

# **Guidelines for Managing Fatigue**

## **Introduction**

These guidelines provide information on avoiding harm from fatigue for those involved with shift work, after hours research, and extended hours such as working from home or travelling to or from Massey University or on Massey University business. The guidelines apply to all Massey University staff, volunteers and students who are engaged on research or teaching projects.

These guidelines were developed as a requirement of the Health and Safety in Employment Act (1992) as a means to manage fatigue which may cause harm. Under the Health and Safety in Employment Act (1992), the employer is required to prevent harm occurring to employees. In some situations, fatigue may be deemed to be a significant hazard, therefore, the employer must take all practicable steps to prevent harm. If the employer cannot practicably eliminate or isolate the cause of fatigue, the employer must then minimise harm to the employee. Minimisation of fatigue can be by administrative controls or by monitoring employees.

## **Definitions**

Shift work is defined as hours of work that are outside Massey University hours of work (that is, normally any work that is completed out of 7am to 6pm, Monday to Friday). From a biological perspective, shift work is any work pattern that requires a person to shift their sleep time. This is because sleeping at less optimal times in the daily cycle of the circadian body clock reduces the amount and quality of sleep you can obtain.

Fatigue is defined as “Fatigue is a series of symptoms (e.g., sleepiness, forgetfulness, lethargy, apathy, irritability) accompanied by a progressive decline in a person’s functional capacity”. Fatigue results from an imbalance between all waking activities (not only work-related activities) and recovery. A vital part of recovery (both physical and mental) is getting adequate sleep.

The key feature of fatigue is the lack of sleep and time of day when work is expected to occur. In traditional “hourly terms” employees who work greater than 70 hours per 7 day week or more than 14 hours in one “shift” are considered to be at high risk for effects of fatigue.

## **The effect of fatigue and shift work on the human body and performance**

One of the major problems of working shifts and extended hours is that the natural circadian rhythm can be disrupted. A number of problems associated with shifts and extended hours are detailed below.

Immediate individual symptoms of fatigue include; loss of appetite, anxiety, depression, irritability, lack of motivation, decreased concentration, poor performance

and sleepiness are all signs. Fatigue can result from inadequate rest, sleep loss, continued physical or mental activity and disrupted biological rhythms.

Long term biological and social problems associated with shifts and extended hours include an increased incidence of peptic ulcers, as well as a higher rate of cardiovascular mortality. Other physical problems include chronic fatigue, excessive sleepiness, and difficulty sleeping. There are also reports of increased divorce rate, higher rates of drug and alcohol abuse, and depression.

Efficiency is impacted with extended hours or shift work increasing absenteeism rates, reducing performance, decreasing productivity and increased staff turnover rates. Performance levels have been shown to decrease over an extended work day while fatigue increased. Poor decisions and forgetfulness are also symptoms of fatigue

Accident rates are also increased with fatigued employees. Some accidents have made International news because of the extent of loss. Overseas the Exxon Valdez oil spill, Three Mile Island, Bhopal chemical plant explosion, and Chernobyl, all occurred on the night shift. Human error, fatigue and lack of sleep have been implicated in these disasters. New Zealand has its own events such as the grounding of the steamer Triumph on the Tiritiri Matangi lighthouse in 1883, and the train derailment at Westmere bank in Taranaki in 2000.

## **Management Responsibility**

### *Work organisation*

When determining shift work or extended hours, the physical as well as the mental requirements of each position, along with the work environment, staffing level and hazards need to be considered. These are considered in more detail below.

- Night shifts should be reduced as much as practicable.
- Quickly rotating shifts are preferable (i.e. less than 4 nights in a row).
- The majority of shift workers should be able to avoid permanent nights.
- Extended work days (i.e. over 8 hours) should only be permitted if;
  - the work is not physical,
  - fatigue is monitored,
  - adequate rest breaks are given,
  - adequate time off between shifts (including rest days),
  - no added overtime,
  - chemical exposure is limited,
  - complete recovery after work is possible (the Massey employment agreements require 9 hours, which should exclude time commuting to and from work), and
  - there is high acceptance of the working time
- Early starts should be avoided for morning shifts.
- Avoid quick changeovers from one shift to the next.
- Shifts should either be the same or forward rotating.
- Number of consecutive working days is limited to a number that is appropriate in the context of the shift work.

- Ensure that adequate breaks such as full 2 days and some full weekends are provided, to allow sufficient time to “catch up on” sleep debt.
- Cover should be organised for absences.
- A degree of flexibility in the working time in all shifts appropriate for the context of the shift work.
- If possible short sleeps should be allowed on nights. A “nap” of 20 to 40 minutes has positive effects in normal working conditions and reduces fatigue.

#### *Other hazard controls*

- Employees should be informed of hazards and the impacts of extended hours and shift work
- Management have a responsibility to ensure that employees are monitored for their fatigue.
- Management have a responsibility to ensure that there are adequate resources to prevent and reduce fatigue.
- The workloads of staff must (should) be monitored.
- Work practices should be reviewed
- Workloads should be paced and organised
- Ensure correct skill levels
- Ensure that good communication exists
- Ensure that personal are trained or supervised for work

#### **Employee responsibility**

- Employees have a responsibility to inform their supervisor or manager of fatigue symptoms
- Employees are required and encouraged to report near misses, incidents and accidents
- Employees have a responsibility to inform the supervisor/manager of any other jobs, social life and study which may affect fatigue in the workplace.
- Employees have a responsibility to report fit for work, which includes having had adequate sleep.

#### **Individual Management of Fatigue**

This section covers individual strategies to cope with fatigue.

##### Sleep debt

Every person has different sleep requirements. Sleep is not only a personal factor, but age, gender and other factors such as medication, stress and fitness all affect sleep needs and requirements.

The body requires a certain amount of sleep to regenerate the physiological needs. The average length of sleep required is 8 hours. When our sleep is reduced, we accumulate “sleep debt”. This is the difference between sleep requirements and actual sleep.

If a person needs 8 hours of sleep, but only has 6 hours sleep, the 2 hours is the sleep debt. The sleep debt needs to be replaced. As the sleep debt increases, so does our need to fall asleep. Sleeping is the only way to reduce sleep debt.

### Individual Strategies to sleep in shift work

Every person has different sleeping needs and strategies. To assist with sleep, when it is required during the day it is important to educate family and friends. To prevent being woken up at unusual hours, and to highlight the importance of uninterrupted day time sleep, an answering phone or disconnecting the phone may be needed. A dark, cool, quiet sleeping place increases both total sleep time and sleep quality. Black out curtains are a worthwhile investment for all who must sleep during the day. Bright light in the early morning (5am to 7am) can hasten adaptation back to days by phase advancing one's rhythms and allowing earlier sleep.

There are also individual sleeping strategies which can be used. A split sleep period is a technique where one sleeps for 3 to 4 hours immediately before and 3 to 4 hours immediately after a night shift. The rationale is that at least part of each sleep episode is during the circadian period when sleep is expected. Anchor sleep is a technique used during one's shift off during a series of nights. One would stay up until 3 or 4 am and then sleep until 10 or 11. That way one gets some time to socialize but doesn't completely lose a nocturnal orientation.

Caffeine can increase alertness but should not be used within 4 hours of a planned sleep period. Alcohol induces sleep but the sleep is markedly distorted.

Exercise is a most useful strategy to adapt to shift work and extended hours. Not only does it improve general mood but also promotes alertness. It has been shown to increase circadian adaptation also, and sleep.

### **Assessing employee safety**

An assessment may be required for the employee to continue to work safely. Human Resources section or the Department of Labour guidelines provide detailed information on these assessments. Each person and situation has different requirements. Should the employee, colleague or supervisor be concerned, an assessment of the ability to continue safely at work should be completed.

### **Driver Fatigue**

Driving fatigue is no different from any other kind of fatigue. The potential consequences are different because driving requires continuous vigilance.

Driver fatigue may be described as being "sleepy", tired or exhausted. Driver fatigue may impair judgement and decrease our ability to judge our own level of tiredness.

Other symptoms of driver fatigue include: Lack of concentration, yawning, tired eyes, slow reactions, drowsiness, missing road signs and micro sleeps (nodding off).

The most common times when an accident has been caused by fatigue is between 4am and 8am in the morning and between 12 noon and 2pm. The majority of fatigue related accidents are on country roads within 10 to 15 minutes of the final destination.

#### *Avoiding driver fatigue*

- Have a good night sleep before travelling
- Avoid driving after a long day's work
- Have regular breaks while driving
- Take a short 20-30 minute nap if feeling tired
- Share the driving
- Pull over when feeling tired
- Arrange meetings where travel is required at a reasonable time to avoid early starts
- Do not drive when it is your normal sleep time.

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