

# Shift work and ill-health

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A growing number of workers in Australia are required to work shifts, particularly night and rotating shifts, despite mounting evidence of the safety dangers and risks to health involved. Nearly one million workers are affected today—one in seven—an increase of some 100,000 over the past six years.

According to the Australian Bureau of Statistics report, *Working Arrangements 1997*, many are working the most debilitating, unhealthy and dangerous shifts. Nearly half, 427,500, are on rotating shifts, that is morning, afternoon and night in sequence (up from 359,800 in 1993). Another 173,800 are on regular night or "graveyard" shifts between 5pm and 6am (up from 142,300 in 1993). Another 173,400 are on irregular shifts (up from 142,300).

They include 49,500 teenagers (15-19 years) and 138,700 young adults (20-24 years). Shift work is most concentrated in the private sector, with 702,800 shift workers, compared to 279,100 in the public sector. Part-timers are more likely to be affected—17 percent of part-timers are on shifts, compared to 14 percent of full-time workers.

Shift work is concentrated in the most dangerous areas of employment. Mining has the highest rate—43 percent—followed by health and community services with 33 percent and transport and storage on 32 percent. Health workers are often involved in critical care, sometimes making life and death decisions. Yet of the 236,700 people working shifts in health and community services, 113,700 are on rotation, 36,000 are on nights, 43,700 are on irregular shifts, 5,700 are "on call" and 4,500 are on split shifts.

Many other employees are routinely working in the evenings or overnight, apparently without being classified as shift workers. Another Bureau of Statistics report shows that in 1997, 36.7 percent of all workers (about 2.3 million) were working between 6pm and 10pm and 17.4 percent (more than one million) were working between 10pm and 6am.

These hours have a serious impact on workers and their

families. Shift workers have little opportunity to interact in social or family gatherings, and are under enormous strain and stress in coping with everyday issues, both on and off the job.

Studies compiled by the Circadian Learning Centre in the United States have shown that shift workers, especially those who work nights, can suffer from a number of health problems. They include sleep disorders, fatigue, heart disease, high blood pressure and gastrointestinal upsets. Shift work can speed the onset of ulcers. In one study of Italian workers, the time between the start of work and diagnosis of an ulcer was 12 years for day workers, 5.6 years for permanent night workers and 5 years for workers on a rotating eight-hour schedule.

In a policy resource and education paper entitled, *Circadian Rhythms and Shift Work*, Harold Thomas outlined the many biological and social problems associated with rotating shifts. They included a rate of peptic ulcer disease eight times higher than normal, increased cardiovascular mortality, chronic fatigue, excessive sleepiness and difficulty sleeping. Shift workers were likely to increase body weight because of abnormal eating habits and lack of exercise. They had a higher divorce rate, worse rates of substance abuse and depression and were more likely to view their jobs as stressful.

A recent article by two sleep and respiratory physicians, Leslie Olson and Antonio Ambrogetti, published in the *Medical Journal of Australia*, cited research showing that: "Night-shift workers seldom sleep more than five or six hours in each 24-hour period, so that after seven nights the accumulated sleep deficit is 15 to 20 hours. At least 48 hours off duty are usually needed to recover this deficit, and rosters that require workers to go from night shifts to day or afternoon shifts with no break are dangerous."

As one's body moves through each 24-hour cycle, it experiences fluctuations in temperature, wakefulness, gastric activity, heart rate, blood pressure and hormone levels. This flow of body activity is known as the circadian rhythm. These rhythms are important for

optimal functioning of the many processes vital to health. When the normal circadian rhythms are disrupted by lack of sleep or by crossing time zones, it may take days or weeks for the body to readjust.

Among the most common health problems are gastrointestinal complaints, including constipation, diarrhoea, excessive flatulence, abdominal pain and heartburn. These ailments are two to three times more frequent among shift workers. The causes are poor eating or diets high in saturated fats. Too much fast food is consumed because of constant tiredness and lack of time to prepare healthy foods. People also have difficulty digesting food during the overnight hours. Other factors include disturbed sleep, poor eating habits, overeating, excessive coffee drinking, smoking and psychological stress.

Heart disease is an added risk. Increased consumption of fast foods, especially those high in fats, can increase cholesterol levels in the blood stream, leading to coronary heart disease. Higher levels of smoking among shift workers exacerbate the danger. The Helinski Heart Study of the Finnish population found that over a five-year period, rotating shift workers had a 40 to 50 percent increased risk of heart disease compared to day workers. One rare study of female shift workers showed that American nurses who worked rotating shifts for six years or more had a 51 percent higher coronary heart disease risk.

Apart from these health dangers, accidents and mistakes are likely, with particularly tragic consequences in hospitals and other medical facilities. In their *Medical Journal of Australia* article, Olson and Ambrogetti state:

"Physiological adaptation to night work is largely a myth and there is no reason to extend periods of night work in the hope that adaptation will occur. For intellectually demanding tasks, short periods of night work (one or two shifts) are better tolerated than longer periods because the accumulated sleep deficit is less. It is easy to demonstrate that the progressive sleep loss of a seven-night roster causes a progressive rise in accidents and a fall in productivity...

"The effects of fatigue on performance are well defined. Concentration, data processing and short-term memory are impaired. The variability of performance increases, so that normal performance alternates with periods of poor work, and astute decisions are mixed with lapses of judgement. Performance declines sharply as the duration of a task increases, and fatigued workers sacrifice accuracy to speed...

"Mistakes caused by fatigue are more likely to occur during routine tasks and tasks which require sustained vigilance, especially when the factors that trigger an effort of concentration (such as an obviously ill patient) are absent. Fatigue mistakes characteristically involve failure to recognise the existence of a serious problem."

In some fields, such as critical health care, it is impossible to eliminate shift work. But augmenting staff levels, so that doctors, nurses and other health workers do few evening or overnight shifts each, could dramatically reduce its impact. Instead, the most tiring and dangerous types of shifts are becoming more prevalent because hospitals are forced to meet increasingly stringent financial constraints.

In other industries—including mining—shift work could be abolished were it not for the dictates of profit. At present, expensive machinery is kept operating 24 hours a day, 365 days a year, because industry is becoming ever-more capital intensive, with equipment costs outweighing labour costs. No down time is allowed. Even interruptions for shift changes are being eliminated, resulting in the more frequent use of 12-hour shifts instead of 8-hour shifts, raising the danger of fatigue and sleep deprivation. Moreover, wages are increasingly being paid at flat rates, with the removal of overtime and penalty rates.

These processes have been assisted by the trade unions. Via Enterprise Bargaining Agreements, most unions have agreed to longer working hours, around-the-clock working, nightmarish shift rosters and unpaid overtime arrangements. Figures released by the Australian Centre for Industrial Relations Research and Training show that 79 percent of such agreements feature clauses to expand working hours and the "flexibility" of working hours.

Yet the scientific research that has been done points clearly to the imperative need for minimal night work, the abolition of rotating shifts, adequate time for meal breaks and lengthy rest periods between shifts.



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