

INSOMNIA MANAGEMENT KIT

Sleep: Facts and hygiene

The Insomnia Management Kit is intended to be used in conjunction with your GP. To access further instructions on the use of this fact sheet and other components of the Insomnia Management Kit, go to 'Insomnia management' on the SA Health website: www.sahealth.sa.gov.au.

Sleep

Sleep is a natural process that allows the body and brain to rest and recover. For most people the sleep process satisfies their sleep need and it causes few problems. However, factors such as lifestyle commitments, stressful events, worries and many physical conditions can alter the balance. This may lead to increased anxiety and stress that can cause further difficulty in gaining satisfactory sleep.

To improve the situation it is useful to understand what is affecting the sleep process. This factsheet provides information on the real nature of normal sleep and its purpose, and describes day and night routines that promote good sleep habits.

Sleep is not one long period of unconsciousness but a series of cycles each lasting approximately 90 minutes.

Each cycle consists of REM and Non-REM sleep states. The Non-REM state is also divided into three stages.

Non-REM	Stage 1 (N1) light sleep
	Stage 2 (N2) moderate sleep
	Stage 3 (N3) deep sleep or slow wave sleep
REM	(rapid eye movement or dreaming sleep)

Understanding the normal sleep pattern

There are three Sleep Charts (on the last page) showing normal sleep patterns. The first is the new NREM classification Sleep Chart. The second is for a healthy younger adult and the third is for a healthy older adult.

The differences between the second and third charts show that:

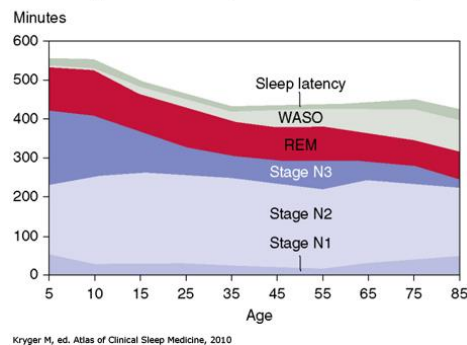
- > the younger adult has more total sleep including more N3 sleep and wakes only occasionally and briefly.
- > the older adult has 1-2 hours less total sleep and wakes more frequently and for longer.

This is a normal and acceptable pattern for an older adult.

When viewing the charts consider the following facts:

- > sleep needs vary from person to person
- > it is normal for adults to wake several times a night, if only for a minute or so
- > ageing reduces sleep need and alters the sleep pattern.

Changes in Sleep over a Life Span



Progressive stages of the sleep cycle

N1: Light sleep commences and usually extends for only a short period (5-10 minutes).

The body temperature begins to drop and muscles become relaxed. You are easy to wake during N1 and if this occurs you may not realise you have been asleep.

N2: Moderate sleep (approximately 30-45 minutes).

You are still easy to wake during N2. If woken from this sleep you are likely to feel as if you have already been awake, since our minds are active during sleep.

N3: Deep sleep or slow wave sleep

In these stages your breathing and muscles become more relaxed, your heart rate slows and sensitivity to sound and light diminish. You will be more difficult to wake during N3. Deep sleep satisfies our sleep needs the most effectively. We are unaware of deep sleep as we rarely wake unless interrupted by bright light or noise.

We may get 10-40 minutes of deep sleep in the first cycle of sleep, depending on our age.

About 80 minutes after falling asleep our sleep starts becoming lighter progressing into N3, then N2 and then into the first period of REM sleep.

REM (rapid eye movement)

This is a different state from Non-REM (N1 to N3). In REM sleep our mind is very active and usually experiences vivid dreams, however we will not remember these dreams unless we wake from REM sleep.

REM periods are short at the beginning of the sleep period but may be as long as 30-40 minutes before finally waking in the morning.

This completes the first 90 minute sleep cycle. The rest of the sleep period repeats three or four more of these sleep cycles.

Facts about sleep

How much sleep do we need?

Sleep to some extent adapts to an individual's circumstances and needs.

Sleep needs vary from person to person. The average amount of sleep for an adult is about seven to eight hours, but sleep needs can range from five to ten hours per night.

The need for sleep declines by about an hour and a half in people aged from their twenties to their seventies.

Judgement on whether we are getting enough sleep depends on how well we feel and function during the day. If we do not feel sleepy and fatigued, then our sleep is adequate, even if it is not the average length of time.

Most of the restorative effects of a night's sleep come during the first three to five hours when most deep sleep occurs. Some researchers have called this core sleep. Research shows it is possible to function normally during the day if you obtain this type of sleep. Research also shows that insomniacs typically obtain their core sleep every night despite believing they have obtained much less sleep.

No-one functions at peak levels everyday and within a day, we all have variations in performance and mood. For example, it usually takes 20-30 minutes after waking in the morning to feel reasonably alert. It is also normal to feel drowsy after lunch. Even after a sleepless night, people normally cope quite well even while feeling tired. A good night's sleep usually puts us right back on track.

Awakenings

Adults will usually wake up a few times during the night. This often occurs during the light sleep stages spaced across the night. Each awakening can be as short as a few minutes and often is not remembered the next morning.

When an insomnia sufferer wakes up in one of these normal awakenings, their fear and anxiety of being unable to return to sleep prolongs the waking period and causes further insomnia.

Our perception of sleep

The number of brief awakenings can also affect the way we view the quality of our sleep.

Sometimes when woken from light sleep people can feel they were already awake and may have been awake for some time. This is because the thought processes present during light sleep are similar to those we have if awake and relaxed in bed with our eyes closed.

Recent research has found that people with insomnia are more likely to misjudge an awakening from sleep as having already been awake.

Therefore, it is possible to wake up from light sleep at the end of a 90 minute sleep cycle and not realise you have been asleep at all. If this happens at the beginning of the sleep period you may think you are taking a long time to fall asleep and feel frustrated. If it happens between two brief awakenings in the middle of sleep, you may feel anxious that you have lost a lot of sleep during the night. It is common to overestimate how long you have been awake and thus underestimate how much sleep you obtained. This is particularly true when more awakenings normally occur as we get older.

Without a sleep recording, one clue you can use to more accurately guess if you have been asleep or awake is to test your memory as to what you can remember thinking about. Since memory doesn't occur when asleep, if you just woke up from sleep you will only have short fragments of memory of the mental activity occurring just before you awoke. If you had been awake for a long time you will be able to recall many detailed thoughts and worries.

The effects of ageing on sleep

People usually begin sleeping less as they enter middle age. The number of awakenings through the night increases as sleep becomes lighter with less deep sleep. Lighter sleep with more awakenings is normal in older adults and has no negative effects on daytime feelings and functioning.

In retirement people sometimes choose to spend more time in bed. The result of this will be to have more time awake in bed. If the time in bed is comfortable, relaxed and free of worry or frustration then it is okay to spend that time in bed. However, if these periods begin to cause concern, they can lengthen and insomnia can develop.

Consequences of losing sleep

Most people assume that loss of sleep causes their mental and physical abilities to decline. Although sleep loss can temporarily reduce our performance and feelings, our abilities are unchanged. Research on sleep deprivation shows that the body has a remarkable tolerance for sleep loss and can restore our feelings and best performance following recovery sleep.

Reduction of sleep results in:

- > fatigue, exhaustion, lack of energy
- > daytime drowsiness mainly during mundane activities
- > tendency to become irritable
- > impaired memory and concentration.

Sleep can tolerate being denied or reduced over several nights. Sleep pressure will inevitably build up and increase the chances and ease of falling asleep. It is this increased sleep pressure that interferes with our motivation to do anything other than sleep and interferes with tasks we try to complete in competition with this sleep pressure.

Making up lost sleep

Sleep following sleep loss is deeper and more efficient than usual. This means that it is not necessary to make up lost sleep on an hour-for-hour basis. It does not take a long time to recover from one or many nights of poor sleep. For example, the complete loss of sleep over one night (7-8 hours) can be recovered with an extra three hours the following night. A two hour reduction of sleep on 14 consecutive nights (28 hours total) can be recovered by an extra three hours on the first recovery night and extra two hours on a second recovery night.

Napping

Research suggests our bodies have an inclination for an afternoon nap. If you like taking a daytime nap then it is important to remember that the amount of sleep you need at night will be less, especially if it is a long nap (greater than 30 minutes).

A brief afternoon nap of 10-15 minutes is unlikely to interfere with the following night's sleep and can be as restorative as a longer nap.

If a person finds brief naps ('power naps') to be useful in reducing daytime tiredness, it can also reduce anxiety about night time awakenings since the nap can make up for the sleep loss.

How to promote a good sleep routine

Now that you have a clearer understanding of the normal sleep pattern, we can look at ways of promoting a good sleep pattern. Having a healthy day/night routine will support a regular sleep pattern.

During the day

- > Establish regular daily routines for meals, taking medication, performing chores and participating in activities.
- > Spend time outdoors in the morning particularly if you tend to be a late riser. Regular exposure to bright light helps to synchronise our body clock.
- > Avoid daytime naps (unless naps are brief). Without long daytime naps you will feel more sleepy at bedtime.
- > Daily exercise up to early evening tends to make sleep deeper and reduce anxiety.

During the evening

- > Avoid caffeine for at least five hours before bedtime (eg coffee, tea, cola or cocoa) as it interferes with getting to sleep and staying asleep. If you regularly drink more than two cups of coffee a day, reduce your caffeine intake. Start by eliminating your last caffeine drink of the day.
- > Avoid a heavy meal too close to bedtime. (If you are hungry a light snack may help you sleep).
- > Relax and prepare for sleep.
- > Put the day to rest. If necessary write a list of what is on your mind and decide to think about it tomorrow.
- > If you have trouble 'switching off' at night, learn a relaxation routine. Practice the routine before you use it as a sleep aid.
- > Wind down before bedtime, with an hour of quiet activity (eg watching TV, reading or listening to music) in dim light conditions.
- > Avoid smoking near bedtime and if you wake up during the night.
- > Avoid alcohol near bedtime – it can cause awakenings later in the night.
- > Make sure your bed and bedroom are comfortable – not too cold or warm and reduce light.
- > Where possible, reduce noises that are likely to keep you awake. If it is not possible to control the noise (eg barking dog) try to maintain a calm attitude and use a relaxation technique.

At bedtime

- > Develop a bedtime routine (warm bath, light bedtime snack, brushing hair). Your body will recognise that you are preparing for sleep. Carry out this routine each night.
- > Go to bed only when you feel sleepy or drowsy and not before.

In the morning

- > Get up at the same time every morning.
- > Sleep inertia will tend to make you feel drowsy and lethargic for a while after getting up. This is normal. Don't judge the quality of your sleep at this time, judge it at the end of the day.

Sleep difficulties

Possible underlying causes

Underlying medical condition and medications (causing Secondary Insomnia)

The most appropriate management strategy, when insomnia is the result of another medical problem, involves treatment of the condition. For example, insomnia symptoms can be produced by sleep apnoea, restless legs syndrome, cardiovascular disease, diabetes, depression, anxiety attacks, etc. The underlying medical condition should certainly be treated. However, it is often helpful to treat the associated insomnia as well. For example, insomnia is often associated with depression and can be a precursor of depression. Research has shown that the treatment of insomnia can reduce depression.

Pain (eg arthritic or back pain) is an obvious and common disruptor of sleep and, if managed appropriately during the night, can improve sleep. It is recommended you speak to your doctor regarding pain management.

Certain medications can disrupt sleep. Check for this possibility with your doctor.

Sleep apnoea

Sleep apnoea results from a breathing obstruction during sleep. On inspiration, an obstruction of the upper airways occurs presumably because of relaxed pharyngeal muscles. The obstruction continues for 20-60 seconds until the blood oxygen drops and carbon dioxide elevates to the point when brain arousal mechanisms are activated. Muscle tension returns to air passages, breathing resumes, blood gases return to normal and the person returns to sleep. This process may occur hundreds of times a night. Obstructive sleep apnoea usually reduces deep sleep and REM sleep and produces excessive daytime sleepiness.

Sufferers of this condition are usually unaware of the many arousals and the disrupted sleep. The sleep diary will reveal a rather long sleep time and frequent daytime naps. Often, morning headaches and hypertension are present. It is more common in overweight middle aged men who are heavy snorers, but can occur in anyone, even children. If you suspect you have sleep apnoea a sleep evaluation is necessary and referral to a sleep clinic is recommended.

Restless legs syndrome and/or periodic limb movements

Periodic limb movements (brief skeletal muscle contraction, usually in the lower legs, lasting only a few seconds), are often accompanied by restless legs syndrome (experiences of discomfort described as crawling, tickling, itching sensation in the legs). Restless legs syndrome can prevent you from falling asleep and returning to sleep during the night.

Periodic limb movements may be infrequent or occur several thousand times during a typical sleep period. This can cause brief arousal and can disrupt sleep without the person being aware. Periodic limb movements are experienced by around 20 percent of chronic insomniacs when investigated in the sleep laboratory. This condition can be managed by trained sleep physicians in sleep clinics.

Narcolepsy

Narcolepsy occurs in approximately 25-50 per 100,000 of the general population. Narcolepsy is a disorder of excessive sleepiness that is associated with cataplexy (a loss of muscle tone triggered by strong emotions).

Onset of this condition usually occurs between early adolescence and early twenties and is a lifetime condition.

The person experiences attacks of daytime sleep that are sudden and overwhelming. These attacks can last from a few seconds up to an hour, on average lasting about 5-10 minutes. Although narcoleptics may sleep eight hours or more a night, many feel drowsy throughout the day and often report a disturbed night sleep.

Narcoleptics who are unaware of their disorder often believe their daytime sleepiness is due to insomnia. However, daytime fatigue, not sleepiness, is most associated with chronic insomnia. The daytime attacks of sleep often include dreams and sleep paralysis on waking. The attacks of sleep usually occur when the individual is in a relaxing quiet situation, and for this reason can become more apparent during retirement. Speak to your doctor if you suspect you may have narcolepsy.

Insufficient sleep

This is the most common cause of excessive sleepiness during the day and typically follows episodes of sleep restriction that have occurred over weeks or months. This problem is commonly seen in adolescents, but can occur at any age and is associated with too many daytime and nocturnal commitments and activities. Give yourself at least an extra hour of sleep per night over at least a week to see if your daytime sleepiness dissipates.

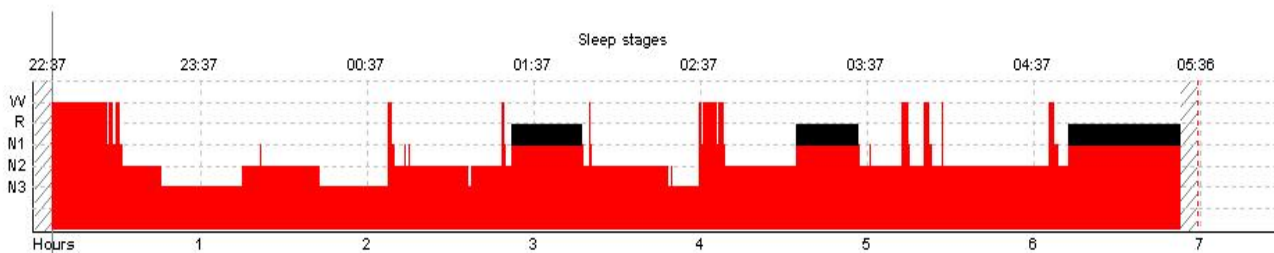
Sleep patterns

The example sleep charts (on the next page) show the different sleep patterns commonly experienced by the younger and older adult.

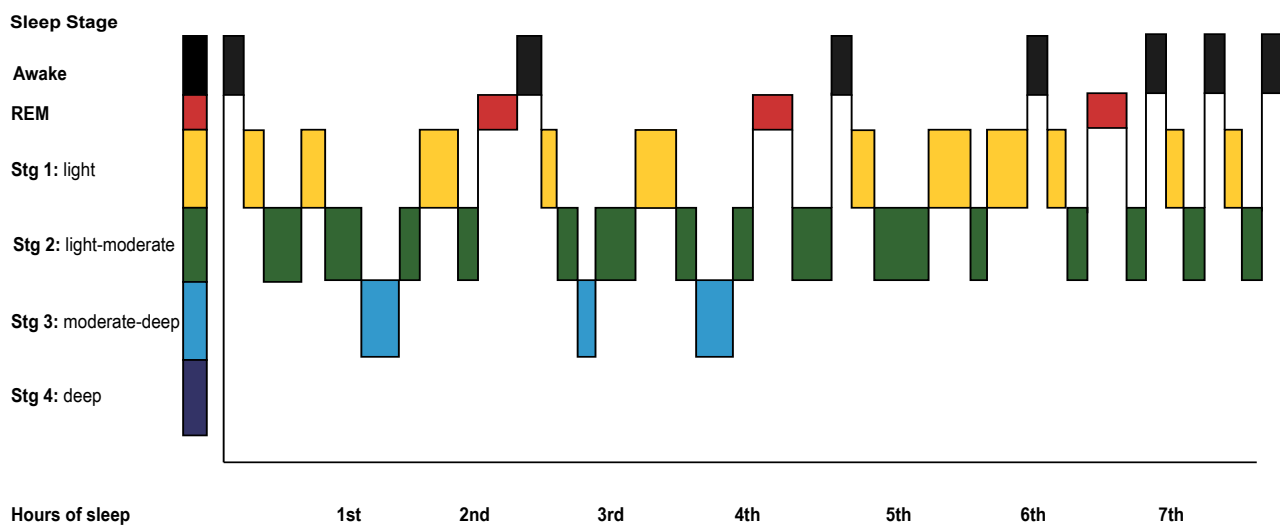
The older adult spends a greater portion of the night in N1 and N2 sleep (light to light-moderate sleep).

The younger adult gains more N2 sleep (light to moderate) and has more N3 sleep (deep).

A typical sleep pattern for a healthy young adult



A typical sleep pattern for a healthy older adult



Please note:

NREM Stg 3 and Stg 4 are now known as N3

NREM Stg 1: N1

NREM Stg 2: N2

For more information

Refer to 'Insomnia management' and 'Sleep problems' on the SA Health website: www.sahealth.sa.gov.au.

Stages and architecture of normal sleep. Uptodate. Dr Kirsch. March 2017

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