

SHIFTWORK

HOW TO DEVISE AN EFFECTIVE ROSTER



GUIDE

WORKCOVER NSW HEALTH AND SAFETY GUIDE

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Hazards of shiftwork

Changes in the workplace such as job sharing, part-time work and more flexible work hours are indicators that shiftwork is on the increase. Industries such as airlines, hospitals and railways have long had round-the-clock operations and extended shopping hours are fast becoming commonplace. Research shows, however, that there are significant health and safety issues associated with shiftwork.

The body clock

Human beings are day oriented. We are designed to work in the daytime and sleep at night. The internal body clock (circadian clock) is responsible for this. It causes a regular variation through 24 hours in different body and mental functions. This variation is referred to as the circadian rhythm. Body temperature, heart rate, blood pressure, respiration rate and adrenaline production, for example, normally rise during the day and fall at night. It is these changes which affect behaviour, alertness, reaction time and mental capacity of all people by varying degrees.

Nightshift

Most people find it is difficult to adapt to night work. If people work by night and rest by day, their circadian rhythms are disturbed but they never completely change to the new pattern of work and sleep. A partial adjustment may occur over successive shifts but normal circadian rhythms are usually quickly re-established on days off. As well, some people are early risers who work best early in the day and slow down in the evening. Others are late to rise, slow to get going and often at their peak in the evening. Ten to 20 per cent of people who are early risers find it hardest to adjust to working at night.

Sleep cycles

Sleep disruption is the most common problem for shiftworkers. A sleep cycle is usually about two hours shorter after working a night shift. A decrease in sleep length also affects those who start work before 7 am. Physiologically, in the early morning hours, the body is preparing for activity which is linked to an increase in alertness. People get their longest sleep when they go to sleep before midnight and their shortest when sleep begins in the morning.

On-the-job fatigue

The level of tiredness increases with the number of hours worked and is more pronounced during the second half of a shift, especially between two and six in the morning. Another common problem experienced with sleep loss is a high level of sleepiness when awake. Many shiftworkers actually fall asleep briefly while working. These 'microsleeps' may last from seconds to three minutes and some shiftworkers may not be aware that they have nodded off. Increased feelings of fatigue and sleepiness at work may make it difficult for employees to maintain concentration. This has implications for workplace safety. Judgement is impaired and response time slowed. A recent Australian study which compared the effects of alcohol and sleep loss on work performance showed that shiftworkers who have had one sleepless night can be as great a workplace hazard as someone who has been drinking alcohol.

Health effects

Shiftworkers and former shiftworkers show more signs of ill health than people on fixed day work. Health problems may appear after a short stint of shiftwork, or may be only apparent after some years. Common health problems often associated with shiftwork include:

Gastro-intestinal complaints: Body rhythms for digestive function are regulated for food to be eaten during the day. The digestive system is relatively inactive at night, causing problems with some foods which are tolerated well in the daytime. Digestive complaints are often aggravated by a higher intake of caffeinated drinks consumed at night to keep awake.

Depression and other psychiatric disturbances: These may be triggered or worsened by irregular sleep patterns and cumulative fatigue.

Pregnancy: Risks of shiftwork should be assessed.

Age: Shiftworkers may become intolerant of their work schedules when they reach their 40s and 50s, despite having done shiftwork successfully for many years. Older employees may also find it more difficult to switch from eight-hour to 12-hour shifts.

Medicines for medical conditions: The effectiveness of certain medicines follows the body clock so reversal of the sleep/wake pattern can interfere with the treatment of some diseases.

Managing shiftwork

Adapting to shiftwork is easy for some people while others never adjust. Exercise and a well-balanced diet will probably help any adjustment. Family understanding and cooperation can also reduce stress that seems to go with a shiftworker's lifestyle. If you do find it difficult to adjust to shiftwork, you should discuss the problem with your supervisor or manager, occupational health nurse or doctor or counsellor or employee advisory service. They may be able to help you find a solution.

Devising an effective roster

More than a dozen health effects of shiftwork have now been identified and it is essential that rosters are designed so as to take account of factors such as adequate rest periods, circadian rhythms and social needs. When planning a roster, safety factors should include:

- a work cycle that is no more than six 8-hour shifts or four 12-hour shifts. Avoid work cycles of more than seven continuous days.
- move with the clock. Studies show it's easier and safer to go from the morning shift to the afternoon shift to an evening shift and to repeat the same cycle. The effects of shiftwork are similar to jet lag and it is easier for people to delay sleep than to go to bed earlier.
- limit the number of nights worked in succession for safety reasons. Rotating rosters with shift changes every two or three days is preferable to seven-day rotating rosters or fixed shifts.
- keep nightwork to a minimum. Three 8-hour or two 12-hour night shifts are the recommended maximum number of consecutive shifts which should be worked. Rostered days off should not be in the middle of a night shift sequence.
- allow for two free weekends in four.
- evaluate the length of shift according to workload. Avoid long shifts when there is excessive heat, cold, noise, vibration, manual handling or exposure to hazardous substances. Occupational exposure levels are calculated as an average over an eight-hour day. When working longer shifts, exposure levels will need to be reassessed.
- try to avoid overtime before or after a night shift, a 12-hour or double shift or when there is heavy mental and physical strain involved.
- work practices for night shiftworkers should be reviewed to incorporate as many safety checks as possible to overcome the tendency for reactions to slow down. This helps prevent accidents which could have far reaching effects on the workplace or the public.
- schedule rest breaks during night shift to help workers maintain alertness. Try to have tasks involving interaction with other team members and plenty of movement to help them stay alert. Sedentary monotonous work performed in a comfortable and quiet environment is not conducive to staying awake.
- try not to start day shifts before 6 am and allow some flexibility in start times if the work allows it. Try to coordinate start times with public transport timetables.
- have minimum of 11 hours between shifts, preferably 12.
- make sure there is adequate changeover time allowed between each shift to allow briefing between workers. Systems for transfer of information and communication should be established and maintained.
- try to give workers at least one week's notice of their roster, longer if possible.
- Avoid rostering someone to work alone at night. If this is impossible, those working alone should have a way of communicating with colleagues to allow social contact. Provide them with access to help, should they be injured or threatened. As well, outside areas, walkways and workplace carparks should be clearly signposted, well lit and secure. Appropriate security arrangements should be made for shiftworkers, particularly when working after dark or over weekends.

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