# Fatigue Management Guide

## *For* N/A

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# Contents

# 1 INTRODUCTION

Fatigue is a serious issue that may be caused by working practices. It will never be eliminated completely and trying to do so may have unintended consequences. This document is intended to provide a guide for identifying where fatigue may increase health and safety risks so that suitable controls can be put in place.

An example Fatigue Management Procedure has been developed as a separate document https://abrisk.co.uk/wp-content/uploads/2024/10/ABRisk-Fatigue-Management-procedure.pdf

## 1.1 What is fatigue?

Fatigue is extreme tiredness or lack of energy. It is the opposite of being alert, where people are awake, aware, attentive and prepared to act or react.

Acute fatigue is temporary and has an identifiable cause (e.g. physical or mental exertion, stress, sleep deprivation, illness). It may develop rapidly but can be reversed by addressing the cause and resting.

Chronic fatigue is a long-term, persistent and potentially debilitating condition. It may be caused by extended periods of exertion, a disruptive lifestyle or underlying physical or mental medical condition.

## 1.2 Consequences of fatigue

Fatigued people find it difficult to concentrate, remember information and make decisions. They have impaired judgement and slower reactions. These conditions increase the likelihood of human errors.

Fatigued people are less efficient and effective at work, and more likely to take sickness absence.

Fatigue can cause stress that may contribute to anxiety, depression, irritability, mood swings, and a weakened immune system. The likelihood of physical health conditions including hypertension, heart disease and stroke can be increased.

Wider implications occur due to social and interpersonal issues. Fatigued people are less willing to communicate with others or engage in activities that would enhance their quality of life.

Fatigue is an outcome of working conditions and other factors. It can contribute, with other factors, to events and situations that can have significant health and safety consequences. This is illustrated in the diagram below.

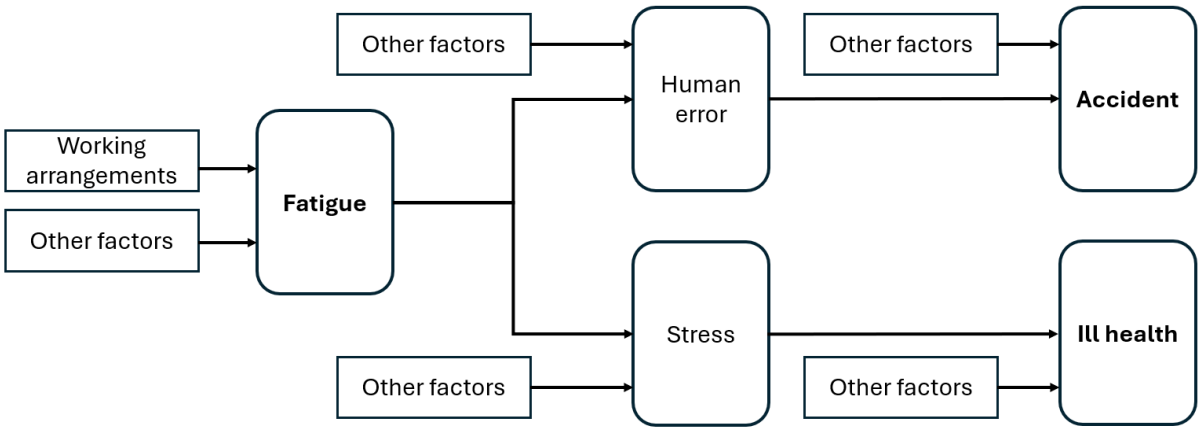


**Figure 1 - Illustration of how fatigue occurs and contributes to accidents and ill health**

## 1.3 Work related causes and mitigation

Work causes fatigue when demands on people are high and their ability to recover is poor. For example:

- Hours worked vs rest time / quality;
- Days worked vs days off;
- Task demands vs rest breaks.

Fit and healthy people with good nutrition, fitness regime, sleep quality and support networks are less susceptible to fatigue. Some underlying medical conditions and medicines are likely to cause fatigue directly or affect sleep and recovery.

## 1.4 Fatigue risk

Risk is the likelihood of an undesirable outcome occurring. The level of risk (scaled from low to high) is determined from consequence severity and likelihood.

Technically fatigue is not a risk but the term ‘fatigue risk’ is used widely. It may be viewed as a useful catchword to cover issues related to fatigue at work, highlighting the contribution made to health and safety risks. However, fatigue cannot be managed as a risk, but should be considered as part of a system wide risk management.

## 1.5 Wider risk context

Action taken to manage fatigue can cause problems in other, potentially far more serious areas. The aim should be to manage overall risks to As Low As Reasonably Practicable (ALARP). Issues to consider when implementing fatigue management include:

- Availability of competent people available to satisfy minimum safe staffing;
- Staffing flexibility to cover absence of individuals and workload variability;
- Team work and communication;
- Recruitment and career progression;
- Fitting in with social norms around weekends, public holidays, annual leave etc.

Optimising arrangements to manage all risks to ALARP requires protective and reactive arrangements that are flexible to adapt to variable and changing conditions.

## 1.6 Managing risks

Avoiding risk by removing the source of harm is preferred but rarely fully achievable. Simple solutions to complex problems will usually result in unintended consequences. For example, eliminating fatigue caused by night work by closing down a continuously operating facility is not a credible solution. Reducing staffing levels on a night shift to reduce the number of people experiencing fatigue will backfire if it increases the likelihood of accidents due to inadequate staffing.

Even if work could be arranged to create no fatigue it would still be an issue due to external factors (e.g. family life, illness, traumatic events). The following should be optimised:

- Managing work to avoid harm to individuals due to fatigue;
- Ensuring wider risks are not increased by interventions made to reduce fatigue;
- Providing a suitable work-life balance;
- Satisfying business demands.

There are many variables, with some beyond the control of the organisation. Whilst the aim should be to proactively control risks due to fatigue there will always be a requirement to react when higher levels of fatigue occur.

# 2 FACTORS THAT NEED TO BE MANAGED

Employers are required to manage risks to employees and others to ALARP. Managing fatigue should be part of this.

## 2.1 Fatigue factors to be managed

Scheduling periods of duty, the nature of work and external factors will affect levels fatigue.

### 2.1.1 DUTY START AND END TIME

Having to start work early in the morning can reduce the number of hours available to sleep, disrupt the natural sleep pattern and lead to poor sleep quality if people are anxious about waking in time. If someone always starts work at the same time each day they can adapt their lifestyle but this can have a negative impact on family and social life. If people work a pattern with varying start times it can be very difficult to make adaptions for early starts.

Guidance suggests that start times before 7am should be avoided. However, many shift patterns start at 6am and this seems to be widely accepted.

Starting work at any time between 6am and midnight is likely to be acceptable. Starting in the early hours of the morning should be avoided.

### 2.1.2 NIGHT WORK

The human body's natural circadian rhythm makes it inclined to sleep at night and be awake and alert during the day. Night work (between midnight and 5am) requires the human body to follow the opposite pattern resulting in less alertness at work and difficulty sleeping during daytime rest.

The human body can adapt gradually and people who work permanent nights can change their circadian rhythm to cope. However, family and social life is usually based around working during the day and resting at night. Permanent night work can create an unhealthy work-life balance.

Guidance suggests a maximum of four night shifts should be worked in a row. More than this will disrupt the circadian rhythm.

### 2.1.3 HOURS ON DUTY

Periods of duty up to 12 hours are likely to be acceptable as long as the work is not particularly demanding. In practice people usually work slightly longer than the prescribed shift length to cover shift handovers, changing clothes etc.

Guidance suggests that people need an average of 8 hours sleep per 24 hours. However, time is taken traveling to and from work, having meals, preparing for bed and rising afterwards. A minimum of 11 hours should be provided between all periods of duty.

### 2.1.4 TASKS PERFORMED

An inverse 'U' affect is observed with workload and exertion vs. fatigue. People who are either under or over loaded with work (physical or mental) are likely to suffer fatigue. The optimum is a workload that is neither under or over loaded. Recovery from under load periods of duty is probably easier than periods of over load.

Workload is usually variable and difficult to predict. Work planning should recognise when under or over loading is likely to arise so that mitigation can be put in place.

### 2.1.5 BREAKS WHILST ON DUTY

The benefit of breaks whilst on duty will depend on the nature of the tasks being performed. The ability to take a break at least every four hours should be a minimum requirement. When more demanding work is taking place the frequency should be increased.

In some cases people can take lots of short breaks throughout their time on duty and do not require any formal breaks. However, they often fail to take quality breaks. It may be necessary to mandate breaks away from the workplace.

A suitable location and cover arrangements should be provided so that people can take quality breaks. Allowing and supporting short ‘power naps’ can provide good mitigation of fatigue.

### 2.1.6 NUMBER OF DAYS ON DUTY

A ‘normal’ pattern of 8 hour periods of duty for five days per week (e.g. Monday to Friday), with a two day weekend provides a reasonable benchmark for evaluating all work patterns. Any work pattern that results in more days or hours being worked requires additional measures to mitigate fatigue.

Additional rest days may mitigate chronic fatigue risks but not acute, which have to be managed at the worksite at the time. Cumulative fatigue should be taken into account when planning work (i.e. the number of days / hours someone will have been on duty when performing a planned task).

### 2.1.7 SHIFT ROTATION

If people are required to work a cycle of different shifts the guidance says that the rotation should always be forward so that morning shifts occur first, followed by afternoons then nights. After a suitable break for rest and recovery the cycle can repeat. The immediate benefit of forward rotation is that break length is increased whenever the shift cycle moves to the next start/end time. Also, night shifts, which introduce the greatest fatigue, are immediately followed by rest days.

### 2.1.8 ON-CALL RESPONSIBILITIES

On-call responsibilities can contribute to fatigue even though people are not at work. The affect depends on how often people are called to attend, the time of calls and the necessary response. Frequent calls at night are particularly problematic, especially if people become anxious and cannot sleep because they think they may be called.

If the frequency of calls is infrequent (e.g. less than once per month) it may not need to be factored into fatigue management arrangements. If calls are more frequent arrangements should be in place to manage the increased fatigue.

When a call occurs the person experience a period of fairly high alertness for a short time (i.e. up to an hour), but this may not be sustained. Arrangements should be in place to provide support for long duration and complex responses.

If someone has been called during a rest period, especially at night, they may experience fatigue the following day. They should be given the opportunity to recover between the time the on-call task is complete and the time they start their next period of duty. They may need to start work later than scheduled or even be given the day off.

### 2.1.9 TRAVEL TIME

Travel time extends the working day and travelling can cause fatigue directly. Although choices people make about where they live may not be the concern of the employer the impact on fatigue needs to be considered. Similarly, whilst an employer is not normally

responsible for the actions of people when outside work they may be liable if someone has a road traffic accident after leaving work in a highly fatigued condition.

Issuing simple advice and being alert to issues when people are at work may be sufficient to demonstrate that risks may be ALARP with regard to fatigue caused by routine travel to and from work. However, for non-routine project work or times of high activity the employer should assume a higher level of responsibility and include it in work planning.

## 2.2 Other risk factors

Controls put in place to manage fatigue may have knock-on effects on risk. These need to be considered when developing optimum arrangements to reduce overall risks to ALARP.

### 2.2.1 COMMUNICATION BETWEEN TEAMS

Wherever teams are required to work shifts an effective shift handover is required to ensure continuity, safety and efficiency. Poor communication has contributed to major accidents (e.g. Piper Alpha).

Shift handover is critical and complex. Working arrangements should allow sufficient time for direct communication (face to face wherever possible). Also, to maintain a good log of events, prepare for handovers at the end of a shift and conduct orientation checks at the start of a shift (after receiving the handover).

12 hour shift patterns can have some advantages because fewer handovers occur each day. Also, repeating shift patterns can result in the same people being involved in handovers on consecutive days. For example, the day shift team will handover to night shift team. The following morning the night shift handover to the same day shift. This may occur several times before the shift cycle progresses (i.e. the team working days moves to working nights). With an 8 hour shift pattern there will be three instead of two handovers in a 24 hour period and different teams will be involved each time.

**Table 1 – Shift handovers on a rotating 12 hour pattern**

| | Day | Handover 1 | Night | Handover 2 |
|---|---|---|---|---|
| Day 1 | A Team | A to B[1] | B Team | B to A[1] |
| Day 2 | A Team | A to B[1] | B Team | B to C[2] |
| Day 3 | C Team | C to A[3] | A Team | A to C[3] |
| Day 4 | C Team | A to C[3] | A Team | Etc. |

**Table 2 - Shift handovers on a rotating 8 hour pattern**

| | Morning | Handover 1 | Afternoon | Hanover 2 | Night | Handover 3 |
|---|---|---|---|---|---|---|
| Day 1 | A Team | A to B[1] | B Team | B to C[2] | C Team | C to A[3] |
| Day 2 | A Team | A to B[1] | B Team | B to C[2] | C Team | C to D[4] |
| Day 3 | D Team | D to A[5] | A Team | A to B[1] | B Team | B to D[6] |
| Day 4 | D Team | D to A[5] | A Team | A to B[1] | B Team | Etc. |

Superscript numbers in the tables above indicate when different teams handover with each other over four days.

Good practices for shift handover should be adopted for all shift patterns. These should support more demanding handovers that may occur when an individual or team is returning from an extended break, where workload is very high and dynamic (e.g. plant start-up or shutdown), or significant changes to plant or process have occurred.

### 2.2.2 COMMUNICATION BETWEEN SHIFT AND DAY WORKERS

Communication between shift teams and day workers (e.g. managers, technical support staff etc.) can be critical but problematic due to different work cycles. Although day workers may be on site for a whole week (Monday to Friday) they may only have the opportunity to meet two or three shift teams because the others will be working night shifts or on rest days. It can take several weeks for every shift team to coincide with the day workers' period of duty.

This is an inherent issue with all shift patterns. Working from home is likely to exacerbate it although the adoption of internet meetings (e.g. MS Teams) may also have some benefits. Flexibility from day workers may be required to ensure critical communications take place effectively with shift teams.

### 2.2.3 CONTINUITY OF WORK

Rotating shifts mean that work is often handed over from one team to another. This can lead to issues with continuity. Day workers generally remain the same from one week to the next, so can act as a conduit of information. This should be considered when evaluating a shift pattern, especially if extended rest periods are included in the pattern. A team returning from a long break at a weekend may mean that no day workers are present to provide additional support that may be required. A midweek start (e.g. Wednesday) may be considered better for this reason.

### 2.2.4 COVERING UNPLANNED ABSENCE

People get sick, have accidents and family emergencies. There may be very little notice and cover arrangements have to be made quickly. One option is for someone already at work to stay beyond the end of their period of duty. This ensures staffing levels are maintained but that person will experience higher levels of fatigue. Another alternative is to not cover the absent person, which may require a change to the work undertaken.

Generally it is preferrable to call someone into work to cover the absence, but they need to have suitable competence and be rested. This should be considered when evaluating shift patterns. Rules should be in place to say who can cover under which circumstances. If the shift pattern includes extended rest periods it may be preferred to ask someone at that stage in the cycle to attend. If this is not possible someone on a shorter break can be asked to work an extra shift. There are likely to be circumstances where judgement has to be used to decide whether the increased risk due fatigue of a person providing cover is greater than working with fewer people on duty.

It is possible to include cover as part of the shift pattern, where people are held on standby in case they are needed. This can be beneficial because it is less reliant on goodwill when cover is required, but can be perceived as creating an unnecessary disruption to the work-life balance of individuals, especially if the financial rewards are only modest.

### 2.2.5 ROUTINE FAMILY COMMITMENTS

Shift patterns that allow people to participate in normal activities outside of work can be beneficial for mental health, which can have benefits at work. Shift start and end times that are consistent with school and nursery drop-off and pick-up can help with family dynamics and finances. Also, most people will want to be able to take a fortnight holiday each year.

Shift patterns that result in full weekends off can be very popular. This does not happen with a simple pattern such as 2 days, 2 nights, 4 off. There are other patterns available that create less disruption to weekends.