Insomnia is a subjective complaint of an inability to obtain adequate sleep. It is characterised by difficulty falling asleep, difficulty staying asleep or waking up too early in the morning. It is claimed that some form of chronic insomnia affects more than 20 per cent of us at some time in our lives and pharmacists are commonly asked by sufferers for advice and over-the-counter remedies.

What is insomnia? “Normal sleep” has not been defined and the amount of sleep that an adult needs to function effectively can range from four to nine hours a night. So insomnia needs to be distinguished from short but healthy sleep by looking for adverse effects, such as impaired daytime functioning and irritability.

Insomnia can be indicated if an individual reports two or more of the following:
- Taking more than 30 minutes to fall asleep
- Difficulty in maintaining sleep — waking up for more than 30 minutes during the night and having a sleep efficiency (ratio of time asleep to time spent in bed) of less than 85 per cent
- Having sleep disturbed more than three nights a week
- Significant impairment of daytime functioning (eg, fatigue, mood disturbances) due to lack of sleep

The duration of insomnia is the most important guide to treatment. Currently, insomnia is classified into three types — transient, short-term and chronic:
- Transient insomnia lasts two or three days and is typically due to extraneous factors (eg, jet lag, shift work, noise — see PJ, 12 February, pp187–90)
- Short-term insomnia lasts up to three weeks and is typically due to emotional trauma or physical illness
- Chronic insomnia can be defined as insomnia on most nights, for three weeks or more (common causes are psychiatric disorders, or drug or alcohol misuse)

Underlying causes of insomnia
Insomnia commonly occurs secondary to an underlying psychiatric or medical condition or unsatisfactory environmental conditions (such as noise or uncomfortable temperature). For example, a recent survey of more than 2,000 people by PruHealth revealed that four in 10 people suffer sleepless nights worrying about their work or home life. These potential causes need to be addressed before considering specific treatment for insomnia.

One US study found that in a group of patients complaining of insomnia, 30 per cent had been diagnosed with depression, 20 per cent suffered other mental illness and 19 per cent had an organic medical condition — thus only 31 per cent were found to have primary insomnia (that is insomnia where no cause can be identified).1
Pharmacologically (but drug treatment
Non-pharmacologically (changing life-
Insomnia can be managed in two ways:
Having attended to contributing factors,
Management of insomnia
is reasonable.
and pharmacists can make sure that this belief
sleep he or she needs can also be significant
the patient. A person’s belief about how much
aspect of the insomnia is most troublesome for
period should be studied).
"five P" approach to possible secondary causes of insomnia. Drugs
known to disrupt sleep are listed in Panel 2.
Sleep diaries To help people with sleep dis-
orders understand their own pattern of sleep-
lessness (and to help pharmacists or GPs understand an individual’s symptoms), it is
valuable for a sleep diary to be kept over one
or two weeks. An example of a sleep diary
entry is given in Figure 1. However, the
patient should not become all-consuming with
the fine detail of their sleeping-waking pat-
tern, because this can cause anxiety. In the
example, the patient achieves six hours sleep in
24 hours. For many adults, this is sufficient to
function effectively, so the next question is: is
this patient functioning effectively? The sleep
diary also shows that the patient took more
than 30 minutes to fall asleep, woke up and
stayed awake for more than 30 minutes during
the night and has a sleep efficiency ratio of 65
per cent (although the pattern over a longer
period should be studied).
The next step is usually to identify what
aspect of the insomnia is most troublesome for
the patient. A person’s belief about how much
sleep he or she needs can also be significant
and pharmacists can make sure that this belief
is reasonable.

Management of insomnia
Having attended to contributing factors,
insomnia can be managed in two ways:
Non-pharmacologically (changing life-
style to include good sleep hygiene, relax-
ation techniques and day-time exercise)
Pharmacologically (but drug treatment
should be short-term)

In the example given in Figure 1, the first
step could be to address the pharmacological
factors that may be contributing to the insom-
nia (ie, alcohol and caffeine).

Adopting good sleep hygiene measures
and following a strict routine for sleeping and
getting up can greatly improve sleep. Panel 3
(p245) lists recommendations for good
sleeping habits. Psychotherapy can also be
helpful if anxiety or stress are contributing
factors.

One non–drug strategy sometimes used to
increase the sleep efficiency ratio is to apply a
sleep restriction programme that decreases the
time spent in bed. For the first few nights of
the programme, the number of hours allowed
in bed is equal to the average total sleep time
per night over the previous week. When sleep
efficiency reaches an average of 85 per cent
over several nights, the time spent in bed can
be slowly increased in 15 minute increments.4

Pharmacological management
Before drug use, the risks versus benefits of
treatment for the individual should be
weighed up. Drug treatment of insomnia
should be reserved solely for transient and
short-term cases. For transient insomnia only
one or two doses should be given. For short-
term insomnia, treatment should not exceed
three weeks (ideally only one week) and
intermittent dosing is desirable. Hypnotics
should not be prescribed for chronic use. The
principles of pharmacotherapy for insomnia
are listed in Panel 4 (p245).

Prescription-only medicine options
There is no ideal hypnotic on the market but
according to guidance from the National
Institute for Clinical Excellence, an effica-
cious hypnotic with the lowest cost should be
prescribed (ie, a benzodiazepine). The newer

Panel 2: Drugs that can
disrupt sleep

- Some anticonvulsants (eg, phenytoin,
lamotrigine)
- Beta-blockers (eg, acebutolol, atenolol,
metoprolol, oxprenolol, propranolol, sotalol)
- Antiparkinson drugs (eg, amantadine,
levodopa)
- Calcium channel blockers (eg, verapamil,
diltiazem)
- Selective serotonin reuptake inhibitors (eg,
citalopram, fluoxetine, fluvoxamine,
paroxetine, sertraline)
- Monoamine oxidase inhibitors (eg,
phenelzine, tranylcypromine, isocarboxazid)
- Decongestants (eg, pseudoephedrine,
phenylephrine)
- Corticosteroids (eg, cortisone,
dexamethasone, prednisolone, triamcinolone)
- Non steroidal anti-inflammatory drugs (eg,
indometacin, diclofenac, naproxen, sulindac,
diflunisal)
- Antipsychotics (eg, chlorpromazine, sulpiride)
- Theophylline
- Levothyroxine (in excessive doses)
- Clofibrate
- Sulfasalazine

Drug treatment of insomnia
should be reserved solely
for transient and short-term
cases

Figure 1: Example of a sleep diary entry

<table>
<thead>
<tr>
<th>Sleep pattern</th>
<th>Day 1</th>
<th>Day 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of going to bed</td>
<td>10.30pm</td>
<td>midnight</td>
</tr>
<tr>
<td>Time of falling asleep</td>
<td>2</td>
<td>Not known</td>
</tr>
<tr>
<td>Number of awakenings</td>
<td>1 hour</td>
<td>6.30am</td>
</tr>
<tr>
<td>Reason for awakening</td>
<td>7.00am</td>
<td>30 mins</td>
</tr>
<tr>
<td>Time spent awake in the night</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Time of waking in the morning</td>
<td>Naprofen (headache)</td>
<td></td>
</tr>
<tr>
<td>Time spent napping in the daytime</td>
<td>2xglasses wine</td>
<td>4coffee</td>
</tr>
<tr>
<td>Exercise during the day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medication taken</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caffeine, nicotine and alcohol intake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Significant events</td>
<td>Dental appointment</td>
<td></td>
</tr>
</tbody>
</table>
Panel 3: Recommendations for good sleep hygiene

DO:
- Go to bed at the same time each day
- Get up at the same time each day (set the alarm and get up, even if you did not fall asleep until late)
- Exercise daily but, preferably, not within four hours of going to bed
- Go outside for at least half an hour each day (especially late afternoon) — exposure to natural light helps restore circadian rhythm
- Keep your bedroom dark, quiet (use earplugs if necessary) and at a comfortable temperature
- Use bed only for rest, sleep or intimacy
- Get into a regular bedtime routine (eg, take a warm bath, read, have a warm milk-based drink — milk contains tryptophan, a precursor to serotonin, which aids sleep — and then go to bed)
- Keep feet warm in bed — wear socks if necessary

DO NOT:
- Exercise or take part in stimulating mental activity just before bedtime
- Take stimulants (tea, coffee, chocolate) after late afternoon
- Smoke — nicotine withdrawal can wake you in the small hours
- Drink alcohol — although it helps you to go to sleep, you are more likely to wake in the night or early morning
- Watch television in bed
- Eat a large (especially fatty) late evening meal — this can make you feel drowsy but its digestion can keep you awake. An empty stomach, on the other hand, can make you toss and turn. A light carbohydrate-rich snack in the evening is best.
- Take daytime or evening naps — naps count towards your total 24-hour need for sleep
- Worry about sleeping (or not sleeping) — this increases anxiety and stress
- Lie awake — if you are awake for more than 30 minutes, get up, go into another room (preferably dimly lit), do something not mentally stimulating or physical and then go back to bed when you feel tired

Benzodiazepines All benzodiazepines have both anxiolytic and hypnotic effects and their use is determined by their duration of action (half-life). They enhance the effects of gamma-aminobutyric acid (GABA) by binding to their own benzodiazepine receptor sites on the GABA receptor. This boosts GABA’s inhibitory action and reduces the output of excitatory neurotransmitters such as noradrenaline, serotonin and dopamine. For insomnia, the shorter-acting benzodiazepines (eg, loprazolam, lormetazepam and temazepam) are recommended because those with a longer half-life (eg, nitrazepam, flunitrazepam and flurazepam) are associated with increased hangover-like effects.

The use of benzodiazepines to treat insomnia has been controversial for years and although use has declined, they are still prescribed, sometimes for long periods. In the year 2002–03, in England, 12.7 million prescriptions for benzodiazepines were written by GPs and 30 per cent of these were for 56 tablets. Pharmacists can work with GPs, to encourage patients to stop taking benzodiazepines and support them through tailored withdrawal programmes. Advice from the Committee on Safety of Medicines is that benzodiazepines should only be used to treat insomnia when the condition is “severe, disabling or subjecting the individual to extreme stress”.

Physical and psychological dependence, tolerance to and difficulty withdrawing from a benzodiazepine, can occur after less than 14 days’ continuous use. Withdrawal symptoms can manifest themselves anytime from a few hours to three weeks after stopping a benzodiazepine, depending on the drug’s half-life.

Z drugs Z drugs (zopiclone, zolpidem and zalepon) are structurally unrelated to the benzodiazepines and to each other. However, their effects are similar. Although originally claimed to produce fewer side effects and to have a decreased tendency for tolerance and dependence, these claims have not been substantiated. Zopiclone has similar effects to the benzodiazepines and also has the potential to cause hangover and impaired psychomotor performance. Tolerance, dependence and misuse have been reported. Zolpidem has similar effects but is shorter acting than zopiclone and...
Valerian is an option for OTC management of insomnia after sleep hygiene measures have been initiated.

Hypnotic withdrawal The National Service Framework for Mental Health states that, where possible, chronic users of hypnotics should be encouraged and helped to stop taking them. Evidence suggests that 40 per cent of chronic users can withdraw without difficulty, 40 per cent can withdraw with difficulty and 20 per cent do not want to withdraw.

OTC options There are a number of OTC options available to the pharmacist treating a patient with insomnia. Little evidence as to efficacy exists for the majority of these preparations. Only those backed up with some clinical research are mentioned here.

Valerian is an option for OTC management of insomnia after sleep hygiene measures have been initiated. It should not be used alongside conventional drug treatment for insomnia or by pregnant or breast-feeding women.

Over-the-counter sedative antihistamines The sedative antihistamine preparations available to the public contain either diphenhydramine (Dreemore, Medinex, Nightcalm and Nytol) or promethazine (Phenergan Nightime and Sominex). These preparations tend to cause hangover-like effects and should be avoided in the elderly who are more prone to these side effects.

Diphenhydramine has been shown to reduce symptoms of insomnia in the majority of patients taking it. It causes less daytime sedation and has a faster onset of action than promethazine. Neither is known to cause dependence, but diphenhydramine has been reported as the OTC medicine most prone to abuse. Manufacturers recommend a 14-day limit for non-prescription use of these products.

Melatonin There are reports that melatonin may have some application in treating insomnia, although evidence is lacking and it is unlicensed in the UK.