

Shiftwork - health effects

The sleep-wake cycle appears to have evolved for humans to be awake during the day and to sleep for approximately eight hours at night. There is a small part of the brain called the 'circadian clock', which monitors the amount of light you see, moment by moment. In the evening, when the light starts to wane, your clock notices and prompts a flood of a brain chemical called melatonin, which gives the body the signal to fall asleep. Overnight, melatonin levels remain high. They drop at daybreak and remain low during the day.

During the day, other chemicals (neurotransmitters) – such as noradrenaline and acetylcholine – increase in the body and keep you awake. This system keeps you synchronised through the day-night cycle. Many other functions of the body – including temperature, digestion, heart rate and blood pressure – fluctuate through the day, tuned by the activity of the circadian clock.

This changing rate of activity over each 24-hour period is known as the circadian rhythm. A person who works nights, or starts their working day before 6am, is running counter to their circadian rhythm. This may put them at risk of health problems.

Research findings are beginning to show that shiftwork can be hazardous to your health.

Your metabolism at night

An important body function, which follows the circadian rhythm, is the internal body temperature. This temperature increases through the day. It reaches the lower level in the early hours of the morning and reaches the maximum level late in the afternoon.

The tendency to fall asleep and stay asleep occurs during the decreasing phase of the temperature circadian rhythm (between midnight and 4am). As the body temperature rises, it is more difficult to stay asleep. This is one of the reasons why night workers who try to fall asleep at 8am find it very difficult and also find it difficult to remain asleep through the day.

Increased risks

A person working night shift, which causes disruption to the circadian rhythm, is at greater risk of various disorders, accidents and misfortunes, including:

- Increased likelihood of obesity
- Increased risk of cardiovascular disease
- Higher risk of mood changes
- Increased risk of gastrointestinal problems, such as constipation and stomach discomfort
- Higher risk of motor vehicle accidents and work-related accidents
- Increased likelihood of family problems, including divorce
- Probable increased risk of cancer, especially breast cancer.

In addition:

- Sleep deprivation caused by shiftwork may increase the risk of epilepsy in pre-disposed people.
- Shiftworkers with diabetes can experience difficulties in controlling their blood sugar levels.

Sleep problems

Shiftworkers get, on average, two to three hours less sleep than other workers. They often sleep though the day in two split periods, a few hours in the morning and then an hour or so before going to work at night. Night workers can find it difficult sleeping during the day (particularly in Australia). It's difficult to keep the sleep environment dark, free of noise and relatively cool.

Rotating shifts

The best rotating shift pattern is still undecided. For the most people, rotating forward through day, afternoon and night shift is better than backwards (night, afternoon then day). The frequency of rotation is also controversial. Some people advocate prolonged rotation, such as two to three weeks. Others advocate short rotations of two to three days. Both have advantages and disadvantages.

It takes about 10 days for the body to adjust to night shift work. However, it is common for night shift workers to revert to daytime routines for a day or two during days off, which tends to make the circadian rhythm unstable.

The amount of hours (8-hour versus 12-hour shifts) is also controversial. It can be said that 12-hour shifts stretch the body's tolerance as far as possible. It's very important that no overtime should be allowed during a rotation of 12-hour shifts. Another risk to sleep is when a worker on seven 12-hour shifts a fortnight uses their free time for another, almost full-time job.

A proportion of shiftworkers may have marked daytime sleepiness. In certain circumstances, they may be helped by careful use of stimulant therapy, on the advice of their doctor.

Where to get help

- Your doctor
- WorkSafe Victoria Tel. (03) 9641 1444 or 1800 136 089
- WorkSafe Victoria Emergency Response Line Tel. 13 23 60 – to report **serious workplace emergencies**, seven days, 24 hours

Things to remember

- The body is synchronised to night and day by a small part of the brain known as the circadian clock.
- Body functions such as heart rate, blood pressure, temperature, digestion and brain activity, fluctuate over each 24-hour period, under the guidance of the circadian clock.
- A shiftworker is at increased risk of health problems, such as digestive upsets, obesity and heart disease, and accidents due to excessive daytime sleepiness.

This page has been produced in consultation with, and approved by:

Newcastle Sleep Disorders Centre

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