaired during the day because of poor sleep?"</li> </ul> <p>If the patient is:</p> <ul style="list-style-type: none"> <li>■ Feeling well: keep the sleeping schedule as is</li> <li>■ Feeling tired: extend the time in bed by 30 minutes</li> <li>■ Still spending a lot of time awake at night: reduce the time in bed by 30 minutes</li> </ul> <p>A goal of <math>\geq 85\%</math> sleep efficiency is often used, with the time in bed reduced or extended depending on the patient's sleep efficiency and how they feel.</p>	At a follow-up appointment or phone call, the patient is sleeping for six and a half out of their allotted seven and a half hours in bed, but still has some daytime fatigue and tiredness. Their time in bed is extended by 30 minutes and steps 3 and 4 are repeated.

 For a handout version of this table for patients, see: [www.bpac.org.nz/2017/docs/insomnia-patient.pdf](http://www.bpac.org.nz/2017/docs/insomnia-patient.pdf)


Patients can be provided with handouts and encouraged to use books, online resources or apps to assist with behavioural and cognitive changes to improve sleep.

 For example, patient information and printouts are available from: [www.healthnavigator.org.nz/healthy-living/sleep/](http://www.healthnavigator.org.nz/healthy-living/sleep/)

A free, New Zealand designed online CBT programme for insomnia is now available from Just a Thought: [www.justathought.co.nz/insomnia](http://www.justathought.co.nz/insomnia)

**If patients wish to keep track of their sleep, advise them to use a sleep diary.** It is not essential to keep a sleep diary, but some patients find it helpful to record when they go to bed, how many times they wake during the night and their total sleep time. Completing a sleep diary for two weeks can also confirm that the patient has an ongoing problem rather than a short-term period of poor sleep, prior to undergoing more intensive management approaches. Be aware that for some patients recording their sleep may lead to an obsessive focus on this and result in further sleep disruption.

The use of fitness trackers or smartphone applications which automatically calculate sleep length is not recommended as these devices do not reliably detect time spent awake during the night and tend to overestimate total sleep time and sleep efficiency (see: "Sleep vocabulary").<sup>23</sup>

 An example of a sleep diary template is available from: [www.goodfellowunit.org/sites/default/files/insomnia/aasm\\_sleep\\_diary.pdf](http://www.goodfellowunit.org/sites/default/files/insomnia/aasm_sleep_diary.pdf)

### Help patients identify any psychological barriers to sleep

Insomnia can lead people to spend long lengths of time awake in bed, becoming frustrated at not being able to fall asleep, or

worrying about whether they will sleep properly when they go to bed. These factors can contribute to a deteriorating cycle where concerns and anxieties over sleep make sleeping well on subsequent nights more difficult. The cognitive aspects of CBTi focus on identifying and challenging any beliefs or attitudes the patient has about sleep that are detrimental to their ability to sleep.

This includes addressing the following:<sup>21</sup>

- Unrealistic expectations about sleep, e.g. thinking that problems or challenges they face would easily disappear after a good night's sleep
- Fear of missing out on sleep. Work with patients to reduce anxieties about how they can cope and manage their day if they do not sleep as well as they would like.
- Overestimating the consequences of poor sleep. Emphasise that many people sleep poorly or lack sleep on occasion, and while the following day may not be pleasant, they get through okay.

Clinicians should also discuss stress associated with work or family, concerns about the future, or alcohol use which may be interfering with sleep.

### Bedtime restriction

Bedtime restriction, also known as sleep restriction, is a behavioural modification which can be added to other sleep hygiene and lifestyle measures. A randomised controlled trial conducted in primary care in New Zealand found that adding bedtime restriction to sleep hygiene advice resulted in improvements in patient ratings of their sleep quality, the severity of their insomnia and their fatigue, after six months (number-needed-to-treat [NNT] of four).<sup>24</sup>

Patients can consider bedtime restriction as a way of resetting their sleep pattern in order to:

## Types of sleep study

**Polysomnography**, also referred to as a level one test, is an overnight sleep study used in the diagnosis of obstructive sleep apnoea and sleep movement disorders. It includes an electroencephalogram, electro-oculogram for tracking eye movements, electromyogram for measuring muscle activation, electrocardiogram, oxygen saturation, measurement of respiratory parameters and is monitored by a technician.<sup>17, 18</sup> A level two test includes the same measures without an attending technician.<sup>18</sup>

**Level three and four tests** use portable equipment which measure oximetry, airflow or respiratory effort, and unlike


level one or two tests can be done at home.<sup>18</sup> These have good sensitivity and specificity for detecting sleep apnoea in patients where there is a high suspicion of having the condition.<sup>18</sup> However, level three and four tests are not useful for diagnosing non-respiratory sleep disorders such as restless leg syndrome; patients with these conditions may need to pay for polysomnography through a private provider.

**A multiple sleep latency test** assesses how easily a patient falls asleep and is used in the diagnosis of narcolepsy.<sup>17</sup> It is conducted during the day, typically following an overnight polysomnography assessment.

1. Firstly, establish a sleeping routine and achieve as much time in bed as possible asleep, i.e. increase their “sleep efficiency”, to reinforce the link between being in bed and sleeping
2. Consolidate the amount of sleep they have into a continuous block, as this may be more restful than the same duration of intermittent sleep
3. Then, extend their sleeping duration to a length that works for them and can provide them with reliable, refreshing sleep in the medium to long term. See the bedtime restriction guide in Table 4.

There are various approaches to bedtime restriction. The most extreme is to limit the time a patient spends in bed to match it as closely as possible to their estimated total sleep time while they have problems with insomnia; i.e. if a patient has been sleeping a total of six hours in interrupted blocks during the night, their time in bed is restricted to six hours. A less extreme approach is usually more acceptable to patients, e.g. initially reducing the time spent awake in bed by half or by more gradual reductions (Table 4). Five hours is the minimum time in bed recommended during a bedtime restriction approach.<sup>24</sup>

#### Further information

 A podcast on managing insomnia in primary care, presented by Professor Bruce Arroll, is available from: <https://www.goodfellowunit.org/podcast/insomnia-bruce-arroll>

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