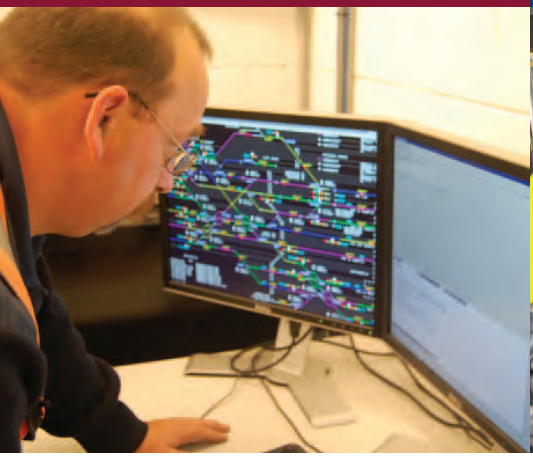
National Standard for Health Assessment of Rail Safety Workers

October 2012 *as amended up to 16 March 2013*



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National Standard for Health Assessment of Rail Safety Workers

October 2012

National Transport Commission

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Published by National Transport Commission
Level 15/628 Bourke Street
Melbourne VIC 3000 Australia
Phone: +61 3 9236 5000
Fax: +61 3 9642 8922
Email: enquiries@ntc.gov.au
www.ntc.gov.au

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Foreword

This revised edition of the *National Standard for Health Assessment of Rail Safety Workers* (the Standard) represents another significant step in the continual improvement of rail safety in Australia.

When the Standard was first approved by the Australian Transport Council (ATC) in April 2004, it was the first time that all states and territories adopted a common system of health assessment arrangements for rail safety workers. The approval of the Standard helped rail operators to operate more efficiently within and across state and territory boundaries, helped rail safety workers to maintain sound health and fitness for rail safety work, and provided for equity and portability of medical certification.

This revised edition of the Standard ensures that it keeps pace with advances in medical knowledge, continues to be based on an up-to-date understanding of the impact of certain health conditions on safe working performance, and addresses the deficiencies identified in recent rail safety investigations.

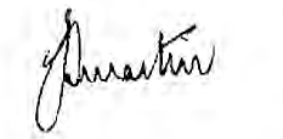
It should be noted that, in producing this edition of the Standard, it was decided to amalgamate what was previously two volumes into a single volume. This reduces repetition and should make the Standard easier to use.

The medical standards have been updated to current best practice using available evidence and specialist medical opinion. Where possible, information has been translated from the commercial vehicle driver standards contained in the recently revised standards for driver licensing, *Assessing Fitness to Drive*.

The Standard is supported by the *Guideline for Health Risk Management*. This Guideline is not formally part of the Standard, but provides practical guidance and examples to assist rail operators to perform health risk assessments for rail safety workers.

This edition of the Standard has been successfully completed with the assistance of industry and government partners.

I would like to thank those who have taken time to provide feedback, particularly the numerous medical professionals and transport stakeholders who have provided valuable input in the review process. I would also like to thank the members of the Reference Group. Finally, thanks go to Fiona Landgren and Bruce Hocking from Project Health, along with the following past and present members of the National Transport Commission project team: Lea Morgan, Belinda Irwin, Donna Soo, Claire McCrae, Eliza Murphy, Jeff Potter, Ben Piper, Jane Murray, Kristian Cook and Kate Pearce.



Chairman

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Acronyms and abbreviations

ATTP	Around The Track Personnel
BMI	body mass index
CMO	Chief Medical Officer
dB	decibel
EAP	employee assistance program
ECG	electrocardiograph
ENT	ears, nose and throat
ESS	Epworth Sleepiness Scale
HDL	high-density lipoprotein
NTC	National Transport Commission
OHS	occupational health and safety
the Standard	*National Standard for Health Assessment of Rail Safety Workers*

Glossary

Authorised Health Professional refers to a health professional who has been selected by a rail transport operator, on the basis of their compliance with the specified selection criteria, to perform rail safety worker health assessments (refer to Section 7, Appointing and authorising health professionals).

Around the Track Personnel (ATTP) are personnel required to work on a railway where any aspect of the task they are undertaking is on or near the track. ATTP may include rail safety workers who are classified as Safety Critical Workers.

Civil infrastructure means track formation and drainage (but excluding track) fixed structures beside, over or under the track, including supports for overhead electric traction equipment, and supports for signalling and telecommunications equipment, but excluding that equipment.

Competence is the possession of skills and knowledge, and the application of them to the standards required in employment.

Contractor means a person who is engaged by, or on behalf of, any body that has been accredited under state or territory rail safety legislation to provide goods or services to such a body.

Controlled environment refers to a rail workplace where a risk assessment has been performed to identify hazards and implement controls to ensure that any person working in or transiting the area is not placed at risk from moving rolling stock trains so far as is reasonably practicable.

Electric traction infrastructure is the equipment and systems associated with the supply and reticulation of electricity for traction purposes, but excluding elements of civil infrastructure supporting or otherwise associated with the equipment or systems.

Employer means a rail transport operator that engages a rail safety worker, either as a paid worker or volunteer.

Ensure means to take all reasonable action insofar as controllable factors will allow.

Mainline refers to the line normally used for running trains through and between locations.

May indicates the existence of an option.

On or near the track means 3 metres from the edge of the closest rail when measured horizontally, and at any level above or below the rail when measured vertically, unless in a position of safety.

Rail network refers to a system of railways, whether interconnected or not.

Rail infrastructure manager means a person who is a rail infrastructure manager under the law specifically regulating rail safety in the place where the rail infrastructure is managed.

Rail safety worker is a worker undertaking rail safety work as defined in state or territory rail safety legislation and for this Standard includes an employee, contractor, subcontractor or volunteer performing work on a railway or tramway system either:

- as a driver, second person, trainee driver, guard, conductor, supervisor, observer or authorised officer; or
- as a signal operator, shunter or person who performs other work relating to the movement of trains or trams; or

- in repairs, maintenance, or upgrade of railway infrastructure, including for rolling stock or associated works or equipment; or
- in construction or as a look out for construction or maintenance; or
- any other work that may be included by regulation.

Rail transport operator means a person who is a rail infrastructure manager, a rolling stock operator, or both a rail infrastructure manager and a rolling stock operator, under the law specifically regulating rail safety in the place where the rail infrastructure or rolling stock is managed or operated, as the case may be.

Railway refers to a guided system designed for the movement of rolling stock that has the capability of transporting passengers and/or freight on a track together with its infrastructure and associated sidings. This includes a heavy railway, a light railway, an inclined railway or a tramway, having a nominal gauge in each case not less than 600 mm, but excludes crane type runways and slipways.

Risk is the combination of the frequency or probability of occurrence and the consequences of a specified hazardous event.

Risk analysis means a systematic use of available information to determine how often specified events may occur and the magnitude of their consequences.

Risk assessment means the overall process of risk analysis and risk evaluation.

Risk control is the process of decision making that involves the implementation of physical changes, standards, policies and/or procedures for eliminating, reducing and/or managing risk.

Risk management means the systematic application of management policies, procedures and practices to analysing, evaluating and controlling risk.

Rolling stock refers to any vehicle that operates on or uses a railway track, excluding a vehicle designed for both on and off-track use when not operating on the track.

Rolling stock operator means a person who is a rolling stock operator under the law specifically regulating rail safety in the place where the rolling stock is operated.

Running line means any line used for the through operation of trains inclusive of mainlines, branch lines, crossing loops and shunting yards.

Safety Critical Worker is a worker whose action or inaction, due to ill health, may lead directly to a serious incident affecting the public or the rail network.

Serious incident for the purposes of this Standard means an accident or incident that affects the public or the network resulting in either:

- the death of a person; or
- incapacitating injury to a person; or
- a collision or a derailment involving rolling stock that results in significant damage; or
- any other occurrence that results in significant property damage.

Should is to be understood as non-mandatory—that is, advisory or recommended.

Signalling and telecommunications infrastructure is the signalling equipment and telecommunication equipment provided and used as part of the safe working and operating systems of the railway, but excluding supports for such equipment.

Track means the combination of rails, rail connectors, sleepers, ballast, points, and crossing and substitute devices where used.

Train means one unit of rolling stock or 2 or more units coupled, at least one of which is a locomotive or other self-propelled unit.

Tram means a vehicle that runs on rails on a highway, road or easement specifically designated for use by a tram or light rail vehicle, and includes a light rail vehicle.

Worker refers to a rail safety worker.

Part 1: Introduction

1 Purpose, scope and structure

1.1 Purpose of this Standard

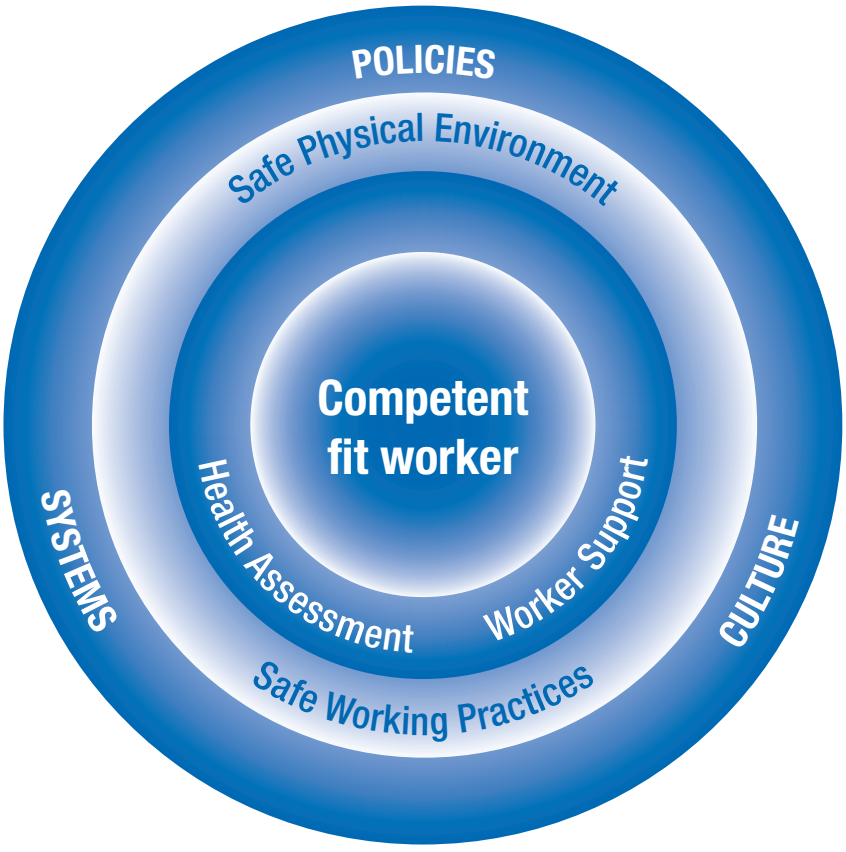
Under rail safety legislation, rail transport operators are required to manage the risks posed by the ill health of rail safety workers. This *National Standard for Health Assessment of Rail Safety Workers* (the Standard) provides practical guidance for rail transport operators to meet these obligations. This responsibility is an essential part of an operator's rail safety management system, which aims to minimise risks and protect the safety of:

- the public
- rail safety workers and their fellow workers
- the environment.

This Standard recognises health assessments as one aspect of an integrated management system aimed at achieving a high level of safety throughout the rail network as shown in Figure 1.

This Standard sets out how the health of rail safety workers is to be assessed. Assessments are to be based on a risk analysis of rail safety tasks and the best available medical evidence.

Figure 1 **The context of health assessments for rail safety workers**



1.2 Application and scope of this Standard

This Standard applies to all rail transport operators and to all rail safety workers.

This Standard takes effect on 20 January 2013. On it taking effect it will replace the *National Standard for Health Assessment of Rail Safety Workers*, June 2004. This Standard relates to health assessments and procedures for monitoring and managing the health and fitness of workers in relation to their ability to perform rail safety duties.

Although this Standard does address individual worker safety on and about the track to some extent, it does not cover other occupational health and safety / work health and safety matters such as occupational exposure. It also does not cover fatigue management, nor does it include specific requirements for drug and alcohol screening, which is addressed through local requirements in each state or territory, or by individual rail transport operator policy. Such matters should be managed in conjunction with this Standard and are not superseded by it. The rail transport operator must address such issues and integrate them with the health assessments as appropriate (refer also to Section 2, Legislative and program interfaces).

The focus of this Standard is on risk management and achieving desirable outcomes, rather than on prescribed processes. The provisions are described broadly so rail transport operators can implement systems and processes appropriate to their needs.

Should an agreement be reached at an enterprise level, this Standard does not preclude more comprehensive or frequent health assessments. However, those who do implement different methods should consider issues such as anti-discrimination laws and industry interfaces.

1.3 Structure of this Standard

This Standard consists of 6 parts:

- Part 1: Introduction

  This Part describes the purpose, scope and context of this Standard.

- Part 2: The health risk management system

  This Part outlines the responsibilities of rail transport operators, workers and health professionals, and describes the system for managing health risks of rail safety workers.

  It includes a framework for analysing and categorising the risks associated with rail safety tasks and assigning workers to a level of health assessment commensurate with the risks. It also includes procedural requirements such as scheduling, communication, records management and the appointment of Authorised Health Professionals. Approaches for quality assurance and audit are also included.

- Part 3: Procedures for conducting health assessments

  This Part outlines the procedures for conducting health assessments for rail safety workers. It is intended mainly as a reference for examining health professionals, but includes procedural aspects that may also be relevant to rail transport operators.

- Part 4: Medical criteria for Safety Critical Worker health assessments (Categories 1 and 2)

  This Part includes the medical criteria for fitness for duty for Safety Critical Workers, arranged alphabetically in sections addressing the main conditions affecting fitness for duty.

- Part 5: Medical criteria for Category 3 workers

  This Part includes the medical criteria for Non-Safety Critical Workers (Category 3).

- Part 6: Forms, case studies and transition arrangements

  This Part includes supporting documentation including:

  - model forms for managing the health assessments
  - case studies
  - transition arrangements.

1.4 Evidence base

The review of this Standard coincided with the conduct of a major literature review (May 2003 to mid-2009) by the Monash University Accident Research Centre (MUARC). The report, *Influence of chronic illness on crash involvement of motor vehicle drivers* (2nd ed.) by Charlton et al. (2010), has provided the evidence base for the effects of medical conditions on driving and for crash risk associated with medical conditions, and by extrapolation to fitness for safety critical work in rail. Contributing professional organisations have also provided references, as appropriate, to substantiate their advice. Where evidence was lacking, expert opinion from members of specialist medical colleges and other health professional organisations provides the basis of this Standard.

2 Legislative and program interfaces

Health assessments interface with a range of health and human resources programs, as well as with quality and risk management systems, and other legislative requirements.

The legislative interfaces are shown in Figure 2. Interfaces with health and human resources programs are shown in Figure 3. Interfaces should be identified and managed to increase the effectiveness of the health assessment program and reduce duplication.

2.1 Occupational health and safety/work health and safety

Occupational health and safety/work health and safety legislation imposes a general duty of care on the employer and rail safety worker regarding risk management, and integrates closely with the rail safety legislation and this Standard.

The scope of this Standard is confined to the assessment of health and fitness to perform rail safety work. Although this Standard does address individual worker safety on and around the track, it does not cover other occupational health and safety/work health and safety matters such as occupational exposure.

Additional examinations required under occupational health and safety/work health and safety legislation (e.g. occupational exposure to noise, lead or asbestos, or poor ergonomic design) are not covered by this Standard, but should be addressed by the rail transport operator as required.

Case study: **Noise exposure**

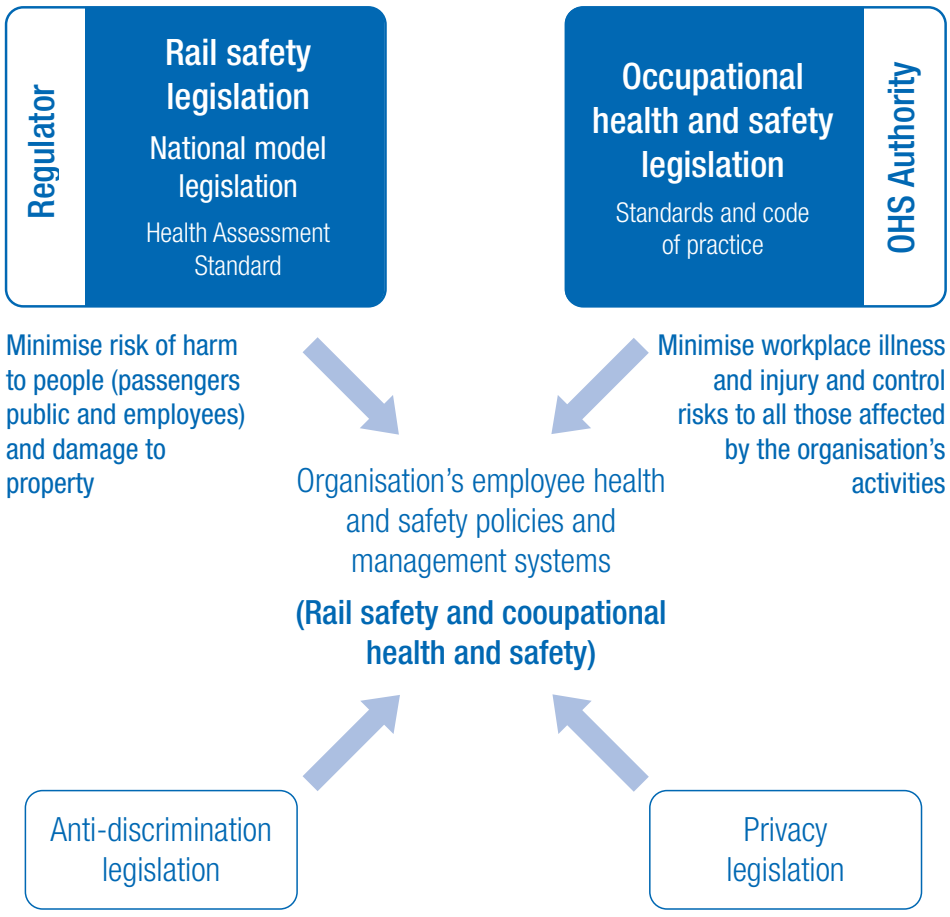
Rail safety workers' hearing ability is assessed to ensure they can work safely. In addition, state or territory regulations for hearing protection usually require audiometric testing at defined times for workers exposed to certain noise levels. Thus, a 30-year-old worker may only require rail safety worker health assessments every five years, yet must have audiometric testing every two years if noise exposure warrants it. Rail transport operators must identify such overlaps and manage the process to ensure compliance.

2.2 Anti-discrimination legislation

Anti-discrimination legislative requirements must be considered by rail transport operators when implementing health assessment systems, such as the following:

- Health assessments must focus on inherent job requirements, not peripheral requirements. The risk assessment must guide the health assessment process (refer to Section 6, Risk assessment and categorisation process).
- In certain situations, it may be necessary to demonstrate that the condition prevents the worker from performing the required rail safety tasks—for example, through a functional or practical assessment of neurological conditions or musculoskeletal capacity (refer to Section 5.2.4, Functional or practical assessments).
- Any required tests should be valid and the criteria must have a clear rationale—that is, the test must be a good predictor of serious illness regarding rail safety.
- If a standard must be met at entry, it should be maintained during employment and examined for periodically (refer to Section 5.3, Timing and frequency of health assessments).
- If a criterion is not met, an employer should consider reasonable adjustments to the workplace to accommodate the disability.
- Although public safety considerations take precedence over anti-discrimination, this does not exempt a rail transport operator from giving close consideration to discrimination issues.

Figure 2 **Legislative context**



OHS = occupational health & safety

2.3 Privacy legislation

When administering the rail safety worker health assessments, rail transport operators must ensure compliance with the Privacy Principles contained in privacy legislation, and ensure that health records are managed and stored in line with the relevant health records legislation. Provisions for these specific requirements are described in Section 8.2, Privacy laws.

2.4 Drug and alcohol controls

The health assessments for rail safety workers should interface with drug and alcohol controls as required by rail safety legislation. The National Rail Safety Law requires rail transport operators to prepare and implement a drug and alcohol management program. This includes, among other things, a drug and alcohol internal policy, systems and procedures for the provision of information and education to rail safety workers in respect of drugs and alcohol, as well as a drug and alcohol testing regime to be undertaken by operators.

Drug and alcohol screening conducted by rail transport operators in accordance with their drug and alcohol management program is a separate process to the general periodic health assessments of rail safety workers. However, in cases where a Safety Critical Worker is diagnosed with chronic drug or alcohol issues, a more intensive individualised testing regime may be implemented as part of their management program upon return to work (refer to Section 18.7, Substance misuse).

Authorised Health Professionals should be aware of all applicable state and territory laws regarding alcohol and other drugs.

Figure 3 **Interfacing health and human resources programs**

2.5 Injury management

Injury management, return to work and rehabilitation are also likely to interface with rail safety worker health assessments. For example, a worker on an injury management program should undergo a health assessment to determine fitness for rail safety duties or fitness for proposed alternative duties. The assessment will be helpful to the rehabilitation provider.

Repeat injuries may also trigger a health assessment (refer to Section 5.3.3, Triggered health assessments). Rail transport operators should ensure appropriate injury management and that workers compensation personnel monitor repeat injuries and initiate health assessments as required.

In all cases, rail transport operators should work in close collaboration with rehabilitation providers to ensure adequate, immediate and ongoing support for workers returning to work after injury.

Case study: **Post-traumatic stress and return to work**

A workplace injury is covered by accident compensation legislation. This means drivers involved in traumatic events, such as suicides, receive counselling and monitoring as per organisational procedures. Depending on the time a driver is away from the workplace, they may undergo a health assessment to ensure they are fit to return to rail safety work. Rail transport operators must have defined programs for the return to work of rail safety workers.

2.6 Critical incident management

Most rail transport operators have counselling and support programs available for workers involved in fatalities, rail incidents and near misses. Periodic health assessments provide a further opportunity to review worker responses to critical incidents and to assess general psychological wellbeing. Interfacing these programs, particularly by informing the Authorised Health Professional of traumatic incident history, supports the effectiveness of the health assessment process and critical incident management overall. Refer to Section 18.5, Psychiatric conditions.

2.7 Psychometric testing

Some rail transport operators have introduced psychometric testing for recruitment, and promotion or change of grade purposes. The health assessments described in this Standard do not include psychometric testing, but may interface with these recruitment and selection tools where they exist. Psychometric testing may also be useful for assessing head injuries, as well as psychiatric and neurological conditions (refer to sections 18.4 Neurological conditions and 18.5 Psychiatric conditions).

2.8 Employee assistance programs

Personal and work-related issues can affect work performance. Employee Assistance Programs (EAP) help workers and their families resolve these issues via independent and confidential professional counselling. There is potential for referral to an EAP by the Authorised Health Professional (refer to Section 18.5, Psychiatric conditions).

2.9 Fatigue management

A worker's vigilance is reduced by fatigue. The National Rail Safety Law requires that rail transport operators prepare and implement fatigue risk management programs for rail safety workers. This is required to manage fatigue-related risks in relation to their railway operations, as far as is reasonably practicable.

Periodic health assessments may detect excessive daytime sleepiness, which manifests itself as a tendency to doze at inappropriate times when intending to stay awake, and may support sleep hygiene education (refer to Section 18.6, Sleep disorders).

2.10 Health promotion

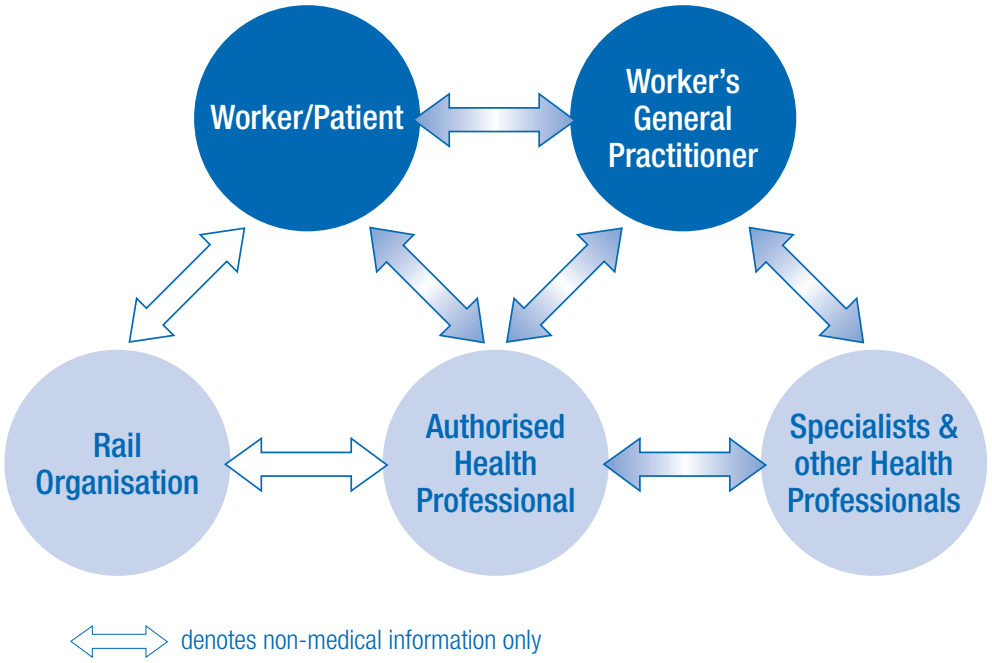
Rail safety worker health and fitness may be supported by health promotion programs. These might typically include heart health, nutrition, physical fitness, smoking cessation and skin cancer prevention programs. They are not a substitute for health assessments, but the programs may usefully complement each other. For example, an Authorised Health Professional may refer a worker with increased risk factors for cardiac disease, such as smoking, to a health promotion program to assist risk factor modification.

3 Responsibilities and relationships

The successful implementation of health assessments for rail safety workers relies on a clear understanding of the various responsibilities, as well as effective communication among the individuals or groups involved. Such communication, including management of health records, should be consistent with the provisions of relevant privacy and health records legislation as discussed in the previous section and in Section 8.2, Privacy laws.

Following is a summary of the responsibilities of the key parties and their interrelationships. Figure 4 illustrates these relationships and the flow of information that should take place in conducting rail safety worker health assessments.

Figure 4 **Relationships and information flow for rail safety worker health assessments**



Note: Medical information can be shared between a worker/patient and a rail operator only if consented to and volunteered by the worker/patient.

3.1 Rail transport operators

The rail transport operator has a legal responsibility under the relevant rail safety legislation to ensure systems are in place to protect the safety of the public and the network. This includes a responsibility to ensure the health and fitness of workers is monitored and does not jeopardise rail safety.

As an employer, the rail transport operator also has a duty of care under occupational health and safety/work health and safety legislation to the safety of its workers.

The final decision regarding fitness for duty or any restrictions rests with the employer, and involves consideration of the advice of health professionals as well as anti-discrimination and retraining issues.

Where possible, to meet anti-discrimination requirements, the employer should accommodate the limitations on the worker's capabilities due to health issues through strategies such as job modifications, alternative duties or supervision, as appropriate (refer to Section 2.2, Anti-discrimination legislation).

Rail transport operators also have a responsibility to ensure privacy principles are maintained with respect to workers' personal and health information (refer to Section 8.2, Privacy laws).

If employing contractors, the employer is required to inform them of their obligations to ensure appropriate health assessment systems are in place for their workers.

The rail transport operator should also ensure that its Authorised Health Professionals are informed of any updates to this Standard or to local procedures (refer to Section 7.2 Criteria for appointing authorised health professionals).

3.2 Contractors

A rail transport operator is responsible for managing its contractors and ensuring that contractors meet their responsibilities for rail safety worker health assessments.

3.3 Rail safety workers

Rail safety workers have a duty of care to themselves and others. Once employed, they should understand the implications of their role on the safety of the public and network, and the importance of their health and fitness to rail safety.

They have a responsibility to notify the employer of any temporary or ongoing health condition or change in health status that is likely to affect their ability to perform their work safely. They must also provide complete and accurate information concerning their medical history to the assessing Authorised Health Professional, as well as comply with any review requirements of a health assessment.

Rail safety workers may request referral to an Authorised Health Professional if they are concerned about their ability to perform their work safely due to health reasons (refer to Section 5.3.3, Triggered health assessments).

If the rail safety worker works for more than one rail transport operator, they have a responsibility to ensure each employer is advised about conditions that may affect their safe working ability.

3.4 Health professionals

Health professionals appointed and authorised by the rail transport operator to conduct health assessments for rail safety work should have demonstrated that they have relevant knowledge and understanding of the rail environment, the associated risks and the requirements of this Standard. Section 7.2, Criteria for appointing Authorised Health Professionals and, in particular, Table 2 outlines the knowledge and experience necessary to conduct worker assessments.

Authorised Health Professionals should conduct health assessments in line with the procedures contained in this Standard (refer to Parts 3, 4 and 5).

The relationship between the health professional and the worker/patient is governed by the ethics of the relevant health profession and by privacy laws. The relationship differs from the usual doctor–patient relationship because of the involvement of a third party—the rail transport operator or employer. The health professional should not provide personal or medical information to the employer, unless specifically allowed by the worker. Only information regarding work capacity should be shared. However, the health professional should permit the rail transport operator's Chief Medical Officer (CMO), if there is one, to access the worker's medical records as specified later in this section.

The Authorised Health Professional should liaise with the worker's general practitioner and treating specialists, where appropriate, to clarify information relating to the worker's current health status. Such communication should occur with the consent of the worker and should be limited to health issues that impact on rail safety.

The ongoing treatment and management of medical conditions should be the responsibility of the worker's general practitioner, treating specialist and other healthcare providers. Authorised Health Professionals should communicate and consult with the relevant providers to ensure the effective management of the worker's health.

The Authorised Health Professional should also liaise with the rail transport operator's Chief Medical Officer (CMO), if the rail transport operator has one. The CMO may access workers' medical records to ensure consistency and quality of health assessments for rail safety workers in the organisation, or to assist management of a particular worker, but is bound by privacy considerations and may not communicate medical information to the rail transport operator without the worker's consent (refer to Section 8.2, Privacy laws).

If a rail transport operator does not have a CMO, they may seek medical advice from an occupational physician knowledgeable about rail.

3.5 The role of medical specialists

This Standard generally requires Safety Critical Workers who are assessed Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional.

In certain circumstances, the CMO of a rail organisation may determine that review by a worker's treating general practitioner is sufficient if there is an established pattern of compliance and good response to treatment. The initial granting of Fit for Duty Subject to Review must be based on information provided by a specialist. These circumstances are identified in this Standard.

References

Charlton, JL et al. 2010, *Influence of chronic illness on crash involvement of motor vehicle drivers*, 2nd edn, Monash University Accident Research Centre, Melbourne. <http://monashuniversity.mobi/muarc/reports/muarc300.html>

Part 2: The health risk management system

4 Risk management approach

The requirements for rail safety worker health assessments are to be determined by a risk management approach. This aims to ensure the level and frequency of health assessments conducted is commensurate with the risk associated with the tasks performed by rail safety workers.

Rail transport operators must establish systems and procedures to ensure rail safety workers receive the appropriate level and frequency of health assessment that corresponds with the risks associated with the tasks they perform.

Figure 5 shows the ergonomics of a typical rail safety job, and provides a framework for understanding and applying a risk management approach to rail safety worker health assessments. It shows that information is gained about the rail system by the senses (mainly vision and hearing). The information is then processed by the brain (cognition, or 'situational awareness') and decisions are made that are then put into effect by the musculoskeletal system to alter the operation of the system. This cycle rapidly repeats. These processes take place within the operational environment of the rail operator.

Figure 5 **The ergonomics and health attributes required for rail safety work**

The aim of the health risk management process is to:

- identify what could go wrong in the case of physical or psychological ill health
- assess the consequences
- establish appropriate controls for the risks associated with ill health.

The health risk management process focuses on a consideration of the extent to which the worker's physical or psychological health could contribute to a serious incident on the rail network that may result in either:

- the death of a person; or
- incapacitating injury to a person; or
- a collision or derailment involving rolling stock that results in significant damage; or
- any other occurrence that results in significant property damage.

A further consideration is the extent to which the worker's health affects their own safety and that of fellow rail safety workers.

Health assessments are one approach to treating the risk of serious incidents and the risk to individual safety, thus a mix of engineering, administrative and health assessment measures is likely to be required. When determining the health assessment requirements of rail safety workers, it is important to take into account the operational and engineering environment, since overall risk management significantly determines the human attributes that are required for safety.

This interaction between technology and human capabilities has implications not only for the setting and application of health standards, but also for meeting diverse legal requirements. Health assessment standards cannot be simply set at the highest level for safety's sake. They must be set and applied carefully to match the risks associated with the tasks to be consistent with anti-discrimination and privacy laws. This requires careful and thorough assessment of the risks to health—and as a consequence of health—as part of the assessment process.

As the work environment significantly determines the skills and attributes required and the risk involved, a risk analysis should form the basis of all rail safety worker health assessment decisions. A rail transport operator should perform its own risk assessments of rail safety work in its own operating environment and apply health assessments accordingly.

5 Features of the health risk management system

The health risk management system defined in this Standard features a number of key elements:

- **Risk categorisation of rail safety workers**. It is not practical to individualise health assessments for every worker or task, thus a system of risk categorisation forms the basis of the health risk management system. This facilitates the risk management process and simplifies application of the health assessment requirements (refer to Section 5.1, Risk categorisation of rail safety workers).
- **Health assessments and medical criteria matched to the risk categories**. Health assessments comprising screening questionnaires and clinical examinations are designed to match the risk categories and identify medical conditions that are likely to impact on safety. In turn, specific medical criteria for various medical conditions are defined to ensure consistency of application.
- **Defined timing and frequency of health assessments**. Timing and frequency of health assessments is defined to support early detection of health conditions and appropriate management to support long-term fitness for duty.
- **Standard reporting framework**. A standard reporting framework for fitness for duty (or otherwise) supports consistency of application.

5.1 Risk categorisation of rail safety workers

This section provides an overview of the risk categories applied in this Standard. Further detail as to how workers are allocated to the respective categories is provided in Section 6, Risk assessment and categorisation process.

In the first instance, categorisation of the rail safety worker is based on a consideration of the key question:

> ***For any aspect of the worker's tasks, could action or inaction on the part of the worker lead directly to a serious incident affecting the public or the rail network?***

The response to this question leads to the definition of 2 main risk categories:

- **Safety Critical Work/Workers**. These are workers whose action or inaction may lead directly to a serious incident affecting the public or the rail network. Their vigilance and attentiveness to their job is crucial, and they are therefore the main focus of this Standard. These workers require health assessments to ensure ill health does not affect their vigilance and attentiveness to the job, and therefore the safety of the public or the rail network.

Safety Critical Workers' tasks are distinguished from tasks that affect only individual worker safety.

- **Non-Safety Critical Work/Workers**. These are workers whose action or inaction will not lead directly to a serious incident affecting the public or the rail network. These workers require health assessments to ensure their own safety while working in or around the network.

Safety Critical Workers are further categorised depending on the potential risks associated with ill health.

- **Category 1 Safety Critical Work/Workers**. Category 1 workers are the highest level of Safety Critical Worker. These are workers who require high levels of attentiveness to their task and for whom *sudden incapacity or collapse* (e.g. from a heart attack or blackout) may result in a serious incident affecting the public or the rail network. Single-operator train driving on the commercial network is an example of a Category 1 task.

- **Category 2 Safety Critical Work/Workers**. Category 2 workers are those whose work also requires high levels of attentiveness, but for whom fail-safe mechanisms or the nature of their duties ensure sudden incapacity or collapse does not affect safety of the rail network. For example, in many cases signallers are classified as Category 2 because fail-safe signal control systems protect the safety of the network in case of worker incapacity.

Non-Safety Critical Workers are also further categorised based on whether their health and fitness will impact on their ability to protect their own safety and that of fellow workers around moving rolling stock.

Around the Track Personnel (ATTP) is the term used to describe workers who perform Non-Safety Critical tasks on or near the track as defined. Workers who do not work around the track are not at risk from moving rolling stock and are not required to have health assessments under this Standard. They are classified as **Category 4**.

ATTP who operate in a Controlled Environment are also classified as **Category 4**. A Controlled Environment is defined in this Standard as a rail workplace where a risk assessment has been performed to identify hazards and implement controls to ensure that any person working in or transiting the area is not placed at risk from moving rolling stock trains so far as is reasonably practicable.

ATTP who operate in an Uncontrolled Environment may be at risk from moving rolling stock. They are classed as **Category 3** and are required to have health assessments to identify relevant health risks.

When analysing the risk to ATTP and classifying the tasks into Categories 3 or 4, the features of a Controlled Environment need to be carefully considered regarding their adequacy. If workers may move between Controlled and Uncontrolled Environments, then the higher level of risk assessment should be applied. Irregular visitors to the track, such as office workers, are not generally classified as ATTP. When they do visit the track, their safety should be ensured by other means—for example, by escort. Further information about assessing Controlled and Uncontrolled Environments is included in Section 6.5, Step 5: Analyse and categorise tasks.

Note that workers who access the track receive track safety awareness training on a regular basis, which is another key aspect of their ability to protect their own safety and that of fellow workers.

5.2 Health assessments matched to risk categories

A rail safety worker should receive the level of health assessment commensurate with their rail safety work risk category. These are briefly described in the following sections. The assessment procedures and medical criteria applicable to each of the Categories 1, 2 and 3 are outlined in detail in Parts 3, 4 and 5.

5.2.1 Safety Critical Worker Health Assessments (Categories 1 and 2)

The health assessment for Safety Critical Workers aims to detect conditions that may impact on their vigilance and attentiveness to their work. These include, for example, cardiovascular disease, diabetes, epilepsy, various other neurological conditions, sleep disorders, alcohol and drug dependence, psychiatric disorders and visual problems. The assessment comprises a health questionnaire and clinical examination.

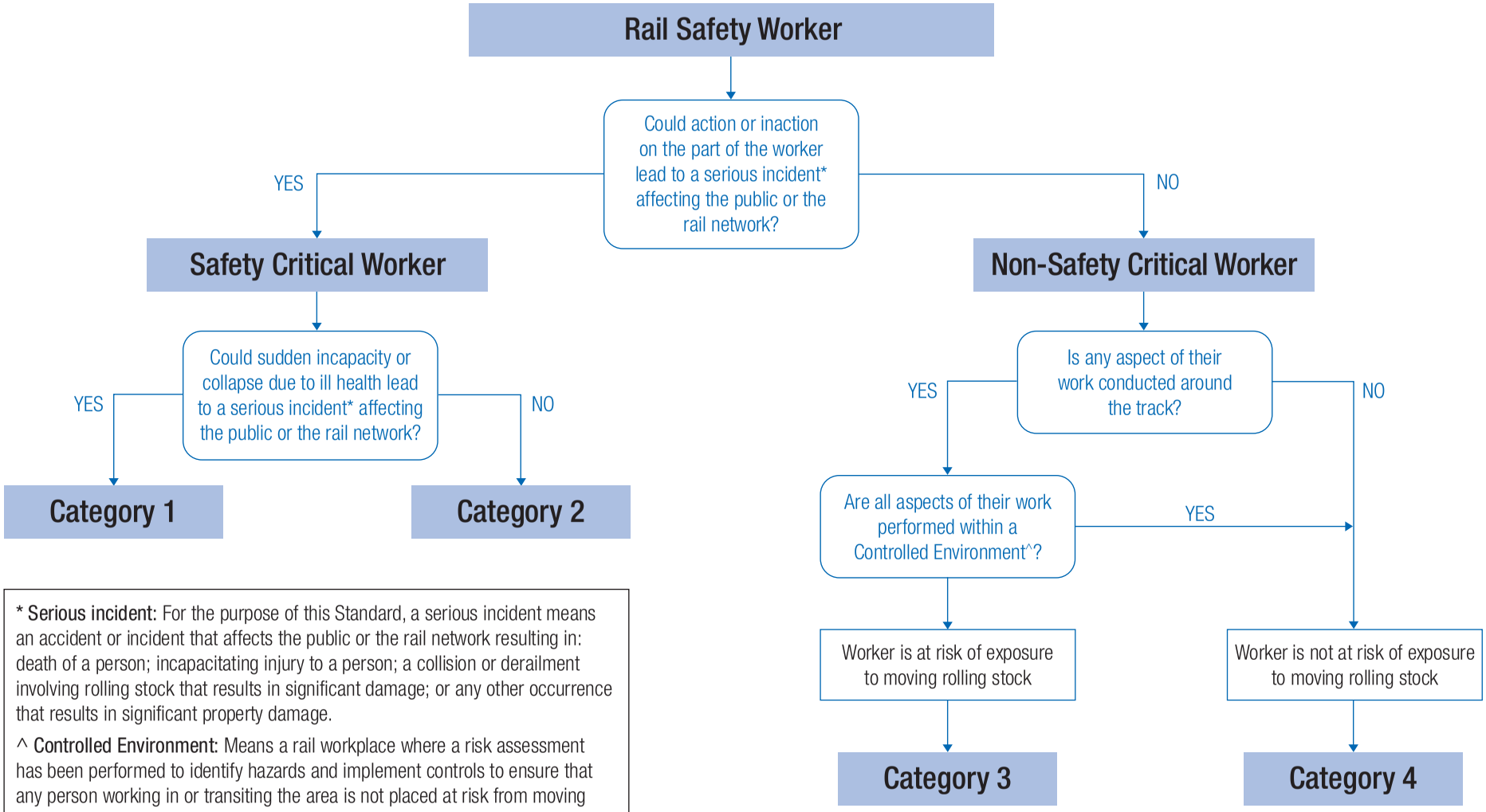
Health questionnaire

This self-administered questionnaire collects a general history and helps identify specific conditions that might affect rail safety task performance, including:

- sleep disorders (Epworth Sleepiness Scale)
- alcohol dependency (AUDIT Questionnaire)
- psychological problems (K10 Questionnaire).

The questionnaire is not diagnostic and no decision can be made regarding fitness for duty until the clinical examination is completed.

Figure 6 **Risk categorisation for rail safety workers**



* **Serious incident:** For the purpose of this Standard, a serious incident means an accident or incident that affects the public or the rail network resulting in: death of a person; incapacitating injury to a person; a collision or derailment involving rolling stock that results in significant damage; or any other occurrence that results in significant property damage.

^ **Controlled Environment:** Means a rail workplace where a risk assessment has been performed to identify hazards and implement controls to ensure that any person working in or transiting the area is not placed at risk from moving rolling stock so far as is reasonably practicable.

Clinical examination

The clinical examination assesses the key body systems to identify conditions that might affect rail safety task performance as described above, including cardiovascular, neurological, psychological, musculoskeletal and visual systems, and may require referral for further tests or opinion.

Additional assessment requirements for Category 1 workers

In addition to the requirements above, a Category 1 worker must have a cardiac risk level assessment to identify their risk of cardiovascular disease and collapse from heart attack, stroke and so on. The assessment requires pathology tests to be conducted including:

- fasting plasma glucose
- fasting serum cholesterol (total and high-density lipoprotein).

The cardiac risk-level tool combines these pathology test results with other risk factors such as age, cigarette smoking and blood pressure to enable determination of the probability of a cardiovascular event, such as heart attack or stroke, in the next 5 years.

Category 1 rail safety workers are also required to have a resting electrocardiograph in order to detect arrhythmias. This is not required routinely for Category 2 workers.

The clinical examination also focuses on the identification of other health conditions that might result in sudden incapacity or collapse, including hypoglycaemia, epilepsy and transient ischaemic attacks.

5.2.2 Track Safety Health Assessment (Category 3)

The Track Safety Health Assessment for ATTP (Category 3) focuses on medical conditions that could impact on a worker's ability to detect and react quickly to an oncoming train or warnings. The assessment comprises eyesight and hearing tests, and an assessment to ensure safe mobility around the track.

Although the periodic health assessments of Category 3 workers relate only to hearing, vision and musculoskeletal capacity, it is recognised that a number of other conditions may affect their safety around the track. Rail operators should ensure that workers are advised to notify their supervisor and/or request a triggered health assessment if they develop a condition that could lead to collapse on track; if they incur serious injury or illness to their eyes, hearing or limbs; if they suffer a serious brain injury; or if they develop a cognitive or psychiatric disorder. Substance abuse should also be declared in accordance with the employer's drug and alcohol policies. Workers making such notifications should be referred for a triggered assessment to assess implications for safety around the track, and action taken should be taken accordingly, including job modification as required. Refer to Section 5.3.3, Triggered health assessments and Part 5, Medical criteria for Category 3 workers

5.2.3 Task-specific requirements

The risk categories and matching health assessments provide a general framework for defining health assessment needs. However, certain tasks will have specific requirements, for example, colour vision, hearing or musculoskeletal attributes.

The health monitoring system should provide appropriate flexibility to ensure that the health assessment requirements reflect the specific requirements of the rail safety tasks including, where appropriate, the frequency with which the tasks are performed.

Further guidance on defining the specific requirements is included in Section 6.6, Step 6: Identify task-specific health requirements.

5.2.4 Functional and practical assessments

In some situations, a clinical health assessment may need to be supplemented by a functional or practical test to confirm fitness for duty. For example, a functional assessment of some neurological conditions or musculoskeletal capacity may be applied to confirm the worker's ability to perform the particular tasks required of them.

Practical tests for colour vision or hearing, however, are not recommended because consistency of methodology, and thereby accuracy and applicability across all rail operators, cannot be ensured. Laboratory (clinical)-based tests of hearing or colour vision are standardised and therefore results are portable to all rail systems (refer to sections 19.1 Hearing and 19.2 Vision and eye disorders).

Practical tests are usually conducted in the typical work environment, whereas functional assessments are simulations of work in settings such as a gym or cab simulator. Such tests cannot override the medical criteria; they can only supplement the doctor's decision about the ability to perform rail safety tasks where this Standard is imprecise.

Each rail operator should develop their own procedures and criteria for practical and functional assessments based on their system requirements. Assessments may also be designed and tailored to specific situations if needed.

The results of practical tests are not transferable to other organisations or networks unless the work practices and work environments are very similar.

Practical or functional assessments of musculoskeletal function may be conducted by people appropriately trained in the test procedure and with experience of the tasks involved such as an occupational therapist, a physiotherapist, a principal driver or other experienced staff. Such people should work in conjunction with the Authorised Health Professional.

A principal driver (or equivalent) is a senior driver with wide experience who is often involved in training other drivers. A worker with borderline impairment may be referred to a principal driver for a practical test to assess work performance. This is particularly relevant to musculoskeletal and neurological impairments. Similarly, other experienced staff may assist in assessing work performance of Safety Critical Workers in other jobs. Such an assessment should be arranged through the worker's manager.

Transport operators and Authorised Health Professionals should consider the following limitations of functional and practical tests:

- They can never fully simulate the work environment—by nature, the test will always be a snapshot of the person's functional capacity. They are limited in time, and may not provide an indication that the individual will be capable of performing those tasks for a full working day.
- The test may place the person being tested at risk of injury. When ordering a functional or practical test, the examining doctor should be satisfied that the individual is fit to perform the test. If fitness to perform the test is questionable, then so is the person's fitness for the role.
- A functional or practical test does not assess risk of injury. Where the health issue is one of recurrent injury, for example, an unstable knee, performing all of the elements of a test does not mean that the person is safe to perform those job demands day after day.
- A practical test is not standardised but is based on local requirements and equipment. Therefore, there is a potential problem in extrapolating the results to other systems if the worker transfers.

5.2.5 Drug and alcohol screening

All states and territories require rail transport operators to ensure that rail safety workers are not impaired by alcohol or drugs when performing their work. Rail safety workers themselves also have a duty not to perform rail safety work while impaired by alcohol or drugs.

Pre-placement and/or change of risk category health assessments may therefore include a drug screen depending on the state/territory's legislation and the rail transport operator's requirements.

Periodic health assessments should not routinely include a drug or alcohol screen. However, testing may occur as part of a return to work program for a person with a substance misuse condition.

In the event that a person is suspected of being intoxicated by alcohol or drugs at the time of an examination, the Authorised Health Professional should assess them and enquire of possible reasons for their condition. Under these specific circumstances the doctor may conduct a drug and alcohol test or assessment according to relevant legislation. If drug or alcohol intoxication is suspected or confirmed, the Authorised Health Professional should stop the examination, classify the worker as temporarily unfit and notify the employer (refer to Section 18.7, Substance misuse).

5.3 Timing and frequency of health assessments

The timing and frequency of health assessments also supports a risk management approach.

A rigorous health assessment system should:

- confirm that the health and fitness of a rail safety worker candidate is suited to the tasks to be performed
- periodically monitor the rail safety worker's health during employment to detect conditions that might affect rail safety
- enable timely response to concerns about the worker's health.

The health assessment system should therefore comprise the 3 types of assessments described below and illustrated in Figure 7.

5.3.1 Pre-placement or change of risk category health assessments

Rail safety workers classified in Categories 1, 2 and 3 require health assessments at pre-placement and before changing to a position involving tasks of a higher risk category. The assessments are aimed at determining a worker's initial fitness to perform the full range of inherent job requirements and job demands of the rail safety position that they have applied for, and should match the risk category of the job they are entering.

5.3.2 Periodic health assessments

Periodic health assessments are conducted to identify health conditions that may affect safe performance of rail safety work. They should be conducted for Categories 1, 2 and 3 rail safety workers according to the following defined frequencies.

Category 1 and 2: Safety Critical Workers

At time of commencement, then:

- every 5 years to age 50, then
- every 2 years to age 60, then
- every year.

Category 3: Around the Track Personnel in an Uncontrolled Environment

At time of commencement, then:

- at 40 years of age, then
- every 5 years.

For Category 1 and Category 2 Safety Critical Workers, despite anything to the contrary in the list, the worker must have a health assessment conducted within 2 years after turning 50 years old, and within 1 year after turning 60 years old.

The frequencies are a minimum requirement based on evidence of rate of age-associated degenerative illness, the power of the assessment to detect rail safety workers at risk, and comparison with local and overseas standards. Rail transport operators may choose to implement more frequent periodic health assessments should the need and rationale be identified.

Depending on the needs of the worker, Authorised Health Professionals may also recommend more frequent assessments for health surveillance. Ongoing treatment of medical conditions should continue to be the responsibility of the worker's general practitioner.

The program of comprehensive periodic health assessments should be maintained even if more frequent triggered health assessments are performed for an individual's particular condition.

5.3.3 Triggered health assessments

Triggered health assessments are conducted in response to incidents or concerns regarding the worker's ability to perform their job safely. They are likely to address a particular health issue and include scheduled review assessments for conditional fitness for duty (Fit for Duty Subject to Review).

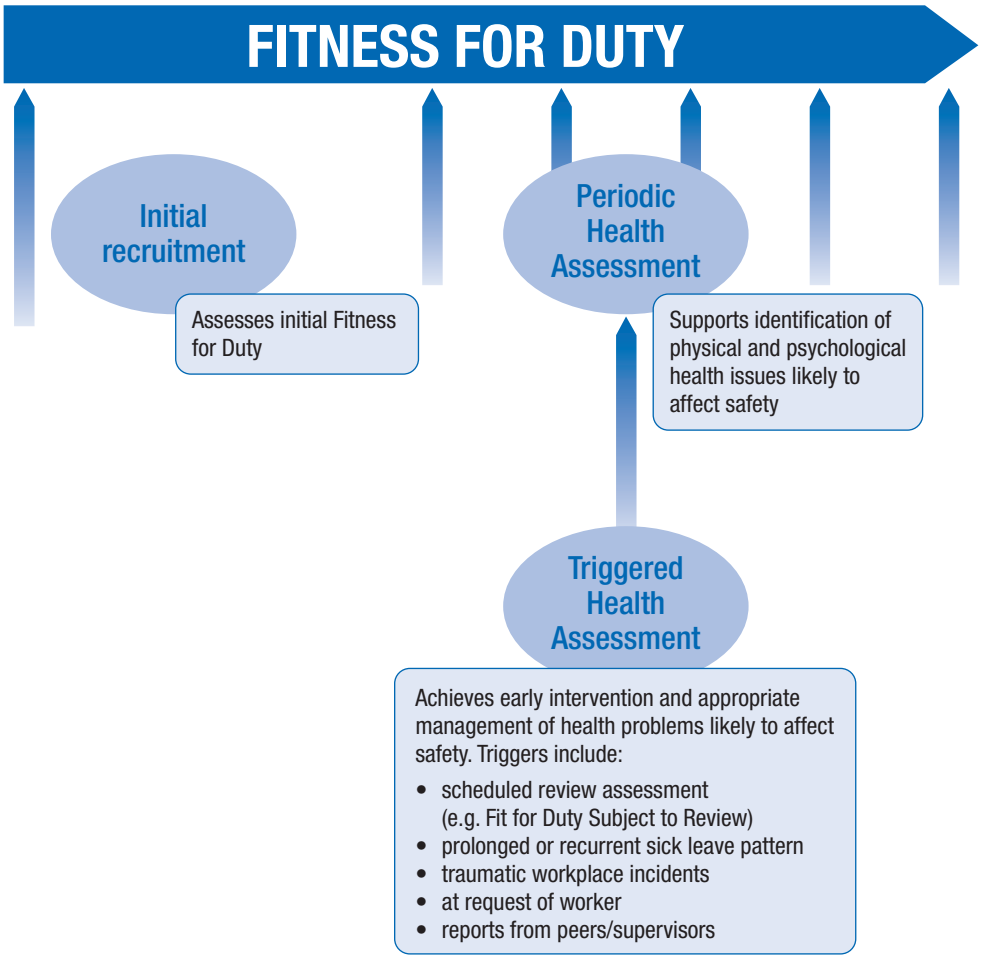
Triggered health assessments aim for early intervention and appropriate management of health problems likely to affect safety. They overlay periodic health assessments, and help to identify and manage illness of unpredictable and rapid onset.

For example, psychological conditions (e.g. anxiety states) are not age dependent and onset patterns are not clearly defined. Therefore, they may not be readily identified at a periodic health assessment.

Rail transport operators should be alert to indicators of ill health, such as recurrent absenteeism, repeated incidents and recent traumatic events, and should discuss these with the rail safety worker. This may lead to a triggered referral for a health or neuropsychological assessment, retraining in competencies or referral to an Employee Assistance Program.

To ensure appropriate referrals and transparency in decision making, the rail transport operator should develop and distribute clear referral criteria for triggered health assessments.

Figure 7 **Health assessments supporting fitness for duty of rail safety workers**



Examples of trigger situations include:

- **Scheduled review assessments (Fitness for Duty Subject to Review)**. Health assessments scheduled for workers who are assessed Fit for Duty Subject to Review or Temporarily Unfit for Duty Subject to Review are the most common triggered referrals. They are more frequent than standard periodic reviews to allow closer monitoring of a health condition. Review intervals are recommended by the Authorised Health Professional.
- **Sick leave and patterns of absenteeism**. Workers who have been absent from work due to an injury or illness, and who have a condition that may adversely affect their ability to perform rail safety duties, should be assessed for fitness for duty before they return to work, taking account of their rehabilitation plan. Recurrent absenteeism may also flag the need for a referral for health assessment. Sick leave review systems should support and validate such referrals.
- **Accident/incident patterns**. Accident/incident patterns may indicate worker difficulties or health issues (e.g. a signal passed at danger). The rail transport operator's incident investigation and management procedures should consider potential health (including psychological) issues and should require referral for health assessment as appropriate.
- **At a worker's request**. Workers should report to their employer any illness or health problem likely to affect their ability to work safely including impairment from medication as required by drug and alcohol legislation.

5.4 Standard reporting framework

Rail transport operators should adopt standard terminology for reporting and managing rail safety workers' fitness for duty.

The terminology provided below and illustrated in Figure 8 is used in the model forms in Section 24. Its use in communicating with workers and health professionals and for managing situations is also illustrated in Section 25, Case studies.

5.4.1 Fit for Duty Unconditional

This indicates the worker meets all criteria in the Standard and is to be reviewed in line with the normal periodic health assessment schedule.

5.4.2 Temporarily Unfit for Duty

This indicates that the worker does not meet the criteria for Fit for Duty Unconditional and cannot presently perform current rail safety duties. Their health situation is such that they may pose a risk to safety and therefore should not continue current rail safety duties. They must undergo prompt assessment to determine their ongoing status and be definitively classified. Temporarily Unfit for Duty may also be applied in situations where a clear diagnosis has not been made—for example, in the case of an undifferentiated illness where a worker is being investigated for blackouts. The worker may be assessed as fit for alternative duties.

5.4.3 Fit for Duty Conditional

This indicates that the person meets all criteria in the Standard provided that they wear appropriate aids (e.g. corrective lenses, hearing aids, prostheses).

5.4.4 Fit for Duty Subject to Review

This indicates the worker does not meet the criteria for Fit for Duty Unconditional; however, the condition is sufficiently controlled to permit current rail safety duties. Continuation of normal duties is conditional on the worker being reviewed more frequently than the periodic health assessment schedule. The review period is specified by the Authorised Health Professional.

This classification may also apply as a provisional classification for a newly diagnosed condition, which does not pose an immediate risk to safety but requires further investigation. In this situation, workers must undergo prompt assessment to determine their ongoing status and be definitively classified.

5.4.5 Fit for Duty Subject to Job Modification

This indicates the worker does not meet the criteria for Fit for Duty Unconditional, but could perform current rail safety duties if suitable modifications were made to the job. These modifications may include:

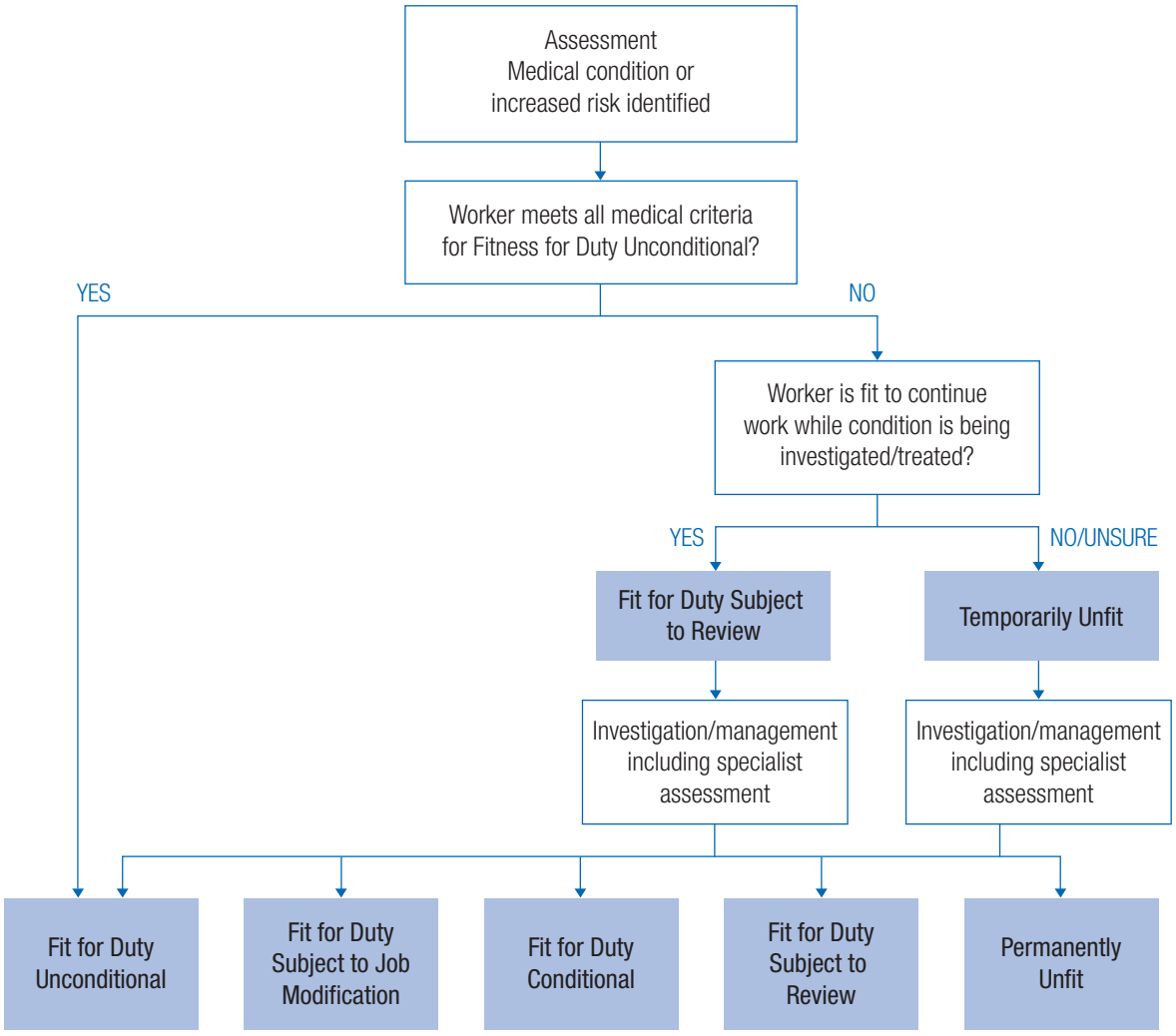
- modification of physical equipment
- roster changes, or
- worker supervision.

Job modifications may not be practicable in various areas of rail safety work. The worker may also be classified Fit Subject to Review if more frequent review of their condition is required.

5.4.6 Permanently Unfit for Duty

This indicates that the worker does not meet the criteria for Fit for Duty Unconditional or Fit for Duty Subject to Review (or any other conditional category). Their condition is permanent (defined as unfit for 12 months or more) and they will not be able to perform current rail safety duties in the foreseeable future. Normal company policies such as redeployment may be considered.

Figure 8 **Reporting framework (applied to newly identified medical condition)**



6 Risk assessment and categorisation process

This section outlines the process for performing risk assessments of rail safety workers, including identifying their risk category and their health assessment requirements. The steps are summarised in Figure 9.

There are a number of key guiding principles in conducting such risk assessments:

- **Focus on tasks**. The assessment should focus on tasks, not on formal grades or job classifications. This is because workers often have to be multi-skilled and perform various tasks. A risk categorisation should be assigned to a grade or job classification to match the task assessed as having the highest risk.
- **Consultation**. The process should involve communication between the responsible manager and the workers who perform the tasks so there is an accurate understanding of the nature of the tasks.
- **Documentation**. Documentation should be developed to record the assessment process, and provide a clear rationale for the risk categorisation and health assessment requirements. This may have legal significance in the future. The name of the person who made the assessment should be recorded. Documentation can also be used to support the understanding of rail safety work by Authorised Health Professionals. A template to guide collection and documentation of relevant data about the task risk analysis, health attributes and risk categorisation is also provided (refer to Section 24.1, Risk assessment template).
- **Expertise**. The process should draw on appropriate expertise. Involvement of the Authorised Health Professional at the risk analysis stage will help identify necessary health attributes for a task. In turn, the health professional is likely to develop a sound understanding of the work and associated risks.
- **Review**. The health risk management process and effectiveness of risk control strategies should be kept under review. As a minimum, review should occur whenever there are changes to work practices or engineering controls.

The process seeks to:

- identify the attributes needed to safely perform the activities
- identify what could go wrong in the case of ill health
- assess the consequences
- establish appropriate controls for the risks associated with ill health.

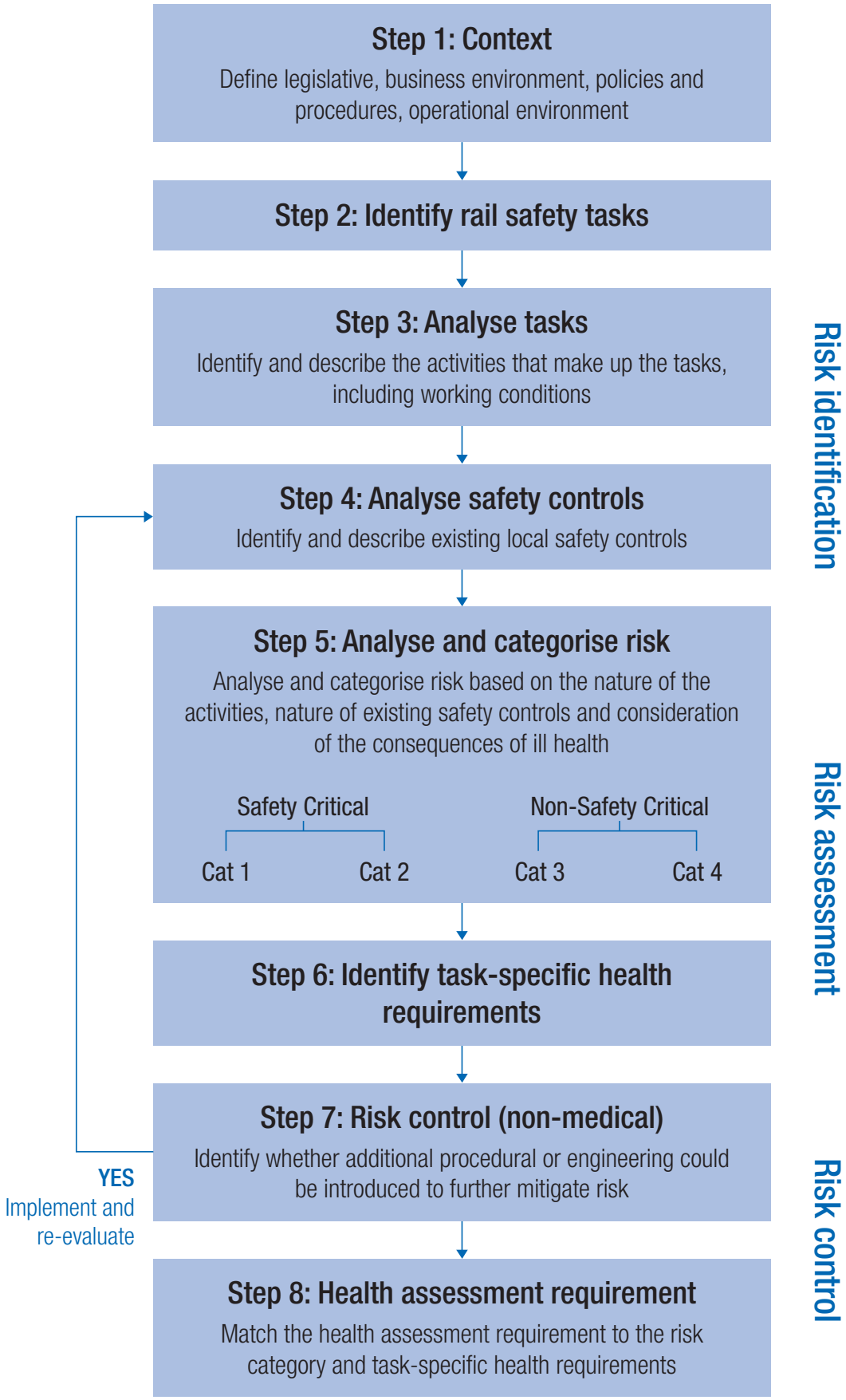
The steps in the risk assessment process are described in the following sections.

6.1 Step 1: Define the context

The first step is to define the context in which the rail safety work is performed. This includes considering:

- relevant legislative requirements
- organisation policies and procedures
- the business environment (e.g. urban passenger train operations; freight operations, including dangerous goods; infrastructure maintenance or construction; light rail or tram operations; or tourist and heritage train or tram operations)
- the operational environment (e.g. the type of safe-working systems such as block signalling or staff-and-ticket systems; train protection systems such as train stops or automatic train protection; the maximum speed of operation).

Figure 9 **Steps in risk assessment process**



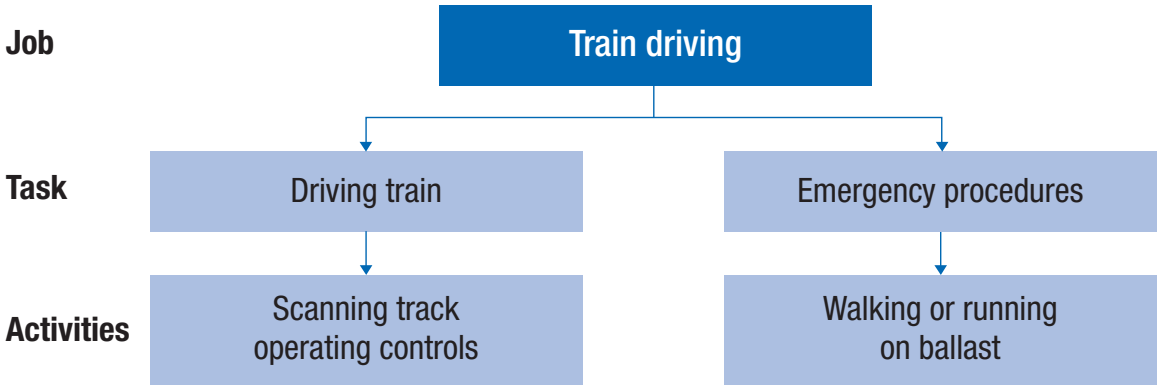
6.2 Step 2: Identify rail safety tasks

The initial focus of the analysis should be on tasks, not on formal job classifications or grades. This is because workers are often required to be multi-skilled and perform various tasks within one job. Once tasks have been analysed, the analysis may then be applied to multiskilled positions, with the highest risk task determining the level of health assessment required.

For the purposes of this Standard:

- a job is the aggregation of tasks that go to make a (multi-skilled) position (e.g. driver)
- tasks are the work required to be done (e.g. driving an urban train, driving a non-urban train, conducting emergency procedures)
- activities are the units of work done in carrying out the task (e.g. scanning the track, moving controls, walking on ballast).

Figure 10 **Identifying rail safety tasks**



The following provides a list of typical jobs and tasks that may comprise rail safety work for a rail operator.

Train driving:

- Operation of a passenger train on an urban network
- Operation of a freight train on a non-urban network.

Operation of signalling equipment

Train controlling

Infrastructure maintenance:

- Driving of a road/rail vehicle
- Track machine operation
- Safe working protection party duties
- Electrical systems maintenance.

Rolling stock maintenance:

- In a workshop or depot
- Train examination.

6.3 Step 3: Analyse tasks

Task analysis is the process of breaking down a job into its key activities. This should involve:

- a review of relevant job descriptions
- on-site visits to discuss tasks with rail safety workers and to observe the activities that comprise the tasks as well as the conditions under which the activities are performed (e.g.shift work, working in extremes of heat and cold or terrain). Figure 5, 'The ergonomics and health attributes required for rail safety work', provides a useful framework for analysing the tasks and activities of a job
- identifying activities performed infrequently in response to an emergency situation.

A thorough task analysis will assist in identifying the key requirements of the task and should be used to drive the risk assessment process. It may assist in ensuring appropriate risk management strategies have been employed to manage residual risk. A template form has been included as guidance (refer to Section 24.1, Risk assessment template).

6.4 Step 4: Identify and describe local safety controls

The nature of the operational and engineering environment will, in part, determine the human attributes that are required for safety. This includes the operational or engineering controls that are intended to mitigate the risk associated with the task.

The next step, therefore, is to identify and assess the impact of the local safety controls on the rail safety task being analysed. For example:

- safe working rules and procedures
- fail-safe systems
- numbers of personnel in the working environment (such that other workers may identify worker incapacity and take up their task to ensure safety)
- driver support devices such as vigilance systems, train stops, the Automatic Warning System and Automatic Train Protection.

6.5 Step 5: Analyse and categorise tasks

The previous steps provide the necessary inputs to categorise the rail safety worker tasks. This risk analysis is best conducted in conjunction with people who are knowledgeable about the tasks and the existing control measures in question.

The first consideration in the analysis is whether the task is Safety Critical or not. This is identified by applying the test (refer to Section 5.1, Risk categorisation of rail safety workers):

> ***For any aspect of the tasks identified, could action or inaction on the part of the worker lead directly to a serious incident affecting the public or the rail network?***

This question is posed in the context of existing control measures such as vigilance systems and fail-safe mechanisms (as per Step 4). Safety Critical tasks are then subdivided by applying a further test:

> ***For any aspect of the tasks identified, could sudden incapacity or collapse lead to a serious incident on the rail network?***

Again, this question is posed in the context of existing control measures and with a consideration of the likelihood of a serious incident resulting from worker incapacity. The test leads to a subdivision of Safety Critical tasks into Category 1 and Category 2 tasks as described in Section 5.1, Risk categorisation of rail safety workers.

Example: **Road-rail vehicle driver**

A road-rail vehicle has a sole driver, travels at up to 80 km/h and has a vigilance control (which brakes the vehicle if not regularly activated), but requires the driver to stop at level crossings. The task is considered Safety Critical because the driver's continued vigilance is necessary to maintain appropriate control of the vehicle to ensure the safety of the rail network. In the event of sudden incapacity (e.g. a heart attack) just before a level crossing, the vehicle may enter the crossing before stopping. However, the likelihood of collapse occurring in the few hundred metres before a crossing is remote and therefore the risk is analysed as low (Category 2). This contrasts with the driver of a track-tamper machine, which has a settable throttle, and without vigilance control the collapse of a sole operator could lead to a large machine progressing out of control. Therefore, the risk is analysed as high (Category 1).

Categorising Non-Safety Critical Work

Non-Safety Critical Work is assessed in a similar way, resulting in allocation to Category 3 or Category 4 based on a consideration of the requirements for maintaining safety of the worker and fellow rail safety workers, and the adequacy of measures to create a Controlled Environment. When analysing the risk to ATTP and classifying the tasks into Categories 3 or 4, the method and adequacy of a Controlled Environment need to be carefully considered regarding their adequacy.

It is important in the risk analysis to differentiate between risks posed by ill health as distinct from lack of competency, which should be addressed through other control measures, such as training and initial worker selection.

Controlled Environment

The determination of a Non-Safety Critical Worker, ATTP Category 4, depends on whether the work is performed in a Controlled Environment. When analysing the risk to ATTP, the features of a Controlled Environment need to be identified and their adequacy carefully considered. The essential requirement of a Controlled Environment is that it must ensure that a person transiting the area is not placed at risk from moving rolling stock, so far as resonably practicable.

In rail workplaces, such as sidings, rail yards or workshops, controls may include:

- provision of lock-out or warning devices
- barrier segregation from running lines
- permits to work.

These may be supplemented as identified by risk assessment by all or any of the following:

- warning signage
- special instructions
- use of designated pathways or access/transit routes
- supervision.

For special works, a running line may also be assessed as a Controlled Environment in certain circumstances, for example, in the case of:

- complete possession of all sections of track in the vicinity, including parallel lines
- a 'non-train day' on isolated historical railways with no active parallel running lines.

In all instances, consideration needs to be given to rolling stock and track machinery movements associated with the works.

Category 3 assessments relate to the ability of a rail safety worker to see and move from the path of rail vehicles. In the case of a worksite where rail vehicles are being moved, a Category 3 assessment should be applied.

6.6 Step 6: Identify task-specific health requirements

Some health requirements are independent of the risk category. These include sensory requirements, such as hearing and colour vision, as well as musculoskeletal requirements. Rail transport operators should conduct risk assessments of individual tasks to identify the requirements. These requirements should be communicated to Authorised Health Professionals when requesting a health assessment.

6.6.1 Colour vision risk assessment

Not all rail safety tasks require colour vision, thus risk assessments of the colour vision requirements should be undertaken by rail transport operators as per Figure 11 and communicated to the Authorised Health Professional.

Assessment of a job requires consideration of whether there is a need for colour vision. If so, is there redundancy of information that averts the need for colour vision (e.g. semaphore arms)? If there is no redundancy, can the job be redesigned to eliminate the need for colour vision?

If colour vision is required, consideration is then given to whether the task requires seeing colour as point sources (typically signals) or flat surfaces (typically flags or screens—'Colour Defective Safe B vision'). Jobs requiring seeing point sources may be further subdivided on basis of viewing conditions with the most adverse requiring 'Normal colour vision' (typically drivers) and lesser conditions requiring 'Colour Defective Safe A vision'.

The following descriptions of rail safety jobs illustrate typical colour vision requirements, but they are not necessarily correct for any one network.

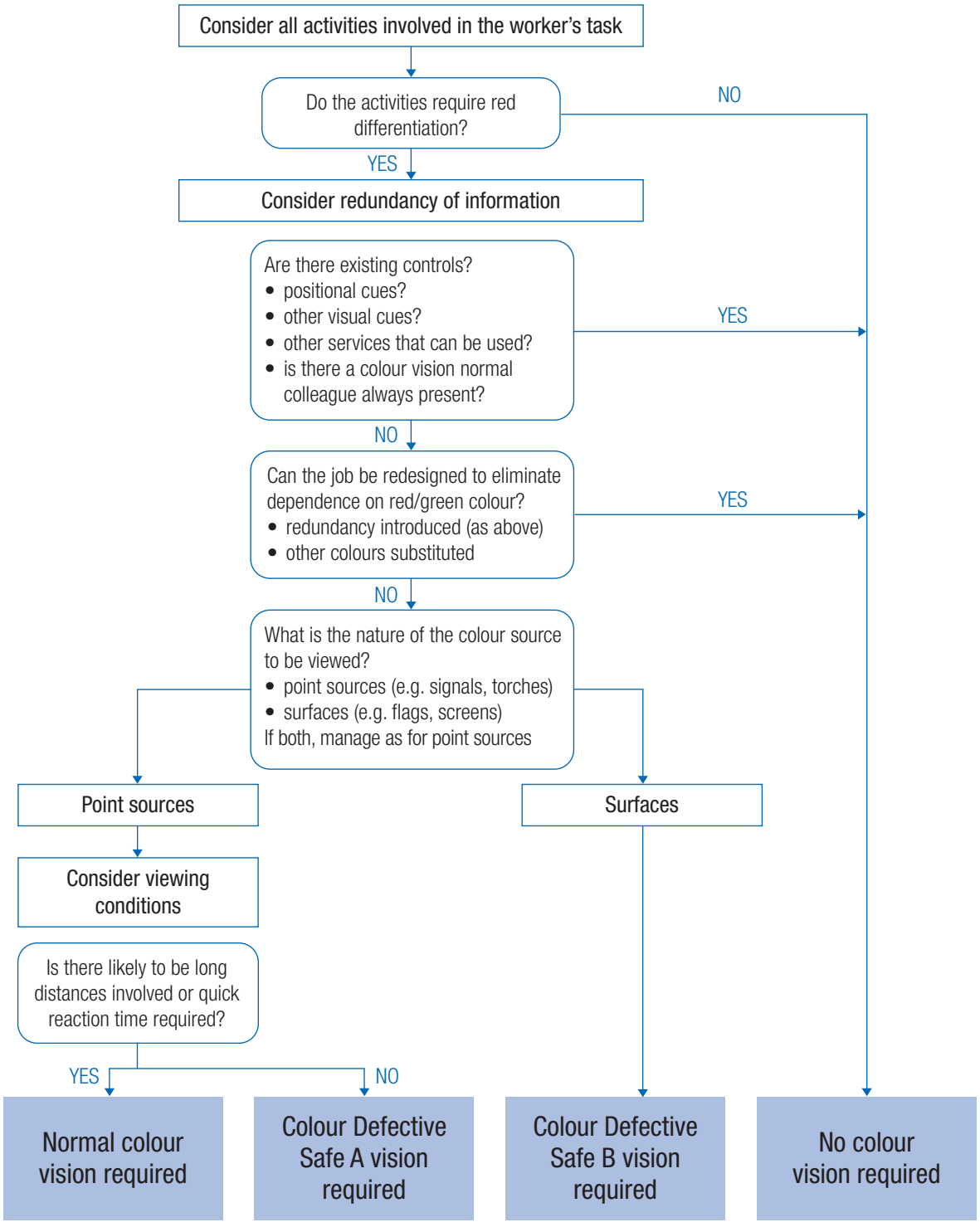
Train drivers must be able to recognise colour signals. Positional cues are not always available because red–green lights often operate from a single lens signal; lights from a signal may have no background or illumination at night to help their identification; there may be dazzle from a low sun behind the signal; and red lights may be shone from a lantern in emergency situations requiring rapid reaction. Combinations of red–yellow–green signals are used to inform the train driver of a safe speed and routing.

Heritage and tourist train drivers who are not on a main line may have a semaphore arm on a signal, which gives a positional cue (redundancy) as well as a red–green light. This only applies for daylight driving. The trains usually travel at low speed.

Case study

A rolling stock maintenance company shunts suburban trains into a large shed before working on them. For safety, the trains are then isolated by placing a red flag on their front so they are not moved while work is in progress. The need for staff to correctly distinguish red flags from other flags was recognised as requiring accurate colour vision. However, the need to introduce a colour vision test was averted by changing the procedure to state that a train should not be moved if any flag has been placed on the front, regardless of the flag's colour.

Figure 11 Colour vision risk assessment



6.6.2 Hearing risk assessment

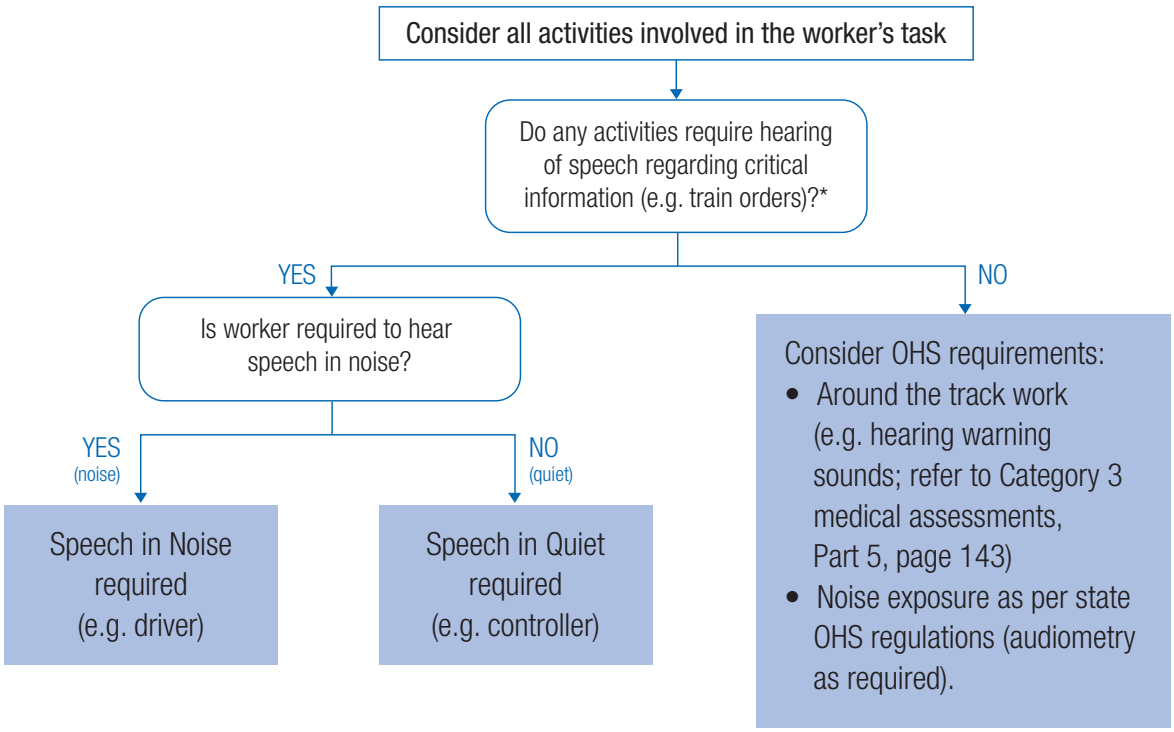
The hearing requirements vary for different tasks and are generally independent of the overall risk category (except for Category 3). For example, a train driver must be able to communicate with control about train orders, often in a noisy cab. This requires sufficient hearing to accurately interpret speech. Alternatively, a track worker only requires sufficient hearing to detect the sound of a train horn or warning shouts from other workers.

All Safety Critical tasks should be assessed in relation to their individual hearing requirements.

Risk assessment of Safety Critical Work divides the hearing task into two categories: 'hearing in quiet', which occurs where hearing takes place in a quiet background (typically indoors such as in a control room); and 'hearing in noise', which occurs where hearing is required against a continuously or intermittently noisy background (typically drivers in a train cab or shunters, or site controllers and flagmen, etc.).

Rail transport operators should assess the hearing requirements based on the flow chart shown in Figure 12 and communicate these requirements to the Authorised Health Professional.

Figure 12 **Hearing and rail safety work: risk assessment**



OHS = occupational health and safety

* The Standard assumes closed-loop communication as recommended by the Rail Industry Safety and Standards Board (RISSB) is in place1. Where closed-loop communication is not enforced, expert advice should be sought and a more stringent hearing standard applied.

6.6.3 Musculoskeletal requirements

The standard for both Category 1 and Category 2 workers requires the worker to be fit enough to undertake the physical demands of their safety critical position. In the case of Category 3 workers, the assessment focuses on their mobility and capacity to move quickly from the path of an oncoming train. This should cover most situations in rail work, but the health assessment may be varied depending on the result of the task evaluation and on expert medical advice. For example, a controller may not need lower limb function, whereas a rolling stock maintainer requires considerable agility to move and inspect trains.

6.7 Step 7: Risk control

The health risk categorisation performed in Step 6 is the basis of referral to a matched health assessment. However, an important interim step is to consider the other treatment options that might be introduced to mitigate the risk, such as additional administrative or engineering controls.

Table 1 summarises the hierarchy of control measures that should be applied to control safety risks.

Both elimination and substitution control the hazard itself. They are, therefore, more effective in reducing risk than controls that reduce the likelihood of the hazard, such as procedures. A limitation with lower level controls, such as procedures, is that they can be more easily defeated. However, redundancy is helpful in safety, and the optimal treatment of risk may involve a mix of engineering, administrative and medical risk control measures.

If practicable, engineering or administrative controls are generally preferred to health assessments because they provide more definitive protection. Such improvements should be implemented where possible and the task re-evaluated in terms of the health risk.

Table 1 **Summary of hierarchy of control measures**

Elimination	Removal of the hazard at its source from the workplace
Substitution	Substitute hazard for one presenting a lower risk
Engineering controls	Install physical barriers or structural changes
Administrative controls	Alter procedures/provide instructions/medical exams
Personal protective equipment	Where no other controls can be applied or where they have limited effect

Example

An outer flagman protecting a worksite needs to lay detonators after each train passes. However, if the flagman collapses, the detonators will not be set and a train will enter a worksite at high speed and may strike heavy machinery and workers, causing a serious incident. One approach is to require Category 1 Safety Critical health assessments for the flagman to lessen the risk of collapse, but another is to alter the track working rules and provide the flagman with a radio to contact the site controller after they have laid detonators so the site controller can then open the site. This would be a safer work practice, and change the categorisation of the job and the examination required to Category 2.

6.8 Step 8: Confirm health assessment requirements

After determining the final risk categories of rail safety worker tasks, the health assessments are matched to the categories—that is, Category 1 and Category 2 workers have a similar assessment (except Category 1 workers have a cardiac risk level assessment). Category 3 workers are required to have a Track Safety Health Assessment.

6.8.1 Occupational health, safety and welfare

Because of the crossover between rail safety, and occupational health, safety and welfare, rail transport operators may elect to use this Standard to support obligations for health monitoring imposed by other legislation.

A robust assessment of the tasks performed by rail personnel should assist in capturing factors that may contribute to ill health. Likewise, health assessments performed because of obligation under other legislation (e.g. audiometry to monitor for noise-induced hearing loss) may give guidance to framing a health assessment under the obligations of rail safety legislation.

7 Appointing and authorising health professionals

7.1 Who may perform health assessments

The rail transport operator should appoint a suitably qualified and competent health professional to conduct the assessments of rail safety workers—an Authorised Health Professional.

Safety Critical Worker health assessments (for Category 1 and Category 2 workers) must be performed by a medical practitioner. Track safety health assessments (for Category 3 workers) may be performed by a health professional with appropriate qualifications and skills to conduct the assessment. They should be appropriately supervised and subject to appropriate quality control measures (refer to Section 9, Quality control).

Practical on-site tests, such as tests for musculoskeletal capacity, may be performed by a person with appropriate qualifications and skills. Such a person should work in conjunction with the Authorised Health Professional.

7.2 Criteria for appointing Authorised Health Professionals

The rail transport operator should ensure the Authorised Health Professional meets the selection criteria in Table 2 as a basis for appointment.

The selection criteria focus on the health professional's knowledge and understanding of the rail occupational environment, the risks associated with rail safety work and the corresponding clinical tests to be applied.

Rail transport operator personnel are well equipped to make such an assessment. The criteria do not require the rail transport operator to assess the health professional's medical knowledge.

The rail transport operator may offer assistance to the health professional to meet the criteria. This can be done by providing them with relevant information, a briefing and/or a site visit, and with a copy of this Standard.

The rail transport operator should maintain a current list of Authorised Health Professionals, including evidence that the criteria have been met in a form readily accessible to audit.

The rail transport operator should ensure that Authorised Health Professionals are kept up to date on changes to legislation, this Standard, and the rail transport operator's policies and procedures.

Table 2 Criteria for selecting Authorised Health Professionals

Safety Critical Worker Health Assessments (Categories 1 and 2)	Track Safety Health Assessments (Category 3)
Qualifications and experience: The health professional must have a qualification in medicine and should have an interest or experience in occupational medicine. They should be subject to appropriate quality control measures (refer to Section 10).	**Qualifications and experience:** The health professional should have appropriate qualifications and skills to conduct the assessment. They should be appropriately supervised and subject to appropriate quality control measures (refer to Section 10).
Rail industry knowledge: The health professional should demonstrate understanding of the rail industry environment, including the work performed and risks involved.	**Rail industry knowledge:** The health professional should demonstrate understanding of the rail industry environment, including the work performed and risks involved.
Standard: The health professional should demonstrate familiarity with the *National Standard for Health Assessment of Rail Safety Workers* and a working knowledge of the *'Assessment Procedures and Medical Criteria'* set out in this Standard, including: • appreciation of the role of health assessments in rail safety • familiarity with the risk management approach used to identify the level of health assessment required • familiarity with the tasks involved in rail operations and with major tasks of Safety Critical Workers • knowledge of rail safety worker risk categories and the rationale for health assessments applied • knowledge of and ability to perform the Safety Critical Worker health assessment • understanding of requirements and reporting options for fitness for rail safety duty • knowledge of the administrative requirements, including form completion and record keeping • understanding of ethical and legal obligations and the ability to conduct health assessments accordingly, including appropriate communication with the worker and the employer • understanding of ethical issues in relationships with the treating doctor/general practitioner.	**Standard:** The health professional should be able to demonstrate familiarity with the *National Standard for Health Assessment of Rail Safety Workers* and a working knowledge of the *'Assessment Procedures and Medical Criteria'* set out in this Standard, including: • appreciation of the role of health assessments in rail safety • familiarity with the risk management approach used to identify the level of health assessment required • familiarity with the tasks in rail operation and with major tasks of Around the Track Personnel • knowledge of rail safety worker risk categories and the rationale for health assessments applied • knowledge of and ability to perform the track safety health assessment • understanding of requirements and reporting options for fitness for rail safety duty • knowledge of the administrative requirements, including form completion and record keeping • understanding of ethical and legal obligations and the ability to conduct health assessments accordingly, including appropriate communication with the worker and the employer • understanding of ethical issues in relationships with the treating doctor/general practitioner.
Interfacing policies and program: The health professional should be able to demonstrate awareness of legislation, policies and programs that might interface with or affect the performance of the health assessment—for example, drug and alcohol policy, critical incident management programs, and anti-discrimination and privacy legislation.	

The rail transport operator may require Authorised Health Professionals to forward rail safety worker health records, including the safety critical worker health questionnaires, health assessment records and other supporting clinical information, to the Chief Medical Officer, (CMO) or another designated Authorised Health Professional if their practice ceases to operate or ceases to perform rail safety health assessments. Such arrangements are aimed at supporting continuity of records. Transfer of rail workers' health records must comply with privacy principles.

The rail transport operator should ensure that the performance of Authorised Health Professionals is subject to appropriate quality control measures (refer to Section 9, Quality control).

8 Administrative systems

8.1 Health assessment database

The rail transport operator should establish an appropriate database to help administer health assessments. The database should identify all of the following:

- each rail safety worker's risk category and assessment required
- the due date for each worker's assessment
- any restrictions or conditions on the worker's fitness for duty.

It should be managed so that timely reminders to supervisors and workers are issued and followed up.

A worker's health assessment status must be kept confidential and released only as required to the worker; the supervisor and the rail transport operator's Authorised Health Professional(s).

8.2 Privacy laws

In administering the rail safety worker health assessments, rail transport operators must ensure that the privacy principles contained in privacy legislation are complied with and that health records are managed and stored in line with the relevant health records legislation. Rail transport operators should consult the Privacy Commissioner in their state/territory if they are uncertain about local requirements.

8.2.1 Privacy policy

The health records and privacy legislation of each state or territory may require rail transport operators to have a privacy policy for health information. This includes provision for ensuring workers are clearly informed about:

- the purpose for collecting and storing the health information
- what information will be stored and where
- the fact that they can access it
- to whom the information may be disclosed.

8.2.2 Primary purpose

Only information justifiably necessary to assess fitness for rail safety work should be collected.

Information must only be disclosed for the primary purpose for which it was collected—that is, for assessing fitness for rail safety duty.

The rail transport operator cannot request an examination outside the health requirements of the worker's job, and cannot provide the examining health professional with information that is not relevant to the health assessment for that job.

8.2.3 Information disclosure

Health information should be reported on a need-to-know basis from a doctor to a rail transport operator.

The Authorised Health Professional must not disclose the worker's clinical records to the rail transport operator. The rail transport operator needs to know fitness for duty (or any restrictions), not the underlying medical conditions.

Worker/patient consent must be obtained to disclose any health information to a third party, unless permitted by law as with workers' compensation.

However, a doctor is not prohibited from giving the rail transport operator general advice about fitness for duty provided the doctor does not refer to the worker's medical details.

Where a rail transport operator employs the services of a CMO, the rail transport operator's CMO may request a copy of the Health Assessment Record, the safety critical worker health questionnaire and/or other supporting clinical records from the Authorised Health Professional to ensure consistency and quality of health assessments for rail safety workers or to assist management of a particular worker. Where such records are accessed or retained by the CMO, their confidentiality must be assured and systems must be in place to ensure records are not accessed by other personnel within the rail transport operator. This is consistent with privacy provisions.

8.2.4 Maintenance and storage of information

Information should be kept accurate, up to date, and protected from loss and unauthorised use.

For continuity of records, a rail transport operator may establish a repository for rail safety worker health records provided that such records are accessible only by Authorised Health Professionals and the CMO.

Records may be scanned and kept in electronic form. The worker's signature on the completed safety critical worker health questionnaire is legally valid after scanning.

8.2.5 Interstate considerations

Where workers work across state or territory boundaries, information should only be transferred to other states or territories where privacy laws are similar.

8.3 Health assessment forms

Model forms are provided in Part 4 as a template for rail transport operators to base their administrative processes on.

Administrative detail on the forms may be altered consistent with a rail transport operator's requirements. The provisions for reporting from the health professional to the rail transport operator, and the content of the safety critical worker questionnaire, represent standardised data collection and should not be altered, unless an assessment of workers' fitness for additional job demands is required.

The model forms are also consistent with privacy principles. The rail transport operator should confer with the Privacy Commissioner in their state or territory to ensure any changes made to the forms are consistent with privacy and health records legislation.

A health professional should not conduct an assessment without the appropriate forms,

Use of the forms is described in the following sections and in Figure 13.

8.3.1 Request and Report Form

This form (refer to Section 24.2) facilitates communication between the rail transport operator and the Authorised Health Professional. The rail transport operator completes relevant details regarding the worker and the type of assessment requested. The Authorised Health Professional summarises fitness for duty assessment findings on the form using the standard reporting terminology (refer to Section 5.4) and returns it to the rail transport operator. Medical data is not conveyed, only functional capacity.

As a general principle, a copy of the report should also be provided to the worker by the Authorised Health Professional to facilitate discussion regarding the assessment outcome. In exceptional circumstances, such as possible aggression from the worker, this step may be omitted.

8.3.2 Worker Notification and Health Questionnaire

This form (refer to Section 24.3) notifies the worker of the requirement to attend a health assessment. It includes the reasons for the assessment and instructions for the worker. It also includes a health questionnaire. Workers should be requested to complete the health questionnaire before attending their appointment (also refer to sections 8.5.1, Before the assessment and 12.1, History including health questionnaire).

8.3.3 Record for health professional

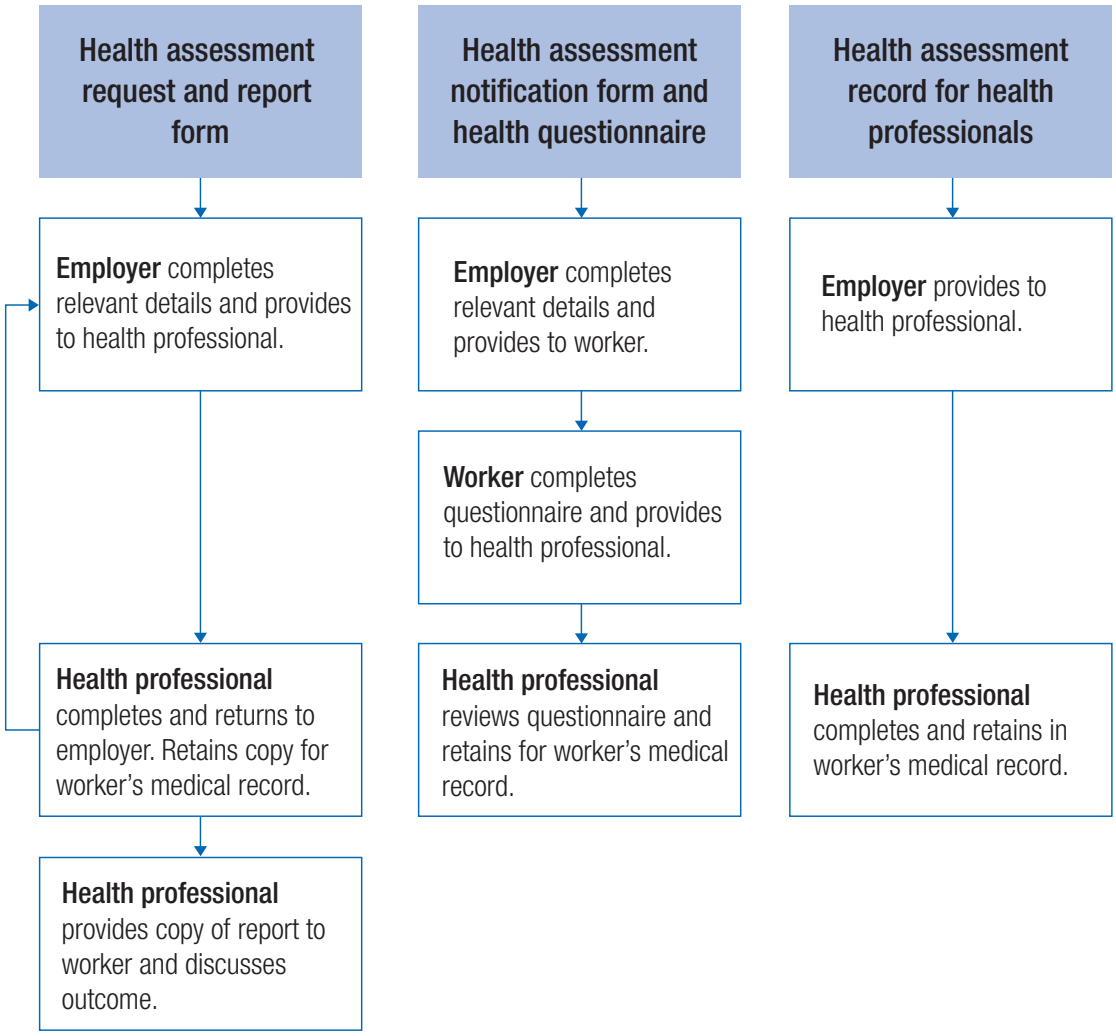
This form (refer to Section 24.4) guides the health professional through the assessment process and provides a standard clinical record. The rail transport operator issues the form, but—since it will contain details of the clinical findings—it must not be returned to the rail transport operator. Instead, the form should be retained by the health professional.

Where a rail transport operator employs the services of a Chief Medical Officer, their Chief Medical Officer may request a copy of the Health Assessment Record, but must maintain confidentiality of such information according to privacy legislation (refer to Section 2.3, Privacy legislation).

8.3.4 Risk assessment template

The risk assessment form (refer to Section 24.1) is a template that guides the process of risk assessment of rail safety tasks. The completed form should detail activities involved in the worker's task(s), as well as health attributes required to complete the task(s). It is recommended that a copy be included with the information provided to the Authorised Health Professional.

Figure 13 **Use of health assessment forms**



8.4 Worker identification

The rail transport operator should establish systems to ensure proof of identity for the rail safety worker for the purposes of the health assessments, including pathology testing.

National Rail Safety Legislation (NTC 2011) requires that these include a photo identification (ID). The systems may include a record of the currency of health assessment and review requirements.

8.5 Communication with workers

The rail transport operator should establish communication mechanisms to alert workers about health assessment requirements, including alerts to management and workers if systems are breached.

8.5.1 Before the assessment

The worker should receive adequate notice of the due date for their health assessment and the consequences of not presenting for the assessment in that time frame. In line with privacy principles and the general requirements of the assessment, the notification will include advice on:

- the purpose of the assessment
- who will conduct the assessment
- who will receive the assessment report
- the worker's responsibility to provide accurate information
- the requirement to:
  - take photo ID to the appointment and to any other tests
  - take glasses, hearing aids or other aids to the appointment
  - the requirement to attend audiometry testing
  - the requirement to complete a health questionnaire before attending the appointment
  - the requirement to take current medication (or a list of it) to the health assessment appointment (including prescription, over-the-counter and alternative medicines)
- for Category 1 workers, the requirement to attend pathology tests before the health assessment for an electrocardiograph (ECG) test, serum cholesterol (total and high-density lipoprotein [HDL]) and blood glucose. The worker should be instructed to fast before pathology tests, if appropriate.

8.5.2 After the assessment

After receiving the health assessment report form, where the worker has been assessed as anything other than Fit for Duty Unconditional, the employer should discuss with the worker any implications for their work, and the policies or arrangements to be applied.

A record of such arrangements should be kept on the database, together with the health assessment result and any requirements for review assessments.

The worker should have been provided with a copy of the assessment report by the Authorised Health Professional (refer section 8.3.1, Request and report form).

8.6 Communication with the Authorised Health Professional

8.6.1 Before the assessment

The Authorised Health Professional should not perform a health assessment of a rail safety worker without the appropriate forms (Authorised Health Professionals should also refer to Section 10, Appointment, documentation and requests for tests).

The rail transport operator should give the Authorised Health Professional all forms and supporting information relevant to the worker's health assessment.

In the case of Category 1 Safety Critical Workers, the examination should take place when the pathology (i.e. blood test results) needed for the cardiac risk level are available. If the results are not available, the worker can be issued with a preliminary assessment of fitness or otherwise for duty, based on the clinical examination and other aspects of the assessment. The final assessment should be made as soon as possible, and the Authorised Health Professional should actively pursue the pathology results to ensure their timely completion. The Authorised Health Professional should contact the worker to explain the results whether they are normal or abnormal.

8.6.2 Supporting information

For a periodic Safety Critical Worker health assessment, relevant supporting information includes the previous health assessment report.

In addition, the following information for the previous period should be provided to the Authorised Health Professional as relevant:

- any change in sick leave patterns
- relevant workers compensation history
- critical incident history
- positive drug and alcohol assessments
- record of involvement in a serious incident.

The above information may be provided in summary and in any format that is administratively efficient and sufficiently comprehensive for the Authorised Health Professional.

In cases where a Category 1 worker refuses a blood test, the Authorised Health Professional should indicate that they were 'unable to complete the assessment' and refer back to the rail transport operator.

8.6.3 After the assessment

The Authorised Health Professional should contact the rail transport operator immediately by phone if the worker is Unfit for Duty, but should not reveal details of the worker's medical condition without the worker's consent.

The method of transmission of the report to the rail transport operator should ensure that confidentiality is maintained.

The rail transport operator should keep all reports confidentially and securely in compliance with privacy and health records legislation.

8.7 Portability of a health assessment report

If a rail safety worker has undertaken a health assessment for a rail transport operator, the health assessment report may be transferable to another rail transport operator provided the rail safety worker has given written agreement. Provision for signed consent of transfer is included on the report form.

The rail transport operator receiving the health assessment report has a responsibility to confirm that:

- the level of health assessment performed by the original rail transport operator (i.e. Category 1, 2 or 3) is equal to or greater than that required for the tasks performed by the rail safety worker in the other rail transport operator.
- the specific health attributes required by the original rail transport operator (e.g. colour vision, hearing, musculoskeletal) are equal to or greater than those required to complete the tasks in the other rail transport operator.

Practical tests, such as for musculoskeletal capabilities, are generally quite specific to the particular rail environment. The results of such tests are not transferable to other rail transport operators unless the work practices and environment are very similar.

A rail safety worker who works for more than one rail transport operator has a responsibility to ensure that each employer is advised about conditions that may affect the worker's safe working ability.

9 Quality control

9.1 General requirements

The adoption of quality control systems is essential for the effective implementation of the health assessments for rail safety workers, and thus for the safety of the rail network.

Quality control is important both for the conduct of the health assessments by the Authorised Health Professionals and for the management systems employed by the rail transport operators. Thus, all rail transport operators should implement a system of formal quality control to ensure that:

- rail safety workers are being appropriately categorised and receiving health assessments in accordance with the requirements of this Standard
- rail safety worker health assessments are being administered and managed in accordance with the requirements of this Standard, both within the organisation and by Authorised Health Professionals.

Where possible, rail operators should also establish that Authorised Health Professionals are correctly interpreting and applying the requirements of this Standard in terms of fitness or otherwise for duty, and appropriately managing rail safety workers according to the outcomes of the assessments.

9.2 Nature and extent of quality control system

This Standard does not identify specific requirements for the quality control system, but recognises that the nature and extent of the system will depend on the nature, size and complexity of the organisations, and the level of risk involved in their operations.

Systems may include elements such as:

- audits—for example, audits of databases to ensure health assessments are being scheduled and completed as required
- document reviews—for example, reviews of procedures and documentation to ensure consistency with this Standard
- consultation and feedback—for example, through discussions with Authorised Health Professionals, internal staff managing the processes and rail safety workers.

Rail transport operators should establish a risk-based system founded on consideration of factors such as:

- **The risk category of the workers**. All categories of assessment should be included in the quality control system; however, the system may focus particularly on Category 1 and Category 2 workers for whom, by definition, the risks are greatest.
- **The experience of the health professionals conducting the health assessments**. The system should involve all Authorised Health Professionals; however, the nature, extent and frequency of review or audit should take into account factors such as:
  - the turnover of Authorised Health Professionals
  - the relatively few assessments conducted by some practitioners
  - the existence or otherwise of any routine checks conducted by the rail transport operator's Chief Medical Officer (if they have one).
- **The complexity of the organisation**. Operators may risk 'creep' away from policies and procedures across diverse areas of the organisation, and should consider this risk when scheduling audits or reviews, and establishing the nature and extent of quality control measures.

The quality control system may change over time, particularly as health professionals and organisations become more familiar with this Standard. Rail transport operators should regularly review their requirements based on a risk management approach.

The system should be devised and implemented by those with appropriate experience both of the rail system and this Standard.

9.3 Audit points

To guide development of appropriate quality control systems, the following table describes possible points for audit or review of the health assessment systems of rail operators. Audit points are grouped under the headings of:

- task risk analysis and worker categorisation
- authorisation and management of Authorised Health Professionals
- management of the health assessment process.

These points provide an indication of the potential scope of quality control systems and are not exhaustive.

Audit points
1. Task risk analysis and worker categorisation With respect to the task analysis and worker categorisation, rail operators should consider adopting audit or review processes that: • confirm all rail safety worker tasks have been categorised according to this Standard • confirm compliance of the categorisation methodology with the Standard, including compliance with the risk management processes outlined in Section 5, Features of the health risk management system • confirm appropriate documentation of categorisation processes and conclusions • confirm the dates of review for risk categorisation have been scheduled and are flagged for reconsideration when job descriptions change.
2. Authorisation and management of Authorised Health Professionals With respect to the authorisation and management of health professionals, rail operators should consider adopting audit or review processes that: • confirm up-to-date records are maintained by health professionals who are authorised by the rail operator • confirm that all health professionals who have conducted assessments (including nurses) are appropriately authorised • confirm that all Authorised Health Professionals have received initial training and refresher training if required by the rail operator, including receiving relevant update information from the regulator or National Transport Commission • confirm current procedures for conducting the health assessments for the particular operator are held by all Authorised Health Professionals • confirm all Authorised Health Professionals use current versions of forms • confirm appropriate systems are in place for regular communication with Authorised Health Professionals.
3. Management of the health assessment process With respect to management of the health assessment process, rail operators should consider adopting audit or review processes that: • confirm adequate internal procedures in line with this Standard • confirm rail safety workers hold current medical certification • confirm recall and monitoring systems adequately identify when health assessments are due, and adequately monitor assessment status • confirm the recall and monitoring system are effective in managing workers with temporary medical certificates (requiring follow-up investigation) and those found Temporarily Unfit for Duty.

Part 3: Procedures for conducting health assessments

This Part outlines the administrative, clinical and reporting procedures that should be followed by the Authorised Health Professional in conducting health assessments for rail safety workers. The procedures are summarised in Figure 15.

10 Appointment, documentation and requests for tests

An appointment for an assessment can be made either by the employer or the worker.

Before the appointment, the employer will forward the relevant forms and documentation to the health professional (also refer to sections 8.3, Health assessment forms and 24, Model forms). This will include:

- **Health Assessment Request and Report Form**, which will indicate the nature of the worker's job and the level (e.g. Category 1, Category 2, Category 3) and type (e.g. preplacement, periodic) of health assessment required. This form will also identify task-specific requirements for hearing, colour vision and musculoskeletal capacity. It will also indicate the nature of tests required.
- **Health Assessment Record for Health Professional**, which guides the clinical examination and provides a convenient standardised template for recording a general assessment of fitness for rail safety duty.

The health professional should not conduct the assessment without the appropriate forms.

Supporting documentation will include a copy of the report from the previous health assessment, as well as additional documentation as relevant, such as:

- summary reports of sick leave and workers compensation claims
- notifiable incident history
- indication of a positive alcohol or drug test, or self-declaration.

Workers should also bring to the assessment:

- the completed *Health Questionnaire*
- all medications they are currently taking (or a list of them)
- corrective lenses if usually worn
- hearing aids if usually worn at work
- copies of any medical reports or test results that are available or that have been requested by the Authorised Health Professional
- photo identification (ID).

Category 1 Safety Critical Workers will require a resting electrocardiograph (ECG) and blood test (fasting blood glucose and lipids) before the appointment. These should be completed in advance and the results forwarded directly to the Authorised Health Professional.

If the results are not available, the worker can be issued with a preliminary assessment of fitness or otherwise for duty, based on the clinical examination and other aspects of the assessment. The final assessment should be made as soon as possible, and the Authorised Health Professional should actively pursue the pathology results to ensure their timely completion. The Authorised Health Professional should contact the worker to explain the results whether they are normal or abnormal.

By agreement between the examining health professional and the employer, the worker may also be requested to have an audiogram before the examination.

11 Orienting the worker

Before starting the assessment, the Authorised Health Professional should:

- explain the purpose of the health assessment to the worker and that the results will be discussed with them
- explain the privacy principles (all clinical and health information will remain confidential and will not be forwarded to the employer without the worker's consent but may be discussed with the chief medical officer [CMO] where one exists); the report provided to management will be in functional terms (rather than diagnostic ones) in relation to their fitness to perform rail safety duties, as indicated on the report form
- ensure that the worker has signed the disclosure indicating that they understand how their information will be handled. If the worker refuses to sign the disclosure or that the information that they have provided is complete and correct, the assessment should be abandoned; the employer should be notified that the examination has not been conducted and class the worker as temporarily unfit
- check the worker's photo identification.

12 The examination

The examination for Category 1 and Category 2 workers seeks to identify significant chronic conditions likely to affect fitness for duty. This includes conditions likely to affect attentiveness to the task, including:

- blackouts
- cardiovascular conditions
- diabetes mellitus
- neurological conditions (seizures and epilepsy, dementia, vestibular disorders and other neurological disorders, etc.)
- psychological conditions
- sleep disorders
- substance abuse.

It also includes examination of task-specific requirements, including:

- hearing
- vision (including colour vision)
- musculoskeletal requirements.

For Category 3 workers, the examination focuses on hearing, vision and musculoskeletal capacity, which are the key requirements for safety around the track. If other conditions are identified or declared during the assessment that may impact on the safety of the worker around the track, this should be communicated to the employer.

The examination proceeds via the conventional steps of:

a) taking a patient history using the *Health Questionnaire* as the basis
b) performing a physical examination, and considering pathology results and other tests using the *Health Assessment Record for Health Professional* for recording results
c) interpreting the findings in light of the National Standard for Health Assessment of Rail Safety Workers (the Standard) to determining fitness status.

These steps are outlined in further detail in the following sections.

12.1 History including health questionnaire

All workers (Category 1, 2 and 3) attending for a periodic health assessment should bring a completed health questionnaire. The questionnaire for the Category 3 assessment is not as specific or comprehensive as the Category 1 and Category 2 questionnaire, but still seeks to establish any serious health condition that might impact on track safety. The assessment should not proceed until this has been completed.

The Authorised Health Professional should review the worker's responses to the questionnaire, elicit further information as required and record the history in detail for all declared conditions.

The Authorised Health Professional should calculate scores for various sections of the questionnaire (Categories 1 and 2 only) and record the results on the *Health Assessment Record for Health Professional*. These sections include:

- Epworth Sleepiness Scale (ESS) (question 4)
- AUDIT Questionnaire (question 5)
- K10 Questionnaire (question 6).

The Authorised Health Professional should clarify and discuss aspects of the questionnaire as required to establish the history. They should ask the worker to sign the questionnaire as a truthful statement, then countersign and date. If this is refused, then proceed as set out in Section 14, Reporting to the employer.

12.2 Clinical assessments relevant to the worker's risk category

When examining a worker to assess their fitness for duty, the functionality of various body systems should be addressed as outlined in Part 4 (Category 1 and Category 2) and Part 5 (Category 3).

Additional tests or referral to a specialist may be required if and when the history and clinical examination raises the possibility of potentially significant problems. It may be necessary to contact the treating doctor to clarify information regarding the worker's health. This must be done with the worker's consent.

The following subsections summarise the examinations to be conducted. Guidance regarding interpretation of the findings of the examination is provided in Section 12.3, and detailed in the condition-specific sections in Parts 4 and 5.

The findings should be recorded on the form *Health Assessment Record for Health Professional*, which aims to guide systematic thinking about the findings. It requires documentation of any abnormalities found, their interpretation in regard to this Standard and the action taken (refer to Part 6, Section 24.4, Record for health professional). The form may be audited to assist in quality assurance.

12.2.1 Hearing

If facilities are available, conduct an audiometry according to procedures outlined in Part 4, Section 19.1, Hearing. Alternatively, an audiologist report may be provided with the health assessment request or may be requested. The hearing threshold level for pure tones is defined as 'the number of decibels below standard audiometric zero for a given frequency at which the listener's threshold of hearing lies when tested in a suitable sound attenuated environment' (Australian Standard AS 2586-1983). The requirements for hearing will vary depending on the task as described by the rail operator in the request for assessment.

12.2.2 Vision

Acuity

Visual acuity should be measured for each eye separately and without optical correction. If optical correction is needed, vision should be retested with appropriate corrective lenses. Acuity should be tested using a standard visual acuity chart (Snellen or LogMAR chart, or equivalent, with 5 letters on the 6/12 line). Standard charts should be placed 6 metres from the person tested; otherwise, a reverse chart can be used and viewed through a mirror from a distance of 3 metres. Other calibrated charts can be used at a minimum distance of 3 metres. More than 2 errors in reading the letters of any line is regarded as a failure to read that line.

Fields

Visual fields may be initially screened by confrontation. The tester should sit close to, and directly opposite, the person and instruct them to cover one eye. The opposite eye should be occluded like a mirror image. The person should fixate on the non-occluded eye and count the number of fingers held up in each of the 4 corners of the tester's visual field. Other extreme upper, lower and side points may also be tested. This should be repeated for the other eye. The requirements for visual fields will vary depending on the task, as described in the information provided by the rail operator.

Colour vision

If colour vision is indicated as a requirement for the task by the rail operator, it should be screened for using Ishihara plates under good illumination. The worker should be shown the trial plate and the test should be explained to them. The 12 colour plates with numbers should then be shown, noting any errors. The colour vision requirements ('Colour Vision Normal' and 'Colour Defective Safe A and B') vary depending on the nature of the rail task. Refer to Section 19.2, Vision and eye disorders for specific advice.

12.2.3 Musculoskeletal capacity

An assessment of locomotor function should be aligned with the specific inherent job requirements and job demands of the worker's role, as described by the rail operator in the request for health assessment. It will generally involve assessment of the following:

- gait—the ability to walk on flat and uneven surfaces
- spine—the strength and range of movement of the cervical and lumbosacral spine
- limbs—the power and range of movement of the upper and lower limbs
- pain—the presence of musculoskeletal pain that may impede movement and its adequacy of treatment
- balance—the person's sense of balance, which may be assessed using the Romberg test.

12.2.4 Cardiovascular

The cardiovascular examination should include:

- blood pressure—this may be taken sitting or supine (if blood pressure is ≥ 150/95 it should be repeated after 15 minutes supine)
- pulse rate
- heart sounds
- cardiac risk level (Category 1 workers only). Note worker's age, whether they are a smoker, blood pressure, fasting cholesterol (total and high-density lipoprotein) and fasting plasma glucose. For scoring, refer to Section 18.2, Cardiovascular conditions
- resting ECG (routinely for Category 1 workers and as clinically indicated for Category 2 workers).

12.2.5 Biometrics/sleep

Height and weight will need to be measured to calculate body mass index (BMI) as part of the sleep disorder assessment (refer to BMI nomogram in Section 18.6, Sleep disorders).

12.2.6 Substance misuse

Drug and alcohol screening should not be included routinely as part of a periodic health assessment (refer to Section 18.7, Substance misuse).

12.3 Interpretation of the examination findings

12.3.1 General considerations

The information gathered in the examination should be interpreted in light of the medical criteria outlined in Part 4 (Categories 1 and 2 Safety Critical Workers) and Part 5 (Category 3).

Categories 1 and 2 Safety Critical Workers have differing medical criteria due to the added emphasis on risk of collapse for Category 1 Safety Critical Work. Both categories, however, share the need for cognitive competence and other faculties. Each section clearly differentiates the requirements for Category 1 and Category 2 workers, as appropriate.

The medical criteria are presented in sections according to various body systems. The main focus is on serious conditions that would impact on the ability to perform Safety Critical Work. The sections are grouped according to:

- conditions affecting cognition (situational awareness) and sudden incapacity
- task-specific requirements, including criteria for conditions affecting vision, hearing and musculoskeletal capacity.

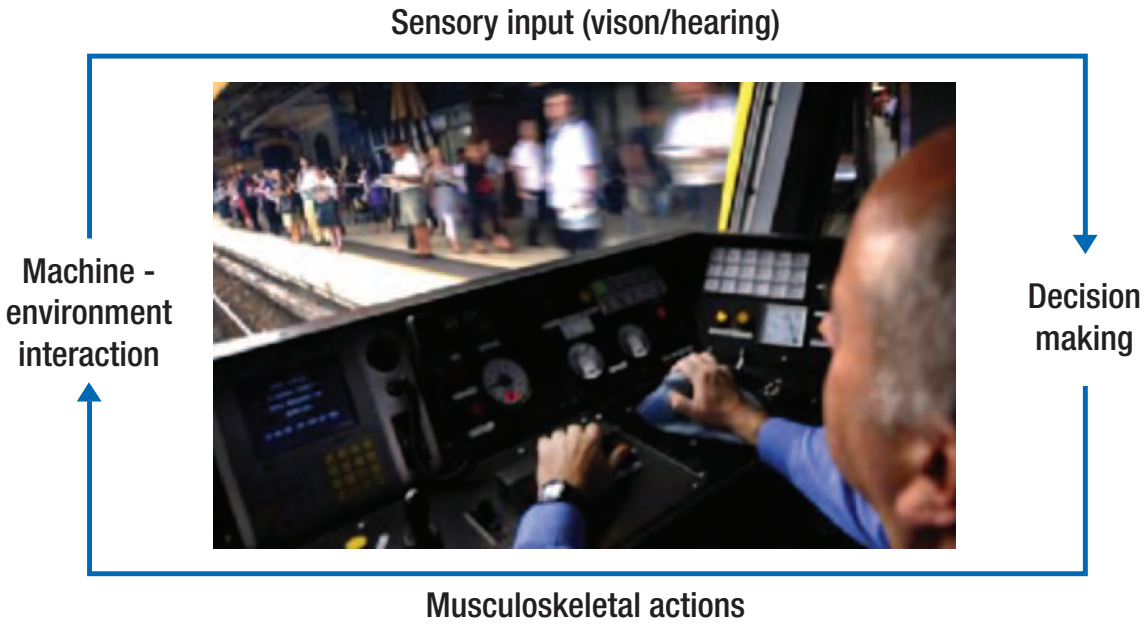
The medical criteria for Category 3 differ again, reflecting the requirements for their own safety around the track, as distinct to the safety of the network.

In the case of hearing, colour vision and musculoskeletal capacity for Category 1 and Category 2 workers, specific risk assessments and standards are required in relation to each job.

Each section provides general information about the condition and its effects on safety, and then provides advice about the medical assessment of the condition. The tables set out the criteria to be met for fitness for rail safety duty. The criteria emphasise function in relation to the job rather than being based on diagnosis or impairment.

When assessing a worker, the Authorised Health Professional should be mindful of the general principles of the ergonomics of Safety Critical Work (refer to Figure 14) and the implications for safety of the network. These principles should be the touchstone for difficult cases or conditions not adequately covered in this Standard.

Figure 14 **The ergonomics and health attributes required for rail safety work**



As an overview to the process, the following sections provide notes on the use and interpretation of the screening tools that are used in the assessments. The condition-specific sections in parts 4 and 5 provide further details.

12.3.2 Cardiac Risk Score/level

The results of the calculation should be interpreted and actioned according to the flow chart in Section 18.2, Cardiovascular conditions. In borderline cases, further information may be sought about family history or the BMI considered when determining the need for further assessment and classification. The worker may need to be immediately classed Temporarily Unfit for Duty pending further assessment. Workers with raised risk levels require a stress ECG.

12.3.3 Psychological health

Consider the result of the *K10 Questionnaire* (question 6 of the *Safety Critical Workers Health Questionnaire*) together with other relevant history, clinical signs, and accident or incident patterns reported by the rail operator.

If the score is raised (i.e. $\geq$ 19) or other clinical observations warrant it, discuss the findings with the worker to determine possible explanations such as work stress, domestic crises or endogenous causes, and determine an approach to managing the condition such as referral to a general practitioner or psychiatrist, or to an Employee Assistance Program (EAP).

In some cases, the worker will need to be immediately classed Temporarily Unfit for Duty pending further assessment (refer to Section 18.5, Psychiatric conditions).

12.3.4 Sleep

Consider the result of the Epworth Sleepiness Scale (ESS) score (question 4 of the Safety Critical Worker Health Questionnaire) together with relevant clinical history, clinical signs (e.g. BMI), work reports and so on.

If the ESS score is raised (i.e. $\geq$ 16) or other clinical findings warrant it, discuss the findings with the worker to determine possible explanations and determine an approach to management—for example, referral to a general practitioner or to a sleep clinic for polysomnography, or arrange home screening. The worker may need to be immediately classed as Temporarily Unfit for Duty pending further assessment (refer to Section 18.6, Sleep disorders).

The BMI provides a degree of objective measure regarding risk of sleep apnoea. A person with any of the following symptoms should be assessed to determine a possible sleep disorder:

- a BMI of ≥ 40
- a BMI of ≥ 35 if associated with type 2 diabetes or high blood pressure requiring two or more medications for control
- a history of habitual loud snoring during sleep or of witnessed apnoeic events (such as in bed by a partner).

12.3.5 Substance misuse

The main purpose of the health assessment with respect to substance misuse is to assess for evidence of illicit drug use or abuse, or dependence on other substances such as alcohol or prescribed medications.

Consider the result of the *AUDIT Questionnaire* (question 5 of the *Safety Critical Worker Health Questionnaire*), together with relevant history and/or clinical signs. If the score is raised (≥ 8) or other clinical findings warrant it, discuss the findings with the worker to determine possible explanations and to agree an approach to management such as baseline biochemistry or referral to a general practitioner or to an Employee Assistance Program.

Drug screening may be required for pre-placement or change of risk category health assessments, or for a specifically referred triggered health assessment, in accordance with relevant legislation.

If, during a periodic health assessment, the examining health professional identifies apparent acute impairment, the worker will need to be immediately classed as Temporarily Unfit for Duty.

12.3.6 Temporary conditions

This Standard does not deal with the myriad conditions that may affect health on a short-term basis, and for which a rail safety worker may be referred for assessment regarding fitness to resume duty. Such conditions may include post-major surgeries, severe migraines, limb fractures or acute infections.

Clinical judgement is usually required on a case-by-case basis, although the text in each chapter gives some advice on the clinical issues to be considered.

12.3.7 Undifferentiated illness

A rail safety worker may have clinical symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a health professional can make a definitive diagnosis, and confidently advise the worker and employer.

Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect rail safety work.

Generally, a Safety Critical Worker who presents with symptoms of a potentially serious nature—for example, chest pains, blackouts, delusional states or dizzy spells—should be assessed as Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be assessed as fit for Non-Safety Critical alternative duties. Fit for Duty Subject to Review may be used to identify workers who require prompt investigation, but their condition is unlikely to pose a safety risk.

12.3.8 Complex conditions and conditions not covered in this Standard

Where a worker has a systemic disorder or a number of medical conditions, there may be additive or cumulative detrimental effects on judgement and overall function. For example, there may be a combination of impaired vision, hearing and locomotor dysfunction, or combinations of physical and mental illness, and associated medication. If these or other clinical conditions are not adequately covered in this Standard,

the health professional should consider the nature of the worker's tasks and the worker's capacity to perform the duties safely. The general principles of the ergonomics of Safety Critical Work should be borne in mind (refer to Figure 14). The key issue to consider is whether the condition could do any of the following:

- affect sensory processes (vision, hearing and balance)
- affect cognition (situational awareness)
- lead to sudden collapse
- affect musculoskeletal performance.

If any of the above could happen, could that then, in turn, affect the safety of the rail network? If so, then consider:

- modifying the tasks or environment to accommodate a person's condition without compromising their efficiency or the health and safety of others, or incurring unreasonable expense
- providing helpful additional information to the clinical assessment through additional functional or practical assessments (refer to Section 5.2.4, Functional and practical assessments).

12.3.9 Drugs and Safety Critical Work

Any drug that acts on the central nervous system has the potential to adversely affect skills required for Safety Critical Work. Central nervous system depressants, for example, may reduce vigilance, increase reaction times and impair decision making in a very similar manner to alcohol. In addition, drugs that affect behaviour may exaggerate adverse behavioural traits and introduce risk-taking behaviours.

Acute impairment (intoxication) due to alcohol or drugs (including illicit, prescription and over-the-counter drugs) is managed through specific rail safety legislation that prohibits working with a blood alcohol concentration of more than a certain limit or when impaired by drugs (refer to the national policy on drugs and alcohol). This is a separate consideration to long-term medical fitness for Safety Critical Work and is outside the scope of this Standard. However, managing people with diagnosed dependency or substance misuse is a fitness for duty matter and specific requirements in this regard are described in Section 18.7, Substance misuse.

Where medication is relevant to the overall assessment of fitness for Safety Critical Work in the management of specific conditions, such as cardiovascular, diabetes, epilepsy and psychiatric conditions, this is covered in the respective chapters. General guidance is provided in the following section.

General considerations for prescription drugs

Although many drugs have effects on the central nervous system, most, with the exception of benzodiazepines, tend not to pose a significantly increased crash or incident risk when the drugs are used as prescribed, and once the patient is stabilised on the treatment (Drummer 2008). This may also relate to drivers self-regulating their driving behaviour. When advising workers and considering their general fitness for Safety Critical Work, whether in the short or long-term, health professionals should consider the following:

- the balance between potential impairment due to the drug and the worker's improvement in health on ability to perform Safety Critical Work
- the individual response of the patient worker—some individuals are more affected than others
- the job requirements and the potential impact on safety of impairment by drugs or of failure to take medication
- the added risks of combining two or more drugs capable of causing impairment, including alcohol
- the added risks of sleep deprivation (through fatigue) while working, which is particularly relevant to shift workers
- the potential impact of changing medications or changing dosage

- the cumulative effects of medications
- the presence of other medical conditions that may combine to adversely affect their ability to perform Safety Critical Work
- other factors that may exacerbate risks, such as known history of alcohol or drug misuse.

The effects of specific drug classes

The effects of specific drug classes are based on information from road safety studies:

- **Benzodiazepines**. Benzodiazepines are well known to increase the risk of a crash/incident and are found in about 4% of road fatalities and 16% of injured drivers taken to hospital (Verster et al 2009). In many of these cases benzodiazepines were either abused or used in combination with other impairing substances. If a hypnotic is needed, a shorter acting drug is preferred. Tolerance to the sedative effects of the longer acting benzodiazepines used in the treatment of anxiety gradually reduces their adverse impact on driving skills.
- **Antidepressants**. Although antidepressants are one of the more commonly detected drug groups in fatally injured drivers, this tends to reflect their wide use in the community. The ability to impair is greater with sedating tricyclic antidepressants, such as amitriptyline and dothiepin, than with the less sedating serotonin and mixed reuptake inhibitors such as fluoxetine and sertraline. However, antidepressants can reduce the psychomotor and cognitive impairment caused by depression and return mood towards normal. This can improve driving and work performance.
- **Antipsychotics**. This diverse class of drugs can improve performance if substantial psychotic-related cognitive deficits are present. However, most antipsychotics are sedating and have the potential to adversely affect driving skills by blocking central dopaminergic and other receptors. Older drugs such as chlorpromazine are very sedating due to their additional actions on the cholinergic and histamine receptors. Some newer drugs are also sedating, such as clozapine, olanzapine and quetiapine, while others, such as aripiprazole, risperidone and ziprasidone, are less sedating. Sedation may be a particular problem early in treatment and at higher doses.
- **Opioids**. There is little direct evidence that opioid analgesics such as hydromorphone, morphine and oxycodone have direct adverse effects on driving behaviour. Cognitive performance is reduced early in treatment, largely due to their sedative effects, but neuroadaptation is rapidly established. This means that patients on a stable dose of an opioid may not have a higher risk of a crash. This includes patients on buprenorphine and methadone for their opioid dependency, providing the dose has been stabilised during a few weeks and they are not abusing other impairing drugs. Driving or working at night may be a problem due to the persistent miotic effects of these drugs reducing peripheral vision.

13 Additional tests and referral

13.1 Functional and practical assessments

In some situations, a clinical health assessment may need to be supplemented with a functional or practical test to confirm fitness for duty. For example, a functional assessment of some neurological conditions or musculoskeletal capacity may be applied to confirm the worker's ability to perform the particular tasks required of them. Practical tests are usually conducted in the typical work environment, while functional assessments are simulations of work in settings such as a gym or a cab simulator. Such tests cannot override the medical criteria; they can only supplement the doctor's decision about the ability to perform rail safety tasks where this Standard is imprecise.

Authorised Health Professionals should consider the following limitations of such tests:

- These tests can never fully simulate the work environment. By their nature, the test will always be a snapshot of the person's functional capacity. They are limited in time, and may not provide an indication that the individual will be capable of performing those tasks for a full working day.
- The test may place the person being tested at risk of injury. When ordering a functional or practical test, the examining doctor should be satisfied that the individual is fit to perform the test. If fitness to perform the test is questionable, then so is the person's fitness for the role.
- A functional or practical test does not assess risk of injury. Where the health issue is one of recurrent injury—for example, an unstable knee—performing all of the elements of a test does not mean that the person is safe to perform those job demands day after day.

As with ordering any test, the doctor should first consider how a positive, negative or inconclusive result will affect their ultimate decision making.

Practical tests for colour vision or hearing are not recommended because consistency of methodology, and thereby accuracy and applicability across all rail operators, cannot be ensured.

13.2 Neuropsychological tests

Neuropsychological tests regarding aptitudes for various rail safety workers have been specifically developed for use in recruitment and other situations. They may be used for assessment of rail safety workers who have had an injury or illness affecting mental processes to help gauge their recovery and suitability for work. The tests should be applied by a psychologist experienced in using neuropsychological tests.

To further assist in assessment there are some additional tests and rail-specific resources to be aware of.

13.3 Specialist referral

The worker's condition may warrant referral to a specialist. In such cases, the Authorised Health Professional should explain fully the nature of the rail safety tasks involved and the concerns regarding health status. The specialist's report should be sent to the Authorised Health Professional, not to the employer.

14 Reporting to the employer

Fitness for duty should be reported using the standard fitness for duty classifications (refer to Section 5.4, Standard reporting framework):

- Fit for Duty Unconditional
- Fit for Duty Conditional
- Fit for Duty Subject to Review
- Fit for Duty Subject to Job Modification
- Temporarily Unfit for Duty
- Permanently Unfit for Duty.

Should the worker be assessed as unfit for duty either temporarily or permanently, the health professional should notify the employer immediately by phone to discuss the implications of the assessment and to allow the employer to make appropriate arrangements. The health professional should not discuss specific clinical information, only recommendations in terms of fitness for duty, including any necessary job modifications.

In all cases, the health professional should complete the report section of the *Request and Report Form*. This report should not include any clinical information. Only the functional assessment of fitness for duty or otherwise, and any recommendations regarding specialist review or job modifications and the like, should be reported to the employer.

The questionnaire and *Health Assessment Record* should not be returned to the employer.

15 Record keeping

For each worker, appropriate records should be maintained by the Authorised Health Professional, including:

- completed *Health Questionnaire*
- completed *Health Assessment Record*
- copy of the report form sent to the employer
- copies of relevant support information
- any additional clinical notes.

In addition and in accordance with legislation:

- the worker's medical records should be made available to the worker on request
- the worker's medical records are subject to confidentiality
- records may be scanned and kept in electronic form. The employee's signature on the completed *Health Questionnaire* is legally valid after scanning.

16 Informing and counselling the worker

The health professional should advise the worker of the results of the assessment and, where relevant, about the ways in which their condition may impair their ability to conduct rail safety work. As part of this process, the worker can become better informed about the nature of their condition, the extent to which they can maintain control over their condition, the importance of regular medical review and the need for medication, where appropriate. The worker should be provided with a copy of the report in order to facilitate the discussion (refer to Section 8.3.1).

If the worker is found to be unfit for duty, the health professional should take a conciliatory and supportive role while fully explaining the risks posed by the worker's condition with respect to rail safety work.

17 Communicating with the worker's general practitioner and other health professionals

The Authorised Health Professional should ensure an ethical relationship with the worker's general practitioner and other treating professionals, and ensure continuity of care is maintained.

Reference to the general practitioner should be made for ongoing treatment requirements, for management of lifestyle issues and to discuss issues such as medication causing impairment.

The Authorised Health Professional should obtain the worker's consent they need to contact the worker's general practitioner or treating specialist to clarify information about the worker's health condition.

Figure 15 provides a summary of the process involved in conducting a health assessment for fitness for rail safety duties, and illustrates the roles and responsibilities of the various parties.

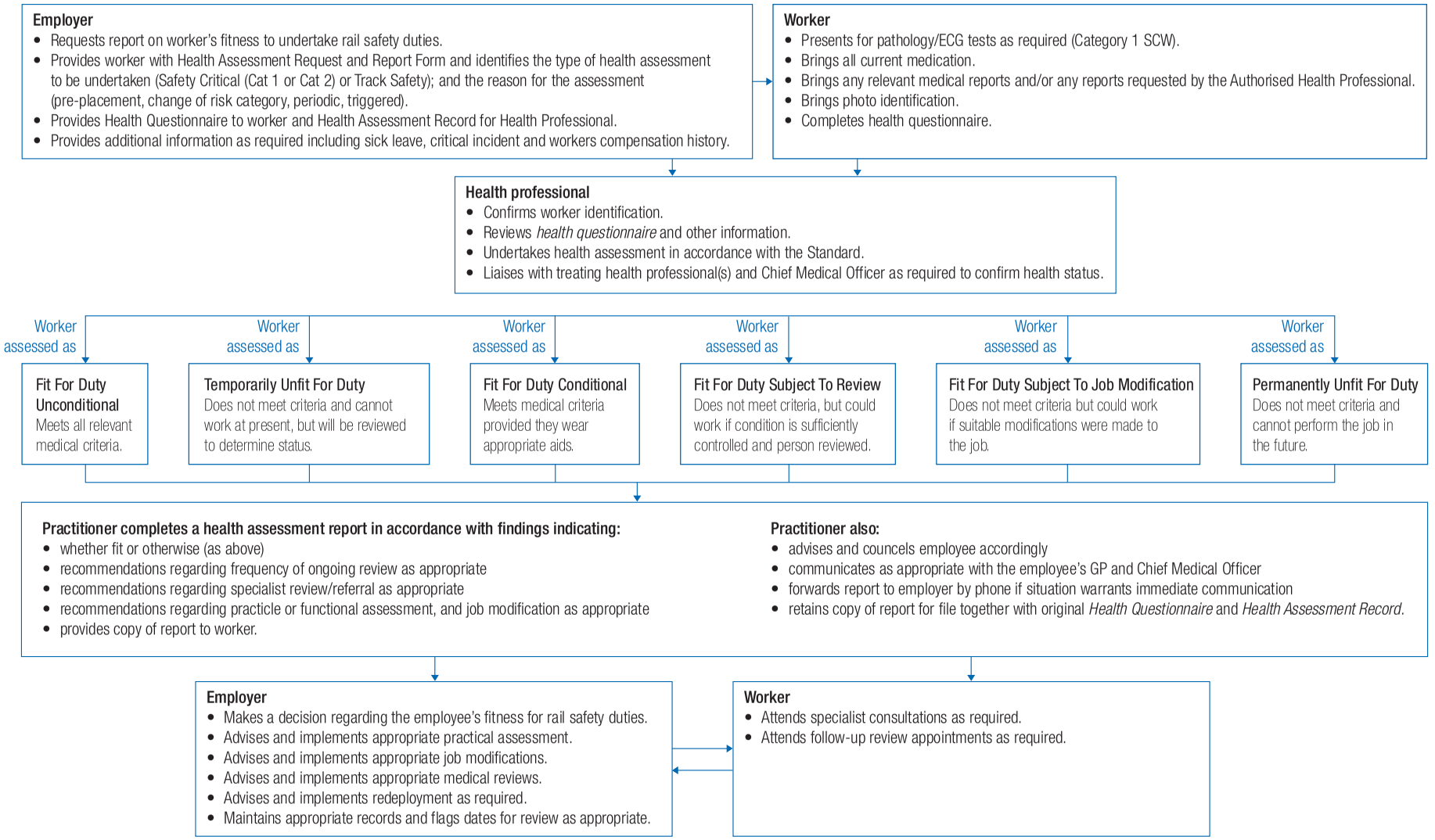
References

Drummer, O 2008, 'The role of drugs in road safety', *Australian Prescriber*, vol. 31, pp. 33–35.

NTC (National Transport Commission), 2011, *Rail safety national law*, NTC, Melbourne.

Verster, JC, Pandi-Perumal, SR, Ramaekers, JG & de Gier, JJ (eds) 2009, *Drugs, driving and traffic safety*, Birkhauser Verlag AG, Basel-Boston-Berlin.

Figure 15 Conducting a health assessment for fitness for rail safety duties



CMO = Chief Medical Officer; ECG = electrocardiograph; GP = general practitioner; SCW = Safety Critical Worker; the Standard = National Standard for Health Assessment of Rail Safety Workers

Part 4: Medical criteria for safety critical worker health assessments (Categories 1 and 2)

18 Conditions causing sudden incapacity or loss of situational awareness

18.1 Blackouts

18.1.1 Relevance to Safety Critical Work

Unpredictable, spontaneous loss of consciousness is incompatible with Category 1 Safety Critical Work. This standard is therefore primarily applicable to those workers. However, blackouts or presyncope may indicate an underlying medical condition (e.g. seizures, diabetes, cardiovascular condition, a sleep disorder), which may have implications for those performing Category 2 Safety Critical Work and that will require management as per the appropriate standard.

For the purposes of this Standard a syncopal event is defined as a loss of consciousness (blackout) arising from a cardiovascular cause.

18.1.2 General assessment and management guidelines

Blackout may arise from various causes, including:

- cardiac (e.g. arrhythmias, flow obstruction)
- hypotension due to inappropriate vasodilation (e.g. vasovagal faints, autonomic system disorder)
- neurogenic (e.g. epilepsy)
- metabolic (e.g. hypoglycaemia)
- psychiatric (e.g. hyperventilation, psychosomatic states).

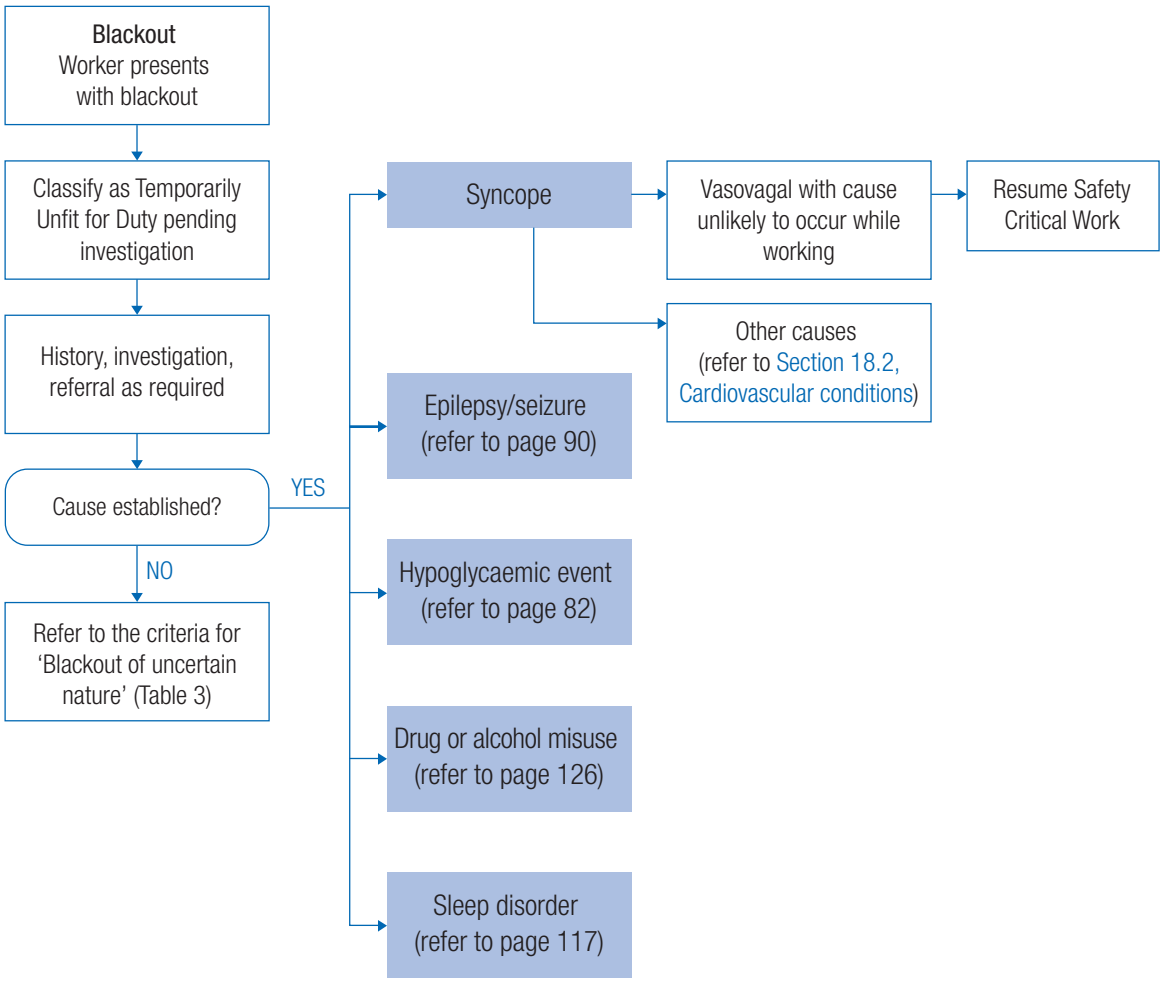
Blackouts should be managed as per Figure 16. Although blackout is of principal concern for Category 1 workers, both Category 1 and Category 2 workers should be assessed as Temporarily Unfit for Duty until the cause of the blackout is established. The underlying cause may adversely affect Category 2 work (e.g. diabetes or a sleep disorder). Determination of the cause of blackouts may be difficult and require extensive investigations and specialist referral.

Some conditions causing blackout are temporary (e.g. fainting in hot weather) and do not impact on fitness for duty.

18.1.3 Medical criteria for Safety Critical Workers

Where a firm diagnosis has been made, the criteria appropriate to the condition should be referred to elsewhere in this Standard. For recurrent blackouts that are not covered elsewhere in this Standard, refer to Table 3.

Figure 16 Management of blackouts and Safety Critical Work (Category 1 and Category 2)



It is important that health professionals familiarise themselves with both the general information previously described and the tabulated standards before making an assessment of a person's fitness for duty.

Table 3 Medical criteria for Safety Critical Workers: Blackouts

Condition	Criteria
Blackouts: episode(s) of impaired consciousness of uncertain nature	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has experienced blackouts that cannot be diagnosed as syncope, seizure or another condition. If there has been a single blackout or more than one blackout within a 24-hour period, Fit for Duty Subject to Review may be determined subject to at least annual review, taking into account information provided by an appropriate specialist as to whether the following criterion is met: • there have been no further blackouts for at least 5 years. If there have been 2 or more blackouts separated by at least 24 hours, Fit for Duty Subject to Review may be determined, subject to at least annual review, taking into account information provided by an appropriate specialist as to whether the following criterion is met: • there have been no further blackouts for at least 10 years. **Category 2 Safety Critical Workers** Refer to text.
Exceptional cases	**Category 1 and Category 2 Safety Critical Workers** Where a person with one or more blackouts of undetermined mechanism does not meet the above criteria, Fit for Duty Subject to Review may be determined, based on consideration of the nature of the task and subject to annual review: • if, in the opinion of the treating specialist and in consultation with the Authorised Health Professional and the operator's Chief Medical Officer (or an occupational physician experienced in rail), the risk to the network caused by blackout is acceptably low.

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified as Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified as Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed as Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed with the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

References and further reading

Austroads Inc.& NTC (National Transport Commission) 2011, *Assessing fitness to drive, commercial and private vehicle drivers: medical standards for licensing and clinical management guidelines*, Austroads Inc, and NTC, Sydney.

Sorajja, D, Nesbitt, GC, Hodge, DO, Low, PA, Hammill, SC, Gersh, BJ & Shen WK 2009, 'Syncope while driving: clinical characteristics, causes, and prognosis', *Circulation*, vol.15, issue 120, no. 11, pp. 928–34.

18.2 Cardiovascular conditions

18.2.1 Relevance to Safety Critical Work

Effects of cardiovascular conditions on Safety Critical Work

Cardiovascular conditions may affect the ability to perform Safety Critical Work due to sudden incapacity, such as from a heart attack or an arrhythmia. This is particularly relevant to Category 1 Safety Critical Workers. Cardiovascular conditions may also affect concentration and ability to control machinery due to onset of chest pain or palpitations, or dyspnoea, which is relevant to both Category 1 and Category 2 Safety Critical Workers. In this Standard, applicability to Category 1 and/or Category 2 workers is shown in the table for each condition.

Symptomatic heart disease, as well as asymptomatic disease, needs to be detected. This is possible by using screening tests including the cardiac risk level (see below). A Category 1 Safety Critical Worker, such as a train driver, who is asymptomatic but found to have an increased likelihood of a heart attack based on the calculation of their Cardiac Risk Level, should be assessed more fully than an ordinary patient because of the risks they pose to rail safety.

Cardiovascular disease also may have end-organ effects, such as on the brain (stroke), extremities (vasculature) and vision. The relevant sections should be referred to for advice on assessment of these effects.

Effects of Safety Critical Work on the heart

A further problem in those who have established ischaemic heart disease is that situations experienced while performing Safety Critical Work may lead to a faster heart rate and fluctuation in blood pressure, which could theoretically trigger angina or even infarction, such as responding to an emergency.

18.2.2 General assessment and management guidelines

Cardiac risk assessment for Category 1 and Category 2 Safety Critical Workers

Assessment of cardiac risk involves clinical assessment as well as a cardiac risk level measurement (for Category 1 only). Clinical assessment includes the evaluation of information such as:

- symptoms, such as chest pain or palpitations that may cause distraction from Safety Critical Work, as well as being a harbinger of possible collapse
- family history, such as first-degree relatives having cardiovascular events in midlife
- past history
- comorbidities such as obesity, inactivity, obstructive sleep apnoea and depression
- work factors such as exposure to climatic extremes in course of work.

All information should be used in assessing fitness for Category 1 or Category 2 Safety Critical Workers. Clinical judgement may be needed to determine if a person is Fit for Duty, Fit for Duty Subject to Review or Temporarily Unfit for Duty while being further assessed.

Cardiac risk level for Category 1 Safety Critical Workers

The health assessment for Category 1 Safety Critical Workers incorporates the cardiac risk level as a tool for predicting risk of a cardiovascular event, and in particular heart attack, during a 5 year period. It considerably increases the power of the assessment to identify workers at risk of sudden incapacity and to guide their management.

The cardiac risk level is based on the Australian cardiovascular risk charts (see Figure 17 (http://www.heartfoundation.org.au/SiteCollectionDocuments/aust-cardiovascular-risk-charts.pdf). An electronic calculator is available at www.cvdcheck.org.au. The cardiac risk level is used as described below.

1. Data collection

Obtain the following information for the cardiac risk level calculator:

- age and sex
- whether or not the patient smokes cigarettes
- blood pressure as measured supine
- fasting blood for total cholesterol (TC) and high-density lipoprotein (HDL) to calculate the TC:HDL ratio
- fasting plasma glucose (> 7 mmol/L is considered diabetic) or if a person is under treatment for diabetes.

2. Determine risk level

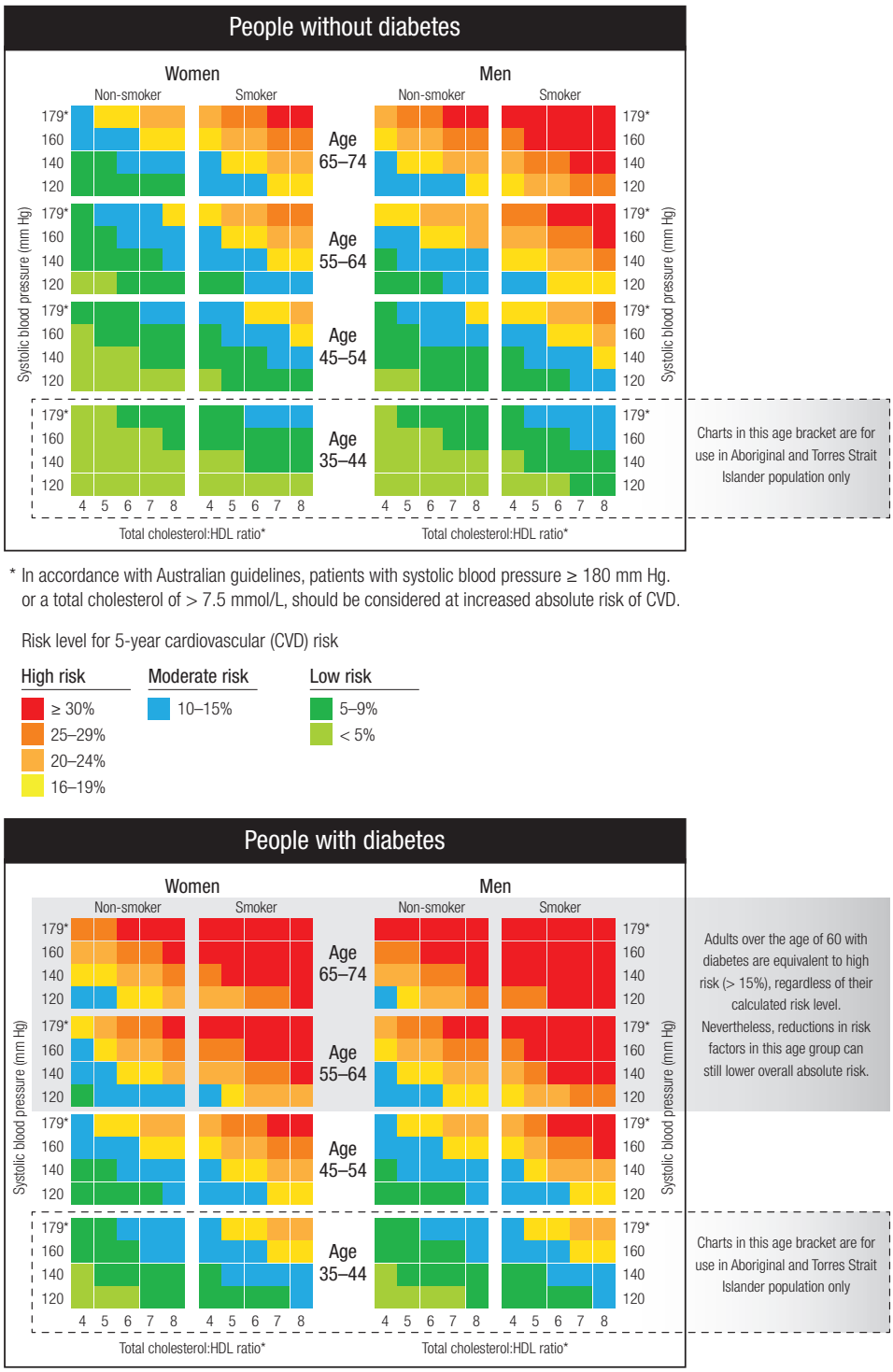
Within the chart, the cell nearest to the person's age, systolic blood pressure and total cholesterol:HDL ratio should be used. Workers who fall exactly on a threshold between cells should be placed in the cell indicating a higher risk. For example, workers less than 35 years old should be managed as if they are 35 years old.

3. Stratification and risk management

The cardiac risk level is associated with a probability of a cardiovascular event in the next 5 years. The higher the cardiac risk level, the higher the probability of an event. Therefore, management of workers is determined partly by their risk level and partly by their overall cardiac risk assessment.

- **Probability ≥ 25% in 5 years (red and orange cells)**. The worker is unfit for Category 1 work. They should be referred for a stress electrocardiograph (ECG) and classed as Temporarily Unfit for Duty pending results and appropriate management.
- **Probability 10–24% in 5 years (light orange, yellow and blue cells)**. The worker is referred for a stress ECG. While awaiting results of the ECG, the worker may be assessed as Fit for Duty Subject to Review or Temporarily Unfit for Duty, depending on the overall cardiac risk assessment.
- **Probability 5–9% in 5 years (dark green cells)**. The worker is assessed for specific risk factors and overall cardiac risk including obesity, physical activity and family history. The worker may be managed by referral to their general practitioner for risk factor modification, a stress ECG and/or other tests as clinically appropriate. While awaiting results of further investigations, the worker may be classed as Fit for Duty Subject to Review or Temporarily Unfit for Duty, depending on the overall assessment.
- **Probability < 5% in 5 years (light green cells)**. The worker is assessed regarding overall cardiac risk assessment and managed accordingly including referral to their general practitioner as required. They may be classed as Fit for Duty or Fit for Duty Subject to Review, depending on the overall assessment.

Figure 17 Coronary heart disease risk factor prediction charts



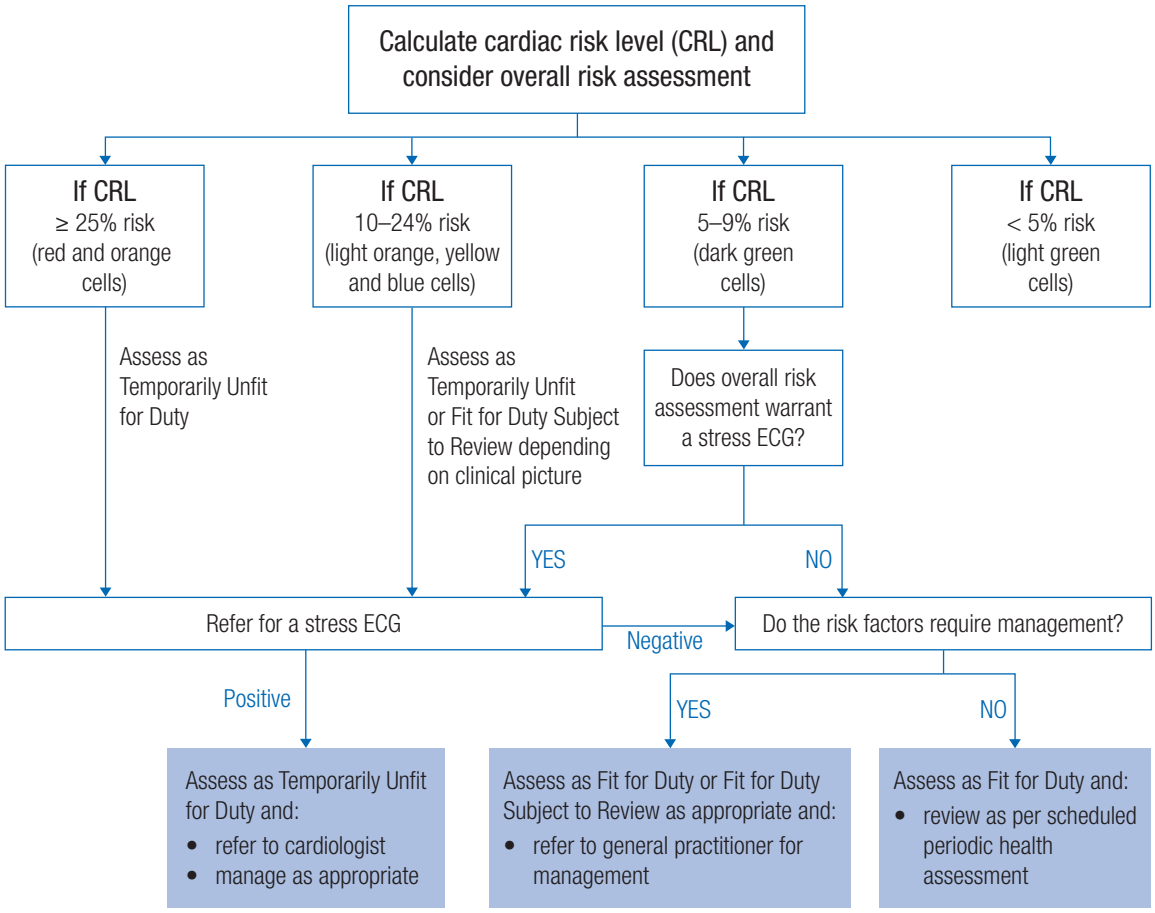
* In accordance with Australian guidelines, patients with systolic blood pressure ≥ 180 mm Hg. or a total cholesterol of > 7.5 mmol/L, should be considered at increased absolute risk of CVD.

Risk level for 5-year cardiovascular (CVD) risk

High risk	Moderate risk	Low risk
≥ 30%	10–15%	5–9%
25–29%		< 5%
20–24%		
16–19%		

Source: Reproduced with permission from the *Absolute cardiovascular disease risk assessment*. Quick reference guide for health professionals. An initiative of the National Vascular Disease Prevention Alliance. © 2009 National Heart Foundation of Australia <http://www.heartfoundation.org.au/SiteCollectionDocuments/aust-cardiovascular-risk-charts.pdf>

Figure 18 Management of cardiac risk level (Category 1 workers)



CRL = cardiac risk level; ECG = electrocardiograph

Stress electrocardiograph

The stress ECG should be conducted using the Bruce protocol. The exercise capacity should be ≥ 90% of the age/sex predicted capacity (refer to Figure 19) (Bruce et al. 1973).

Where a stress ECG is positive or clinical assessment warrants it, referral to a cardiologist should be made for further assessment and advice on management.

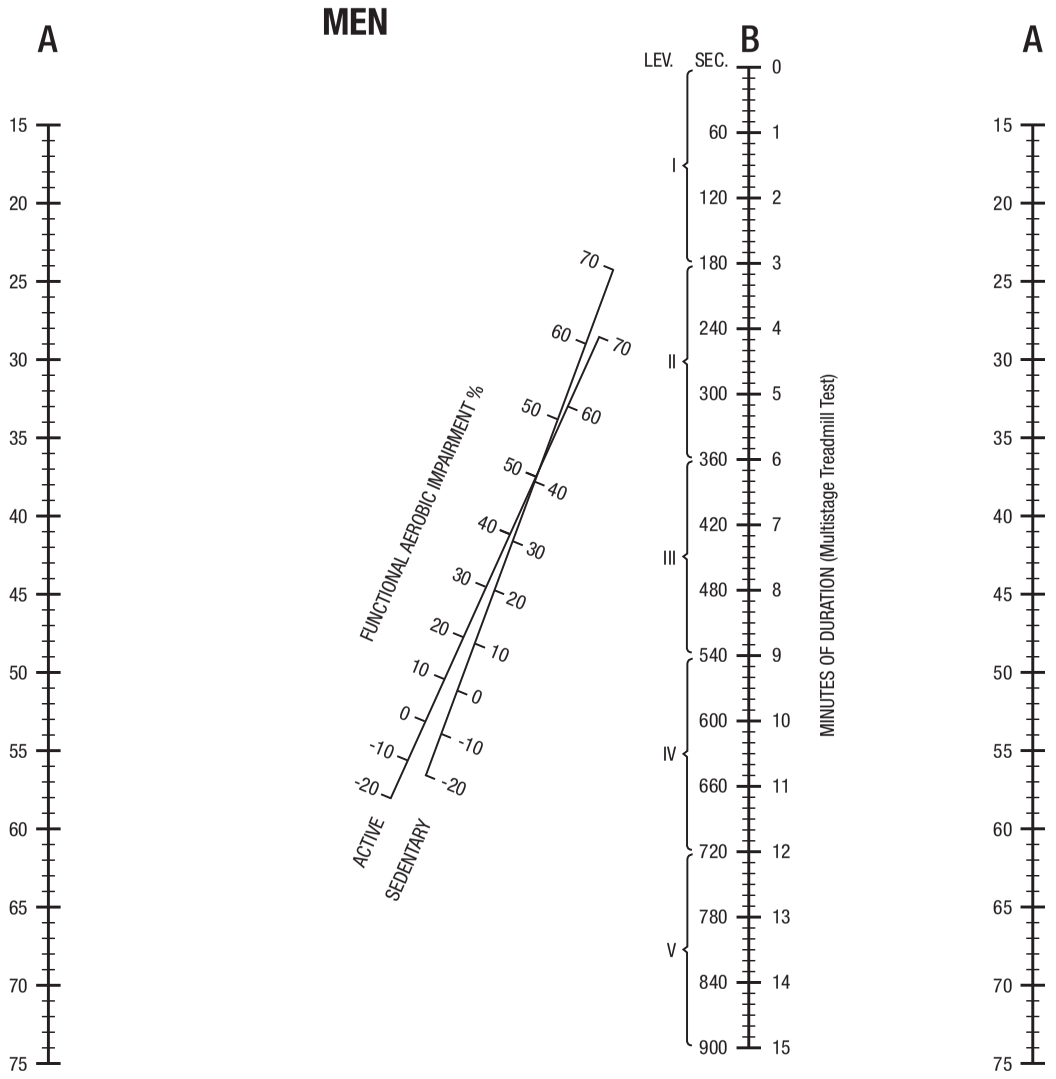
The results of a stress ECG are valid for up to 2 years, provided that the person remains asymptomatic.

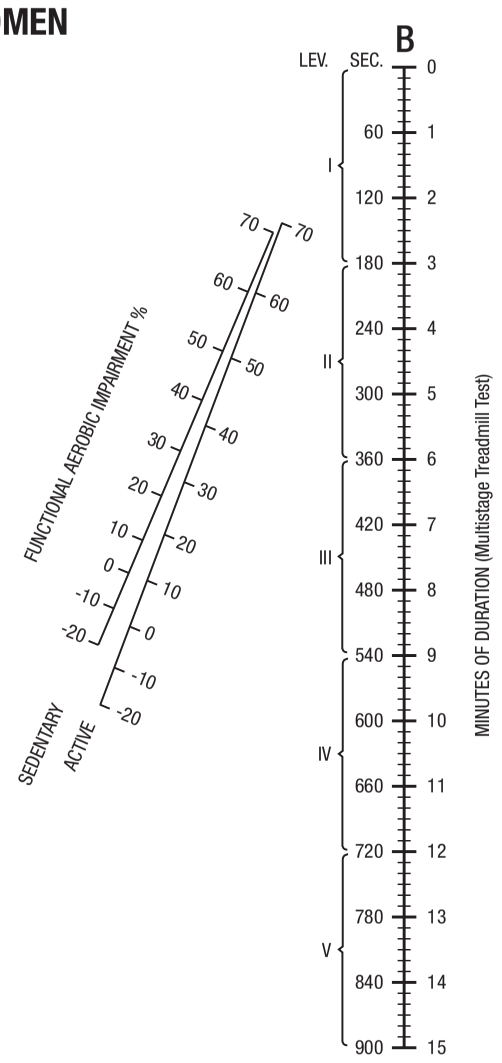
Management of risk factors

Where risk factors are identified, such as having increased blood pressure or being a smoker, the worker should be referred to their general practitioner and other appropriate programs. The worker should be reviewed to monitor management of their risk factor profile. Where hypertension is identified as a risk factor, also refer to the section on hypertension.

If, during the course of the examination, a Category 2 worker is found to have raised cardiovascular risk factors, there are no specific actions regarding fitness for duty since the major risk is in relation to sudden incapacity. However, if raised cardiovascular risk factors (e.g. smoking) are found, the worker should be referred to their general practitioner.

Figure 19 **Bruce protocol nomogram for men and women**





Source: Reproduced with permission from the Department of Cardiology, School of Medicine, University of Washington.

Ischaemic heart disease and related interventions

In individuals with ischaemic heart disease, the severity—rather than the mere presence of ischaemic heart disease—should be the primary consideration when assessing fitness for duty. For Category 1 and Category 2 workers, the health professional should consider any symptoms of sufficient severity to be a risk to attentiveness while working. For Category 1 workers, the risk of sudden collapse is a further consideration. Those who have had a previous myocardial infarction or similar event are at greater risk of recurrence than the normal population, thus cardiac history is an important consideration.

Exercise testing

The Bruce protocol is recommended for formal exercise testing. Nomograms for assessing functional capacity are shown in Figure 19.

Suspected angina pectoris

Where chest pains of uncertain origin are reported, every attempt should be made to reach a diagnosis. Generally, it would be wise to class the worker as Temporally Unfit for Duty until cardiovascular or other serious disease is excluded, particularly for Category 1 Safety Critical Workers. If the tests are positive, or the person remains symptomatic and requires anti-anginal medication for the control of symptoms, the requirements listed for proven angina pectoris apply (refer to Table 4).

Cardiac surgery (open chest)

Cardiac surgery may be performed for various reasons, including valve replacement, excision of atrial myxoma or correction of septal defects. In some cases, this is curative of the underlying disorder and so will not affect fitness for duty in the long term, although the worker should be classed Temporarily Unfit for Duty (refer also to Table 4 regarding non-working periods). In other cases, the condition may not be stabilised and the effect on Safety Critical Work needs to be individually assessed. In addition, all cardiac surgery patients should be advised regarding safety of working in the short term as for any other postsurgery patient (e.g. taking into account the limitation of chest and shoulder movements after sternotomy).

Disorders of rate, rhythm and conduction

Workers with recurrent arrhythmias causing syncope or presyncope are usually not fit for duty. A classification of Fit for Duty Subject to Review may be considered after appropriate treatment and a non-driving period (refer to Table 4).

An implantable cardioverter defibrillator (ICD) is incompatible with performing Category 1 Safety Critical Work because discharge can cause chest pain and throw the implantee to the ground. Category 2 workers should be individually assessed based on the nature of their work.

There is a wide diversity of ECG changes and a diversity of consequences arising from these changes. Sometimes palpitations, and hence loss of attentiveness, may occur. Occasionally there is a risk of collapse. Each case needs to be individually assessed as to the potential consequences and impacts on the particular work being undertaken.

Workers treated with pacemakers, defibrillators or other electronic devices should have their devices assessed for sensitivity to electromagnetic fields (static, extremely low frequency or radiofrequency) that are likely to be present in the rail environment and may cause interference with the device.

Vascular disease

Aneurysms

Aneurysms usually present as a rupture or painful dissection causing collapse, and are therefore relevant to Category 1 Safety Critical Workers. They are unlikely to affect attentiveness.

Deep vein thrombosis and pulmonary embolism

Although deep vein thrombosis (DVT) may lead to an acute pulmonary embolus (PE), there is little evidence that such an event affects safety. Therefore, there is no standard for either DVT or PE per se, although non-working periods (Temporarily Unfit for Duty) are advised (refer to Table 4). If long-term anticoagulation treatment is prescribed, the standard for anticoagulant therapy should be applied (refer to ‘Other cardiovascular conditions’, below).

Valvular disease

Valvular disease may present with diverse symptoms including exertional dyspnoea, palpitations, angina, syncope, cardiac arrest or heart failure. It may also be asymptomatic and found on examination. The symptoms, if severe, may cause distraction from work and as such are relevant to both Category 1 and Category 2 workers. The risk of collapse is particularly relevant to Category 1 workers. Specific criteria are set for the complications of cardiac arrest, heart failure and implanted devices (refer to Table 5).

Myocardial disease

The dilated and hypertrophic cardiomyopathies may present with diverse symptoms, including exertional dyspnoea, palpitations, angina, syncope, cardiac arrest or heart failure. They may also be asymptomatic and found on examination. The symptoms, if severe, may cause distraction from work and as such are relevant to both Category 1 and Category 2 workers. The risk of collapse is particularly relevant to Category 1 workers. Specific criteria are set for the complications of cardiac arrest, heart failure and implanted devices (refer to Table 5).

There are several other causes of myocardial disease. These may be managed using the principles for the cardiomyopathies or by consideration of the basic principles regarding Safety Critical Work.

Other cardiovascular conditions

Long-term anticoagulant therapy

Long-term anticoagulant therapy may be used to lessen the risk of emboli in disorders of cardiac rhythm, following valve replacement, for deep venous thrombosis and so on. If not adequately controlled, there is a risk of bleeding that may acutely affect Category 1 Safety Critical Work, such as an intracranial bleed. Such workers do not meet the criteria, but may be classed as Fit for Duty Subject to Review if their therapy is adequate and stable.

High Blood Pressure (Hypertension)

For Category 1 Safety Critical Workers the concerns about high blood pressure relate to:

a] exceedingly high levels (≥170/≥100] where acute incapacity due to events such as stroke are a concern and the blood pressure is managed as a risk factor *per se*; and

b] moderately raised blood-pressure (< 170/< 100) where blood pressure is managed, along with other risk factors, as a contributor to cardiovascular events (refer Cardiac Risk Level, Figure 17).

Category 1 Safety Critical Workers with blood pressure levels ≥ 170/100 should be managed as follows (refer Figure 20):

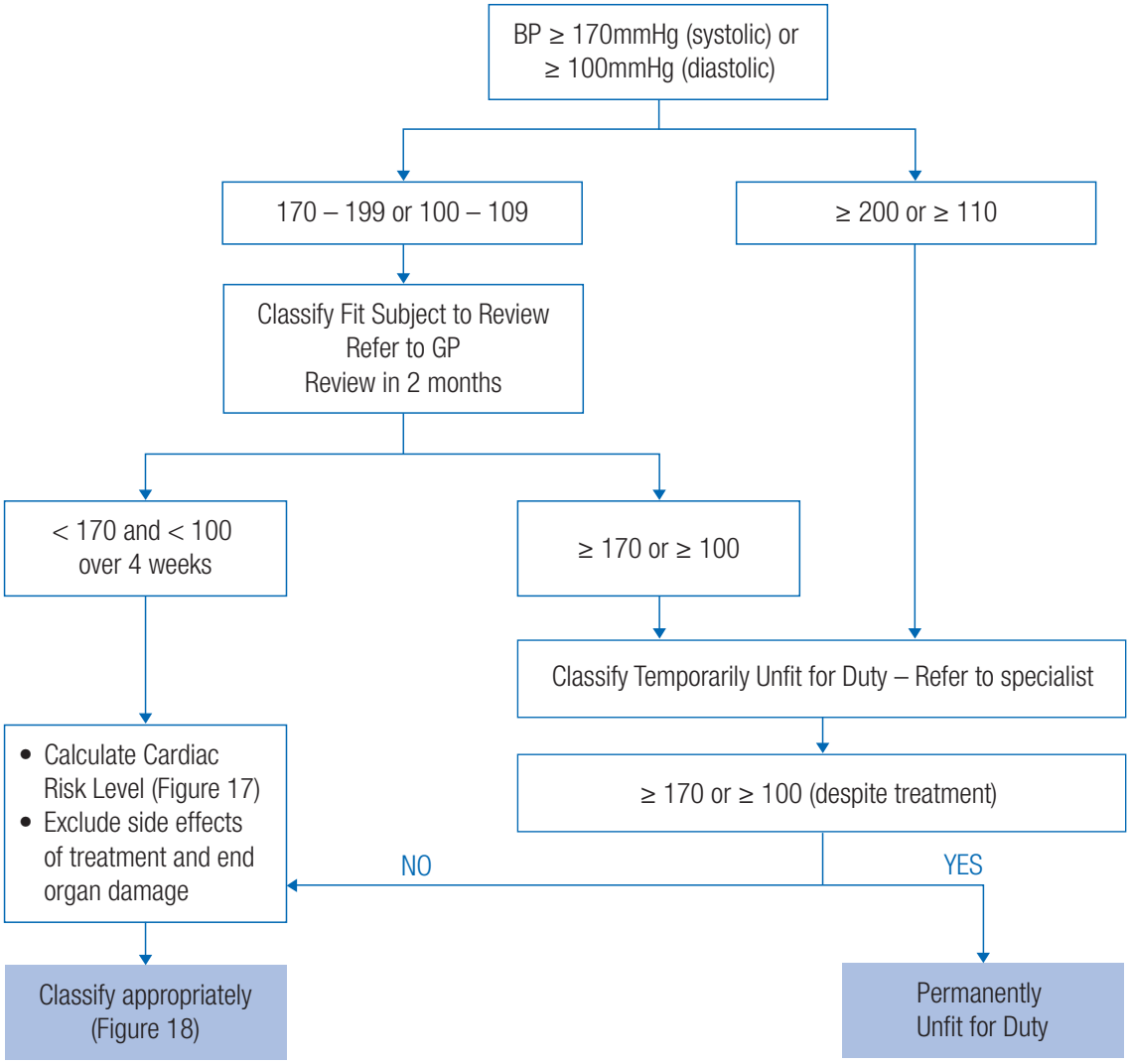
- Those with blood pressure 170 – 199/100 – 109 should be classified Fit Subject to Review and referred to their general practitioner for assessment and treatment. White coat hypertension should be excluded. If high blood pressure is confirmed it should be treated. If after four weeks of treatment levels remain ≥170/100, the person should be classed Temporarily Unfit for Duty and referred to a specialist. On the other hand, if the blood pressure is satisfactorily controlled, the cardiac risk level should then be calculated (Figure 17) and the person managed according to the flow chart in Figure 18. In addition the effects of medication on safety critical work and any end organ effects as per this publication will need to be considered regarding fitness.
- Those with blood pressure ≥200/110, or those whose blood pressure remains ≥170/100 after 4 weeks of treatment by their general practitioner, should be classed as Temporarily Unfit for Duty and referred to a specialist for investigation and treatment. Fit for Duty Subject to Review may be determined if their blood pressure can be reduced to <170/100 over 4 weeks. These workers should have their cardiac risk level assessed (Figure 17) and managed accordingly (Figure 18). In addition the effects of medication on safety critical work and any end organ affects as per this publication will need to be considered regarding fitness.
- Category 1 workers whose blood pressure remains ≥170/100 after specialist investigation and treatment will be classified Permanently Unfit for Duty.

There are no specific criteria for Category 2 safety critical workers; however their blood pressure should still be measured as part of the assessment and if found raised referred to their general practitioner.

Syncope

If an episode of syncope is vasovagal in nature with a clear-cut precipitating factor (e.g. venesection), and the situation is unlikely to occur while performing Safety Critical Work, the person may generally resume work within 24 hours. With syncope due to other cardiovascular causes, a person should not perform Category 1 Safety Critical Work for at least 3 months, after which time their ongoing fitness for duty should be assessed. In cases where it is not possible to be certain that an episode of loss of consciousness is due to syncope or some other cause, refer to Section 18.1, Blackouts of undetermined mechanism.

Figure 20 **Management of high blood pressure for Category 1 Safety Critical Workers**



BP = blood pressure (all measured in mmHg)

18.2.3 Medical criteria for Safety Critical Workers

There are 2 aspects of the medical standards regarding cardiac conditions and Safety Critical Work. One is the non-working period (Temporarily Unfit for Duty) following a cardiac event or intervention, which is mainly relevant to Category 1 Safety Critical Work, and the other is the criteria regarding long-term fitness for duty in relation to a range of cardiovascular conditions that may be relevant to Categories 1 and 2 Safety Critical Work.

Non-working periods

A number of cardiovascular incidents and procedures have implications for both short-term and long-term fitness for duty—for example, acute myocardial infarction and cardiac surgery. The person should be classified as Temporarily Unfit for Duty for the appropriate period as shown in Table 4. The variation in non-working periods reflects the varying effects of these conditions, including the time needed for recovery from discomfort of an intervention to resume necessary musculoskeletal work, as well the time needed to assess stabilisation of the condition or a device. These exclusion periods are minimum advisory periods only and are based on expert opinion. The classification of Fit for Duty Subject to Review should be considered once the condition has stabilised and safe working capacity can be assessed, as outlined in this section.

Table 4 **Suggested non-working periods post-cardiovascular events or procedures**

Event or procedure	Minimum non-working period for Category 1 Safety Critical Workers*	Minimum non-working period for Category 2 Safety Critical Workers*
Ischaemic heart disease		
Acute myocardial infarction	4 weeks	Individually determined
Angioplasty	4 weeks	Individually determined
Coronary artery bypass grafts	3 months	Individually determined
Disorders of rate, rhythm and conduction		
Cardiac arrest	6 months	Individually determined
Implantable cardioverter defibrillator (ICD) insertion	ICD not permitted for Category 1*	Individually determined
Generator change of an ICD	ICD not permitted for Category 1*	Individually determined
ICD therapy associated with symptoms of haemodynamic compromise	ICD not permitted for Category 1*	Individually determined
Cardiac pacemaker insertion	4 weeks	Individually determined
Vascular disease		
Aneurysm repair	3 months	Individually determined
Valvular replacement	3 months	Individually determined
Other		
Deep vein thrombosis	2 weeks	Individually determined
Heart or lung transplant	3 months	Individually determined
Pulmonary embolism	6 weeks	Individually determined
Syncope (due to cardiovascular causes)	3 months	Individually determined

*Generally, some latitude may be allowed in application of the medical criteria to a Category 2 Safety Critical Worker. If there is uncertainty, the advice of an occupational physician with railway industry experience should be sought regarding a risk assessment of the job.

Criteria for long-term fitness for duty

Standards for chronic disorders are made with the presumption that the disorder is stable and well controlled. If this is not the case, a specialist consultation should be conducted and the person may need to be classified Temporarily Unfit for Duty while such opinion is being sought. A classification of Fit for Duty Subject to Review may be recommended after initial assessment by an appropriate specialist.

Applicability to Category 1 and/or Category 2 workers varies depending on the condition and is shown in the table.

Requirements for safe working are included in Table 5 for the following conditions:

- **Ischaemic heart disease**
  - acute myocardial infarction
  - angina
  - coronary artery bypass grafting
  - percutaneous coronary intervention
- **Disorders of rate, rhythm and conduction**
  - arrhythmia
  - cardiac arrest
  - cardiac pacemaker
  - implantable cardioverter defibrillator
  - ECG changes
- **Vascular disease**
  - aneurysms (abdominal and thoracic)
  - deep vein thrombosis
  - pulmonary embolism
  - valvular heart disease
- **Myocardial diseases**
  - dilated cardiomyopathy
  - hypertrophic cardiomyopathy
- **Other conditions and treatments**
  - anticoagulant therapy
  - congenital disorders
  - heart failure
  - heart transplant
  - hypertension
  - stroke
  - syncope.

Because many cardiac conditions are stabilised and not cured, the worker usually should be classified as Fit for Duty Subject to Review. In general, the review interval should not exceed 12 months for Category 1 workers with diagnosed cardiac disease (as distinct from raised risk factors).

Where a condition has been effectively treated and there is minimal risk of recurrence, the worker may be classified as Fit for Duty (with no requirements for more frequent review) on the advice of a specialist.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 5 Medical criteria for Safety Critical Workers: Cardiovascular conditions

Condition	Criteria
Cardiac risk level *(Refer to text and flow chart)*	**Category 1 Safety Critical Workers** The cardiac risk level is to be interpreted in the context of overall cardiovascular risk assessment. For details of management, refer to the text. If cardiac risk level has a: • Probability of ≥ 25% in 5 years (**red and orange cells**): worker is unfit for Category 1 Safety Critical Work. Refer for stress ECG and classify as Temporarily Unfit for Duty pending results. Review annually. • Probability of 10–24% in 5 years (**light orange, yellow and blue cells**): refer for stress ECG. While awaiting results, classify as Fit for Duty Subject to Review or Temporarily Unfit for Duty depending on overall risk assessment. Review annually. • Probability of 5–9% in 5 years (**dark green cells**): refer to general practitioner for risk factor modification or refer for stress ECG if appropriate. While awaiting investigation, classify as Fit for Duty Subject to Review or Temporarily Unfit for Duty depending on overall risk assessment. Review as appropriate. • Probability of < 5% in 5 years (**light green cells**): assess risk factors and other clinical data, and refer to general practitioner as appropriate. Classify as Fit for Duty or Fit for Duty Subject to Review depending on overall risk assessment. Review as appropriate. Refer to related criteria as required (e.g. hypertension and diabetes). **Category 2 Safety Critical Workers** There are no specific criteria for fitness for duty for Category 2 workers since the major risk is in relation to sudden incapacity. However, if in the course of the examination, raised cardiovascular risk levels are found the worker should be referred to their general practitioner.
Ischaemic heart disease	
Acute myocardial infarction (AMI) *Refer also to percutaneous coronary intervention (PCI)* *Refer also to coronary artery bypass grafting (CABG)*	**Category 1 Safety Critical Workers** A Category 1 Safety Critical Worker should be categorised Temporarily Unfit for Duty for at least 4 weeks following an acute myocardial infarction. A person is not Fit for Duty Unconditional: • if the person has had an acute myocardial infarction. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the criteria described below are met. • it is at least 4 weeks after an uncomplicated acute myocardial infarction; and • there is a satisfactory response to treatment; and • there is an exercise tolerance of ≥ 90% of the age/sex predicted exercise capacity according to the Bruce protocol (or equivalent exercise test protocol); and • there is no evidence of severe ischaemia (i.e. < 2 mm ST segment depression on an exercise ECG, or a reversible regional wall abnormality on an exercise stress ECG, or absence of a large defect on a stress perfusion scan); and • there is an ejection fraction of > 40%; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). **Category 2 Safety Critical Workers** The non-working period for a Category 2 Safety Critical Worker should be determined on clinical grounds. They may resume work classified as Fit for Duty Subject to Review depending on the nature of the work.

Condition	Criteria
Angina	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person is subject to angina pectoris. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • there is an exercise tolerance of ≥ 90% of the age/sex predicted exercise capacity according to the Bruce protocol (or equivalent exercise test protocol); and/or • there is no evidence of severe ischaemia (i.e. < 2 mm ST segment depression on an exercise ECG or a reversible regional wall abnormality on an exercise stress echocardiogram or absence of a large defect on a stress perfusion scan); and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). *Myocardial ischaemia* If myocardial ischaemia is demonstrated (as per the criteria above), a coronary angiogram may be offered. The person may be classified as Fit for Duty Subject to (annual) Review: • if the result of the angiogram shows lumen diameter reduction of < 70% in a major coronary branch and < 50% in the left main coronary artery. If the result of the angiogram shows a lumen diameter reduction of > 70% in a major coronary branch and < 50% in the left main coronary artery (or if an angiogram is not conducted), Fit for Duty Subject to (annual) Review may be considered if: • there is an exercise tolerance of ≥ 90% of the age/sex predicted exercise capacity according to the Bruce protocol (or equivalent exercise test protocol); and • there is no evidence of severe ischaemia (i.e. < 2mm ST segment depression on an exercise ECG or a reversible regional wall abnormality on an exercise stress echocardiogram or absence of a large defect on a stress perfusion scan); and • there is an ejection fraction of > 40%; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). Where surgery or percutaneous coronary intervention (PCI) is undertaken to relieve the angina, the requirements listed for PCI apply (see below). **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into account information provided by the treating specialist and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.

Condition	Criteria
Coronary artery bypass grafting (CABG)	**Category 1 Safety Critical Workers** A Category 1 Safety Critical Worker should be categorised as Temporarily Unfit for Duty for at least 3 months following coronary artery bypass grafting. A person is not Fit for Duty Unconditional: • if the person requires or has had coronary artery bypass grafting. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • it is at least 3 months after coronary artery bypass grafting; and • there is a satisfactory response to treatment; and • there is an exercise tolerance of ≥ 90% of the age/sex predicted exercise capacity according to the Bruce protocol (or equivalent exercise test protocol); and • there is no evidence of severe ischaemia (i.e. < 2mm ST segment depression on an exercise ECG or a reversible regional wall abnormality on an exercise stress echocardiogram or absence of a large defect on a stress perfusion scan); and • there is an ejection fraction of > 40%; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness); and • there is minimal residual musculoskeletal pain after the chest surgery. **Category 2 Safety Critical Workers** The non-working period for a Category 2 Safety Critical Worker should be determined on clinical grounds. Fit for Duty Subject to Review may be determined, taking into consideration information provided by the treating specialist and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.
Percutaneous coronary intervention (PCI) (e.g. angioplasty)	**Category 1 Safety Critical Workers** A Category 1 Safety Critical Worker should be categorised Temporarily Unfit for Duty for at least 4 weeks after percutaneous coronary intervention (PCI). A person is not Fit for Duty Unconditional: • if the person requires or has had PCI. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • it is at least 4 weeks after the PCI; and • there is a satisfactory response to treatment; and • there is an exercise tolerance of ≥ 90% of the age/sex predicted exercise capacity according to the Bruce protocol (or equivalent exercise test protocol); and • there is no evidence of severe ischaemia (i.e. < 2mm ST segment depression on an exercise ECG or a reversible regional wall abnormality on an exercise stress echocardiogram or absence of a large defect on a stress perfusion scan); and • there is an ejection fraction of > 40%; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness) **Category 2 Safety Critical Workers** The non-working period for a Category 2 Safety Critical Worker should be determined on clinical grounds. Fit for Duty Subject to Review may be determined, taking into account information provided by the treating specialist and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.

Condition	Criteria
Disorders of rate, rhythm and conduction	
Atrial fibrillation	**The non-working period will depend on the method of treatment (see below).** **Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has a history of recurrent or persistent arrhythmia, which may result in syncope or incapacitating symptoms. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether any of the following criteria are met: • there is a satisfactory response to treatment; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness); and • subject to appropriate follow-up. The person should not perform Safety Critical Work for: • at least 4 weeks following percutaneous intervention • at least 4 weeks following initiation of successful medical treatment • at least 3 months following open chest surgery. Review periods may not be necessary if the condition has been cured in the opinion of the specialist. If the person is taking anticoagulants, refer to the anticoagulant therapy section, below. **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into account information provided by the treating specialist and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.

Condition	Criteria
Paroxysmal arrhythmias (e.g. supraventricular tachycardia [SVT] atrial flutter, idiopathic ventricular tachycardia)	**The non-working period is at least 4 weeks.** **Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if there was near or definite collapse. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • there is a satisfactory response to treatment; and • there are normal haemodynamic responses at a moderate level of exercise; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). The person should not perform Safety Critical Work: • for at least 4 weeks following percutaneous intervention; • for at least 4 weeks following initiation of successful medical treatment. If the person is taking anticoagulants, refer to the anticoagulant therapy section, below. **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into consideration information provided by the treating specialist, and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.
Cardiac arrest	**Category 1 Safety Critical Workers** A Category 1 Safety Critical Worker should be categorised as Temporarily Unfit for Duty for at least 6 months following a cardiac arrest. A person is not Fit for Duty Unconditional: • if the person has suffered a cardiac arrest. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • it is at least 6 months after the arrest; and • a reversible cause is identified and recurrence is unlikely; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). **Category 2 Safety Critical Workers** The non-working period for a Category 2 Safety Critical Worker should be determined on clinical grounds. They may resume work Fit for Duty Subject to Review depending on the circumstances of the arrest and the nature of the work.

Condition	Criteria
Cardiac pacemaker	**Category 1 Safety Critical Workers** A Category 1 Safety Critical Worker should be categorised as Temporarily Unfit for Duty for at least 4 weeks after insertion of a pacemaker. A person is not Fit for Duty Unconditional: • if a cardiac pacemaker is required, or has been implanted or replaced. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • it is at least 4 weeks after insertion of the cardiac pacemaker; and • the relative risks of pacemaker dysfunction have been considered; and • there are normal haemodynamic responses at a moderate level of exercise; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). **Category 2 Safety Critical Workers** The non-working period for a Category 2 Safety Critical Worker should be determined on clinical grounds. They may resume work Fit for Duty Subject to Review depending on the nature of the work.
Implantable cardiac defibrillator (ICD)	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person requires or has an ICD for ventricular arrhythmias. **Category 2 Safety Critical Workers** The non-working period for a Category 2 Safety Critical Worker should be determined on clinical grounds. They may resume work Fit for Duty Subject to Review depending on the nature of the work.
ECG changes (e.g. strain patterns, bundle branch blocks or heart block and left ventricular hypertrophy)	**The person should not perform Safety Critical Work for at least 3 months following initiation of treatment.** **Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has an ECG abnormality—for example, left bundle branch block, right bundle branch block, pre-excitation, prolonged QT interval or left ventricular hypertrophy, or changes suggestive of myocardial ischaemia or previous myocardial infarction. Fit for Duty Subject to Review* may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • if the condition has been treated medically for at least 3 months or follow-up investigation has excluded underlying cardiac disease; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). * Where the condition is considered to be cured, the requirement for periodic review may be waived. **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into consideration information provided by the treating specialist, and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.

Condition	Criteria
Vascular disease	
Aneurysms (abdominal and thoracic)	**Category 1 Safety Critical Workers** A Category 1 Safety Critical Worker should be categorised Temporarily Unfit for Duty for at least 3 months post-repair. A person is not Fit for Duty Unconditional: • if the person has an unrepaired aortic aneurysm, thoracic or abdominal. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether either of the following criteria are met: • it is at least 3 months after repair; and • the response to treatment is satisfactory; or • the aneurysm diameter is < 5 cm. **Category 2 Safety Critical Workers** The non-working period post-repair for a Category 2 Safety Critical Worker should be determined on clinical grounds. They may resume work Fit for Duty Subject to Review depending on the nature of the work.
Deep vein thrombosis (DVT)	**Category 1 and Category 2 Safety Critical Workers** A Category 1 Safety Critical Worker should be categorised as Temporarily Unfit for Duty for at least 2 weeks after a DVT. The non-working period for a Category 2 Safety Critical Worker should be determined on clinical grounds. There are no specific criteria for long-term fitness for duty. For long-term anticoagulation refer to page 77. Also refer to Section 18.2.2, General assessment and management guidelines.
Pulmonary embolism (PE)	**Category 1 and Category 2 Safety Critical Workers** There are no specific Safety Critical Work criteria for long-term fitness for duty for PE. A Category 1 Safety Critical Worker should be categorised as Temporarily Unfit for Duty for at least 6 weeks after a PE. The non-working period for a Category 2 Safety Critical Worker should be determined on clinical grounds. For long-term anticoagulation, refer to page 77. Also refer to Section 18.2.2, General assessment and management guidelines in the text.

Condition	Criteria
Valvular heart disease	**The person should not perform Safety Critical Work for at least 3 months following valve repair.** **Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has any history or evidence of valve disease, with or without surgical repair or replacement, associated with symptoms or a history of embolism, arrhythmia, cardiac enlargement, abnormal ECG, high blood pressure, or • if the person is taking long-term anticoagulants. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • the person's cardiological assessment shows valvular disease of no haemodynamic significance; or • it is 3 months following surgery and there is no evidence of valvular dysfunction; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness); and • there is minimal residual musculoskeletal pain after chest surgery. **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into account consideration information provided by the treating specialist, and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.
Myocardial diseases	
Dilated cardiomyopathy *(see also heart failure)*	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has a dilated cardiomyopathy. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • the ejection fraction is > 40%; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness); and • the person is not subject to arrhythmias. **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into account information provided by the treating specialist, and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.

Condition	Criteria
Hypertrophic cardiomyopathy (HCM)	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has HCM. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • the left ventricular ejection fraction is 40% or over; and • there is an exercise tolerance of ≥ 90% of the age/sex predicted exercise capacity according to the Bruce protocol (or equivalent exercise test protocol); and • there is an absence of a history of syncope, severe left ventricle hypertrophy, a family history of sudden death or ventricular arrhythmia on Holter testing; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into account information provided by the treating specialist, and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.
Other cardiovascular diseases	
Anticoagulant therapy	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person is on long-term anticoagulant therapy. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criterion is met: • anticoagulation is maintained at the appropriate degree for the underlying condition. **Category 2 Safety Critical Workers** There are no specific criteria for fitness for duty for Category 2 workers, since the major risk is in relation to sudden incapacity.

Condition	Criteria
Congenital disorders	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has a complicated congenital heart disorder. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • there is a minor congenital heart disorder of no haemodynamic significance, such as pulmonary stenosis, atrial septal defect, small ventricular septal defect, bicuspid aortic valve, patent ductus arteriosus or mild coarctation of the aorta; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into account information provided by the treating specialist, and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.
Heart failure	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has heart failure. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • there is a satisfactory response to treatment; and • there is an exercise tolerance of ≥ 90% of the age/sex predicted exercise capacity according to the Bruce protocol (or equivalent exercise test protocol); and • there is an ejection fraction of 40% or over; and • the underlying cause of the heart failure is considered; and • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into account information provided by the treating specialist, and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.

Condition	Criteria
Heart transplant	**Category 1 Safety Critical Workers** A Category 1 Safety Critical Worker should be categorised Temporarily Unfit for Duty for at least 3 months after transplant. A person is not Fit for Duty Unconditional: • if the person requires or has had a heart or heart/lung transplant. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • it is at least 3 months after transplant; and • there is a satisfactory response to treatment; and • there is an exercise tolerance of ≥ 90% of the age/sex predicted exercise capacity according to the Bruce protocol (or equivalent exercise test protocol) • there are minimal symptoms relevant to performing Safety Critical Work (chest pain, palpitations, breathlessness). **Category 2 Safety Critical Workers** The non-working period for Category 2 Safety Critical Workers should be determined on clinical grounds. A person is not Fit for Duty Unconditional: • if the person has symptoms that may impair Safety Critical Work. Fit for Duty Subject to Review may be determined, taking into account information provided by the treating specialist, and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.
Hypertension	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has blood pressure consistently ≥ 170 mmHg systolic or ≥ 100 mmHg diastolic (treated or untreated). Management of the person and subsequent categorisation will depend on: • the level of blood pressure • the response to treatment • the cardiac risk level • the effects of medication relevant to Safety Critical Work and • the presence of end organ damage relevant to Safety Critical Work *For blood pressure between 170 - 199mmHg systolic or 100 -109mmHg diastolic:* • The person should be categorised Fit Subject to Review and referred to their ***general practitioner*** for appropriate investigation and treatment. A report should be provided within 2 months. • If the person's blood pressure is < 170 mmHg systolic and < 100 mmHg diastolic after 4 weeks of treatment, they should have their cardiac risk level calculated based on the new level of blood pressure and they should be managed and categorised accordingly (refer page 66), including whether they meet the following criteria: - there are no side effects from the medication that will impair Safety Critical Work; and - there is no evidence of damage to target organs relevant to Safety Critical Work. • If the person's blood pressure remains ≥170/100 after 4 weeks of treatment, they should be categorised Temporarily Unfit for Duty and referred to an ***appropriate specialist*** for investigation and treatment. Categorisation will subsequently depend on response to treatment, the cardiac risk score and meeting of other criteria as above. • If blood pressure remains ≥170 mmHg systolic or ≥100 mmHg diastolic despite treatment, the person should be categorised Permanently Unfit for Duty.

Condition	Criteria
Hypertension (continued)	*For blood pressure ≥200mmHg systolic or ≥110 mmHg diastolic* • The person should be categorised Temporarily Unfit for Duty and referred to an ***appropriate specialist*** for investigation and treatment. • If the person's blood pressure is < 170 mmHg systolic and < 100 mmHg diastolic after 4 weeks of treatment, they should have their cardiac risk level calculated based on the new level of blood pressure and they should be managed and categorised accordingly (refer page 66), including whether they meet the following criteria: - there are no side effects from the medication that will impair Safety Critical Work; and - there is no evidence of damage to target organs relevant to Safety Critical Work. • If blood pressure remains ≥170 mmHg systolic or ≥100 mmHg diastolic despite treatment, the person should be categorised Permanently Unfit for Duty. **Category 2 Safety Critical Workers** There are no specific criteria for Category 2 safety critical workers; however their blood pressure should still be measured as part of the assessment and if found raised referred to their general practitioner.
Stroke	**Refer to Section 18.4, Neurological conditions.**
Syncope due to hypotension *Refer also to Section 18.1, Blackouts*	**Category 1 Safety Critical Workers** The person could resume Safety Critical Work within 24 hours if the episode was vasovagal in nature with a clear-cut precipitating factor (e.g. venesection) and the situation is unlikely to occur while performing Safety Critical Work. A Category 1 Safety Critical Worker should be categorised Temporarily Unfit for Duty for at least 3 months after syncope due to other cardiovascular causes. A person is not Fit for Duty Unconditional: • if the condition is severe enough to cause episodes of loss of consciousness without warning. Fit for Duty Subject to Review may be determined, taking into account the nature of the work and information provided by the treating specialist as to whether the following criteria are met: • the underlying cause has been identified: and • satisfactory treatment has been instituted; and • the person has been symptom-free for 3 months. **Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has symptoms of pre-syncope that may impair Safety Critical Work. • Fit for Duty Subject to Review may be determined, taking into account information provided by the treating specialist, and based on the criteria above (Category 1), although some latitude may be allowed in applying this standard based on a consideration of the nature of the work.

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified as Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed with the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed to, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

References and further reading

Austroads Inc. & NTC (National Transport Commission) 2011, *Assessing fitness to drive, commercial and private vehicle drivers: medical standards for licensing and clinical management guidelines*, Austroads Inc. and NTC, Sydney.

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18.3 Diabetes

(Refer also to sections 18.2, Cardiovascular conditions, 18.4, Neurological conditions, 18.6, Sleep disorders and 19.2, Vision and eye disorders.)

18.3.1 Relevance to Safety Critical Work

Diabetes may affect a person's ability to perform Safety Critical Work, either through impairment or loss of consciousness in a hypoglycaemic episode or from end-organ effects on relevant functions, including effects on vision, the heart, the peripheral nerves and vasculature of the extremities, particularly the feet. Sleep apnoea is also more common in people with type 2 diabetes (refer to Section 18.6, Sleep disorders).

Hypoglycaemia causing collapse is particularly important in Category 1 Safety Critical Workers; however, the associated confusional state may affect judgement, which is relevant to both Category 1 and Category 2 Safety Critical Workers. This standard is therefore applicable to both categories of Safety Critical Worker.

18.3.2 General assessment and management guidelines

General management of diabetes in relation to Categories 1 and 2 Safety Critical Workers is summarised in Figure 21.

Satisfactory control of diabetes

When assessing if workers with diabetes are fit to perform Safety Critical Work, for the purposes of the assessment diabetes can generally be considered to be "satisfactorily controlled" if there is a glycated haemoglobin (HbA1c) level of < 9.0% (75 mmol/mol) measured within the preceding 3 months, as against a general goal of < 7.0% in people with diabetes. A HbA1c level of 9.0% or higher should usually trigger a formal consultation and assessment by a specialist or clinician experienced in the management of diabetes, in order to assess fitness to perform Safety Critical Work.

For people on insulin treatment, blood glucose monitoring and other related records should also be reviewed. The worker should keep a diary of blood glucose levels, taking rosters into account, as agreed with the examining doctor. This is partly so the worker knows they are safe for work and partly so that control of their diabetes can be readily checked at their review.

In general, at least the last 3 months of blood glucose monitoring records should be reviewed. Work performance reports may be helpful in assessing if hypoglycaemia is interfering with safety critical decisions.

Input from treating doctor or specialist

When assessing a worker with diabetes, a report from the person's treating specialist is generally required in order to determine fitness for duty. The report should include details of general health, indication of satisfactory diabetes control (as above) and freedom from severe complications.

For diabetes controlled by diet and exercise alone, a report from the treating general practitioner will suffice.

In the case of type 2 diabetes managed by oral agents alone, ongoing fitness for duty may be assessed based on information (including an HbA1c level) received from the treating general practitioner, by mutual agreement with the treating specialist and the rail transport operator. The initial recommendation of Fit for Duty Subject to Review must, however, be based on the opinion of a specialist in diabetes.

Hypoglycaemia

Definition: severe hypoglycaemic event

For the purposes of this document, a 'severe hypoglycaemic event' is defined as an event of hypoglycaemia of sufficient severity such that the person is unable to treat the hypoglycaemia themselves, and thus requires an outside party to administer treatment. It includes hypoglycaemia causing loss of consciousness. Episodes occurring during working time or at any other time of the day or night are relevant to the assessment in relation to this Standard.

A severe hypoglycaemic event is particularly relevant to Safety Critical Work because it affects brain function and may cause impairment of perception, motor skills or consciousness. It may also cause abnormal behaviour. A severe hypoglycaemic event is to be distinguished from mild hypoglycaemic events, with symptoms such as sweating, tremulousness, hunger and tingling around the mouth, which are common occurrences in the life of a person with diabetes treated with insulin and some hypoglycaemic agents.

Potential causes

Hypoglycaemia may be caused by many factors, including non-adherence or alteration to medication, unexpected exertion, alcohol intake or irregular meals. Irregular meals and variability in medication administration may be an important consideration for long-distance train driving or for those operating on shifts. Impairment of consciousness and judgement can develop rapidly.

Managing a 'severe hypoglycaemic event' including non-working period

Safety Critical Workers with diabetes should be advised to cease safety critical duties if a 'severe hypoglycaemic event' is experienced while working or at any other time. Such an event should result in a triggered health assessment. The worker should be classed Temporarily Unfit for Duty and not work for a significant period of time. The minimum period of time before returning to Safety Critical Work is generally 6 weeks because it often takes many weeks for patterns of glucose control and behaviour to be re-established and for any temporary 'lack of hypoglycaemia awareness' to resolve. The non-working period will depend on factors such as identifying the reason for the episode, specialist opinion and the nature of the work. Specialist support of a return to Safety Critical Work should be based on patient behaviour and objective measures of glycaemic control (documented blood glucose) over a reasonable time interval.

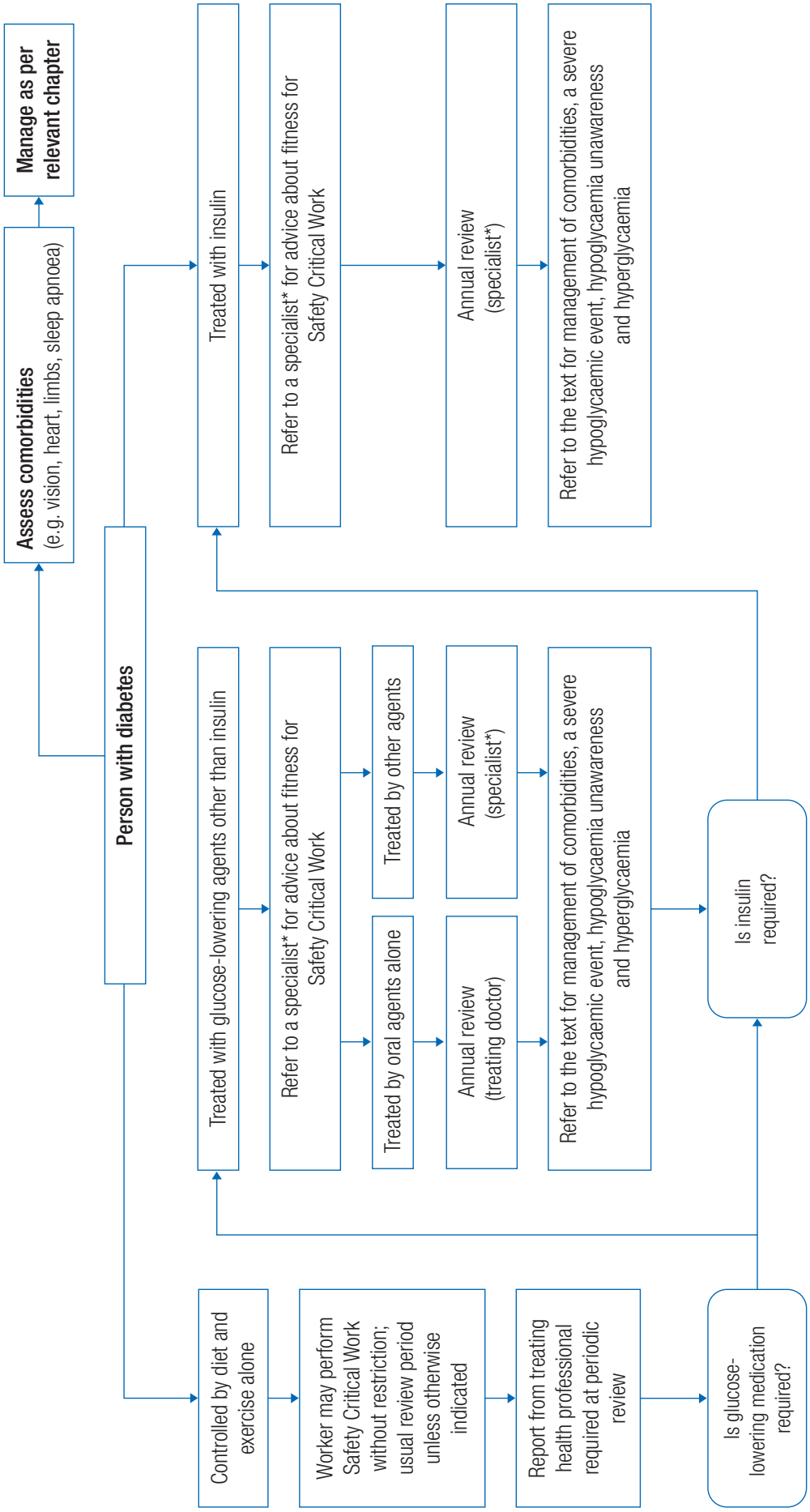
Reducing the risk of hypoglycaemia:advice to Safety Critical Workers

Workers with diabetes should also be advised to take appropriate precautionary steps to help avoid a severe hypoglycaemic event; for example by:

- complying with specified medical review requirements (general practitioner or specialist)
- not working if their blood glucose is less than 5 mmol/L
- not working for more than 2 hours without considering having a snack
- not delaying or missing a main meal
- self-monitoring blood glucose levels before working and every few hours at work, as reasonably practical, taking into account the history of control
- carrying adequate glucose for self-treatment
- treating mild hypoglycaemia if symptoms occur while working, including
  - ceasing work as practical
  - self-treating the low blood glucose
  - checking the blood glucose levels 15 minutes or more after the hypoglycaemia has been treated and ensuring it is above 5 mmol/L
  - not recommencing working until feeling well and until at least 30 minutes after the blood glucose is above 5 mmol/L.

Workers should be instructed to request a triggered health assessment if their condition deteriorates or their treatment changes.

Figure 21 **Management of diabetes and Safety Critical Work**



*Endocrinologist or diabetes specialist

Lack of hypoglycaemia awareness

Lack of hypoglycaemia awareness exists when a person does not regularly sense the usual early warning symptoms of mild hypoglycaemia, such as sweating, tremulousness, hunger, tingling around the mouth, palpitations and headache. Lack of hypoglycaemia awareness should be considered in people with insulin-treated diabetes of longer duration (more than 10 years), particularly if there is a history of unstable glucose control or severe hypoglycaemia over recent years.

When lack of hypoglycaemia awareness develops in a person who has experienced a severe hypoglycaemic event, it may improve in the subsequent weeks and months if further hypoglycaemia can be avoided.

A person with a lack of hypoglycaemia awareness should be under the regular care of a medical practitioner with expert knowledge in managing diabetes (e.g. endocrinologist or diabetes specialist), who should be involved in assessing their fitness for duty. Any worker who has a lack of hypoglycaemia awareness is generally not fit for Safety Critical Work unless their ability to experience early warning symptoms returns.

In managing lack of hypoglycaemic awareness, the medical practitioner should focus on aspects of the person's self-care to minimise a severe hypoglycaemic event occurring while working, including the points described in the section, 'Reducing the risk of hypoglycaemia: advice to Safety Critical Workers'. In addition, self-care behaviours that help to minimise severe hypoglycaemic events in general should be a major ongoing focus of regular diabetes care. This requires attention by both the medical practitioner and the person with diabetes to diet and exercise approaches, insulin regimens and blood glucose testing protocols.

Acute hyperglycaemia

Although acute hyperglycaemia may affect some aspects of brain function, there is insufficient evidence to determine regular effects on driving performance—and, by implication, rail Safety Critical Work—and related crash risk. Each person with diabetes should be counselled about management of their diabetes during days when they are unwell, and should be advised not to work if they are acutely unwell with metabolically unstable diabetes.

Electromagnetic interference

Workers using insulin pumps or other electronic devices should have their devices assessed for sensitivity to electromagnetic fields (e.g. static, extremely low frequency or radiofrequency) that are likely to be present in the rail environment and may cause interference with the device.

Comorbidities and end-organ complications

Assessment and management of comorbidities is an important aspect of managing people with diabetes with respect to their fitness for Safety Critical Work. This includes but is not limited to the following.

- **Vision**. (refer to Section 19.2, Vision and eye disorders).
- **Neuropathy and foot care**. Although it can be difficult to be prescriptive about neuropathy in the context of Safety Critical Work, it is important that the severity of the condition is assessed. Adequate sensation is required for the operation of foot controls and adequate stability is necessary for walking on ballast, climbing in and out of trains and so on (refer to Sections 18.4, Neurological conditions and 19.3, Musculoskeletal conditions).
- **Sleep apnoea**. Sleep apnoea is a common comorbidity affecting many people with type 2 diabetes and has substantial implications for rail safety. The treating health professional should be alert to potential signs and symptoms, and apply tests such as the Epworth Sleepiness Scale as appropriate (refer to Section 18.6, Sleep disorders).
- **Cardiovascular**. Diabetes is an important risk factor in assessing the cardiac risk level (refer to Section 18.2, Cardiovascular conditions).

18.3.3 Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty are outlined in Table 6.

Table 6 **Medical criteria for Safety Critical Workers: Diabetes**

Condition	Criteria
Diabetes controlled by diet and exercise alone	**Category 1 and Category 2 Safety Critical Workers** A person with diabetes controlled by diet and exercise alone may perform Safety Critical Work without restriction. More frequent reviews may not be necessary. They should be reviewed by their treating doctor periodically regarding progression of diabetes. A report from the treating doctor should be available for review by the Authorised Health Professional at periodic health assessment appointments. The worker should be instructed to request a triggered assessment if their condition deteriorates or their treatment changes.
Diabetes treated by glucose-lowering agents other than insulin	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has non-insulin-treated diabetes mellitus and is being treated with glucose-lowering agents other than insulin. Fit for Duty Subject to Review may be determined, subject to at least annual review, taking into account the nature of the work and information provided by a specialist in endocrinology or diabetes* on whether the following criteria are met: • the condition is satisfactorily controlled (refer to Section 18.3.2) and the person is compliant with treatment; and • there is no history of a severe hypoglycaemic event during recent years as assessed by the specialist; and • the person experiences early warning symptoms (awareness) of hypoglycaemia (refer to Section 18.3.2); and • the person is following a treatment regimen that minimises the risk of hypoglycaemia; and • there is an absence of end-organ effects that may affect working as per this Standard. *The Chief Medical Officer of a rail organisation may determine that review by the worker's treating general practitioner is sufficient if there is an established pattern of compliance and good response to treatment. The initial granting of Fit for Duty Subject to Review must be based on information provided by a specialist.
Insulin-treated diabetes	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has insulin-treated diabetes Fit for Duty Subject to Review may be considered, taking into account the nature of the work and information provided by a specialist in endocrinology or diabetes on whether the following criteria are met, subject to at least annual review: • the condition is satisfactorily controlled (refer to Section 18.3.2) and the person is adherent with treatment; and • there is no history of a severe hypoglycaemic event during recent years as assessed by the specialist; and • the person experiences early warning symptoms (awareness) of hypoglycaemia (refer to Section 18.3.2); and • the person is following a treatment regimen that minimises the risk of hypoglycaemia; and • there is an absence of end-organ effects that may affect working as per this Standard.

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified as Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified as Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed as Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed to by the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed to, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

References and further reading

Austroads Inc. & NTC (National Transport Commission) 2011, *Assessing fitness to drive, commercial and private vehicle drivers: medical standards for licensing and clinical management guidelines*, Austroads Inc. & NTC, Sydney.

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18.4 Neurological conditions

Safety Critical Work requires a number of intact neurological functions. In the rail industry, this is often referred to as having 'situational awareness'. Depending on the job, these neurological functions may include:

- visuospatial perception
- insight
- judgement
- attention and concentration
- reaction time
- memory
- sensation
- muscle power (refer to Section 19.3, Musculoskeletal conditions)
- coordination
- balance
- vision (refer to Section 19.2, Vision and eye disorders).

Impairment of any of these capacities may be caused by neurological disorders and thus affect safe working ability (situational awareness). In addition to these deficits, some neurological conditions produce seizures.

This section provides guidance and medical criteria for the following conditions:

- dementia (refer to Section 18.4.1)
- seizures and epilepsy (refer to Section 18.4.2)
- vestibular disorders (refer to Section 18.4.3)
- other neurological conditions, including (refer to Section 18.4.4)
  - unruptured intracranial aneurysms and other vascular malformations
  - cerebral palsy
  - head injury
  - neuromuscular conditions
  - Parkinson's disease
  - multiple sclerosis
  - stroke
  - transient ischaemic attacks
  - subarachnoid haemorrhage
  - space-occupying lesions, including brain tumours
  - neurodevelopmental disorders.

The focus of this section is mainly on long-term or progressive disorders affecting safe working ability, but some guidance is also provided regarding short-term fitness to work—for example, following head injury (also refer to Section 12.3.6, Temporary conditions).

Where people experience musculoskeletal, visual or psychological symptoms, the relevant standards should also be considered. Refer to Sections 19.3, Musculoskeletal conditions, 18.5, Psychiatric conditions and 19.2, Vision and eye disorders.

18.4.1 Dementia

This section focuses on dementia, which —for the purposes of this Standard— is defined as a progressive deterioration of cognitive function due to degenerative conditions of the central nervous system.

Other causes of temporary or permanent cognitive impairment or delirium, such as hepatic, renal or respiratory failure, may be managed according to general principles. Substance misuse is covered in Section 18.7.

Relevance to Safety Critical Work

Effects of dementia on Safety Critical Work

Dementia is characterised by significant loss of cognitive abilities such as memory capacity, psychomotor abilities, attention, visuospatial functions and executive functions. This standard is therefore applicable to workers performing Category 1 and Category 2 Safety Critical Work.

Dementia may arise due to numerous causes including Alzheimer's disease, Huntington's disease, fronto-temporal dementia and vascular dementia. Alzheimer's disease is the most common cause, accounting for 50–70% of cases. It mainly affects people over the age of 70, and is of some relevance in the rail industry due to an ageing workforce.

Dementia may affect safe working ability in a number of ways, including:

- memory loss
- limited concentration or 'gaps' in attention, such as failing to see or respond to signals (signals passed at danger [SPAD])
- errors in judgement
- confusion when making choices
- poor decision making or problem solving
- poor insight and denial of deficits
- errors with navigation, including forgetting details of routes
- slowed reaction time, including failure to respond in a timely fashion to instructions
- poor hand–eye coordination.

Evidence of crash risk

Based on studies of road accidents, a diagnosis of dementia is associated with a moderately high risk of collision compared with matched controls (Charlton et al. 2010).

General assessment and management guidelines

Assessment

Due to the progressive and irreversible nature of the condition, people with a diagnosis of dementia will eventually be a risk to themselves and others when working.

The level of impairment varies widely; each person will experience a different pattern and timing of impairment as their condition progresses. This presents problems in both diagnosis and management.

The following points may be of assistance in assessing a person:

- **Work history**. Have they been involved in any incidents? Have they been referred for assessment by a supervisor?
- **Vision**. Can they see things coming straight at them or from the sides? (refer to Section 19.2, Vision and eye disorders).
- **Hearing**. Can they hear speech and warning sounds?
- **Reaction time**. Can they respond to signals and train orders?
- **Problem solving**. Do they become upset and confused when more than one thing happens at the same time?

- **Coordination**. Have they become clumsy or started to walk differently because their coordination is affected?
- **Praxis**. Do they have difficulty using their hands and feet when asked to follow motor instructions?
- **Alertness and perception**. Are they aware and do they understand what is happening around them? Do they experience hallucinations or delusions?
- **Insight**. Are they aware of the effects of their dementia? Is there denial?

Because of the lack of insight and variable memory abilities associated with most dementia syndromes, the person may minimise or deny any difficulties with working. Work performance reports, and feedback from supervisors or co-workers may be a useful source of information regarding overall coping and safety decision-making skills.

Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty are outlined in Table 7.

Due to the progressive nature of dementia, a person first diagnosed with suspected dementia should be classed as Temporally Unfit and referred for specialist assessment.

A Safety Critical Worker with a diagnosis of dementia will generally not meet this Standard. In some situations, a classification of Fit for Duty Subject to Review may be determined subject to careful assessment by an appropriate specialist. Information relating to work performance and, in particular, safety breaches or near misses, should also be considered.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 7 **Medical criteria for Safety Critical Workers: Dementia**

Condition	Criteria
Dementia	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has a diagnosis of dementia. Fit for Duty Subject to Review may be determined, subject to at least annual review, taking into account: • the nature of the work and work performance reports; and • information provided by an appropriate specialist regarding the level of impairment of any of the following: visuospatial perception, insight, judgement, attention, reaction time or memory.

18.4.2 Seizures and epilepsy

(Refer also to Sections 18.1, Blackouts, 18.2, Cardiovascular conditions and 18.3, Diabetes)

Relevance to Safety Critical Work

Effects of seizures on Safety Critical Work

Epilepsy refers to the tendency to experience recurrent seizures. Not all people who experience a seizure have epilepsy.

Seizures vary considerably, some being purely subjective experiences (e.g. some focal seizures), but the majority involve some impairment of consciousness (e.g. absence and complex partial seizures) or loss of voluntary control of the limbs (e.g. focal motor and complex partial seizures). Convulsive (tonic–clonic) seizures may be generalised from onset or secondarily generalised with focal onset. Seizures associated with loss of awareness, even if brief or subtle, or loss of motor control, have the potential to impair the ability to perform both Category 1 and Category 2 Safety Critical Work.

The seizure-free periods outlined in this Standard are applicable to workers performing Category 1 Safety Critical Work. Category 2 workers should be individually assessed for various seizure types as discussed in this section.

In addition, sleep deprivation is a common provoking factor in epilepsy and may be experienced in shift work.

Evidence of safety risk

Evidence of safety risk is derived from road crash data. Most studies have reported an elevated crash risk among drivers with epilepsy, but the size of the risk varies considerably across the studies. The majority of studies have found that individuals with epilepsy are twice as likely to be involved in a motor vehicle crash compared with the general driving population. More recent studies have found that drivers who do not take anti-epileptic medication as prescribed are at an increased risk for experiencing a crash (Charlton et al. 2010).

General assessment and management guidelines

Epilepsy is a common disorder with a cumulative incidence of 2% of the population, with 0.5% affected and taking medication at any one time. The majority of cases respond well to treatment, with a terminal remission rate of 80% or more. The majority suffer few seizures in a lifetime, and about half will have no further seizures in the first 1 or 2 years after starting treatment. Some people with epilepsy may eventually cease medication. For others, surgery may be beneficial.

Workers experiencing initial seizures should be referred to a specialist for accurate diagnosis of the specific epilepsy syndrome so that appropriate treatment is instituted and all the risks associated with epilepsy, including Safety Critical Work, can be explained and acted upon.

The specific criteria outlined in this section relate to Category 1 workers, for which sudden collapse is likely to pose a serious risk for the rail network. The impact of seizures for Category 2 workers is less clear. By definition, sudden collapse will not lead to a serious incident; however, the variable impacts of the condition, including the impact on attentiveness, will need to be considered in light of the individual requirements of the worker's job.

Category 2 workers

All Category 2 workers experiencing a seizure should be managed on an individual basis. They require careful assessment of their condition by a neurologist specialised in epilepsy to determine the type and severity of the epilepsy, and response to treatment. Their job requirements should be assessed by an occupational physician knowledgeable in rail to determine the possible consequences on the safety of the network (and the worker's own safety) if the worker is impacted by epilepsy. The neurologist and the occupational physician should confer to determine fitness for duty or otherwise.

The default standard (all cases)

Given the considerable variation in seizures and their potential impact on Safety Critical Work, a hierarchy of standards has been developed that provides a logical and fair basis for decision making regarding fitness for duty.

The 'default standard' is the standard that applies to all Category 1 Safety Critical Workers who have had a seizure. It requires a seizure-free period of 10 years before return to Safety Critical Work. It applies in all but a number of defined situations that are associated with a lower risk of a seizure-related crash or incident. Only in these situations may work be resumed after a shorter period of seizure freedom. However, the need for adherence to medical advice and at least annual review still apply.

If a seizure has caused a crash, incident or near miss within the preceding 12 months, the required period of seizure freedom may not be reduced below that required under the default standard.

Anti-epileptic medication is not to be withdrawn in Category 1 Safety Critical Workers (refer to Table 8 for details).

Variations to the default standard

There are some situations in which a variation to the default standard may be considered to allow an earlier return to Safety Critical Work. This will require input from a specialist in epilepsy. These situations include:

- **Seizures in childhood**. In some specific childhood epilepsy syndromes, seizures usually cease in the teenage years before working age. Category 1 workers may be classified as Fit for Duty Subject to Review if no seizures have occurred after 11 years of age. If a seizure has occurred after 11 years of age, the non-working periods apply as outlined in the table.
- **First seizure**. Approximately half of all people experiencing their first seizure will never have another seizure, whereas half will have further seizures (i.e. epilepsy). The risk of recurrence falls with time. Safety Critical Work may be resumed after sufficient time has passed without further seizures (with or without medication) to allow the risk to reach an acceptably low level (refer to Table 8). If a second seizure occurs (except within 24 hours of the first), the risk of recurrence is much higher.
- **Acute symptomatic seizures**. Acute symptomatic seizures are caused by a transient brain disorder or metabolic disturbance (e.g. encephalitis, hyponatraemia, hypoglycaemia, head injury, or drug or alcohol withdrawal) in patients without previous epilepsy. Acute symptomatic seizures can be followed by further seizures weeks, months or years after resolution of the transient brain disorder. This may occur because of permanent changes to the brain caused by the process underlying the acute symptomatic seizures (e.g. seizures may return years after a resolved episode of encephalitis) or because the transient brain disorder has recurred (e.g. benzodiazepine withdrawal).

  People who have experienced a seizure only during and because of a transient brain disorder or metabolic disturbance should not perform Safety Critical Work for a sufficient period to allow the risk of recurrence to fall to an acceptably low level (refer to Table 8 for details). Return to Safety Critical Work requires input from a specialist in epilepsy.

  If seizures occur after the causative acute illness has resolved, whether or not due to a second transient brain disorder or metabolic disturbance, the acute symptomatic seizures standard no longer applies. For example, if a person has a seizure during an episode of encephalitis and then, after recovery from the encephalitis, has another seizure and begins treatment for epilepsy, the standard for epilepsy treated for the first time applies. Similarly, if a person experiences seizures during 2 separate episodes of benzodiazepine withdrawal, the default standard applies.
- **Exceptional cases**. In addition to the reduction for particular circumstances or seizure types, there is also an allowance for 'exceptional cases' in which Fit for Duty Subject to Review may be considered for a Category 1 worker on the recommendation of a medical specialist with specific expertise in epilepsy, and in consultation with the Authorised Health Professional and the rail operator's Chief Medical Officer (CMO), if they have one, or another occupational physician experienced in rail. This enables individualisation of cases where the person does not meet this Standard, but may be considered safe to perform their job.

Other situations relevant to both Category 1 and 2 workers

- **Epilepsy treated by surgery**. Resection of epileptogenic brain tissue may eliminate seizures completely, allowing safe return to Safety Critical Work. For Category 1 workers, the default non-working seizure-free period of 10 years applies. The vision standard may also apply if there is a residual visual field defect. If medication is being considered, refer to 'Withdrawal of all anti-epileptic medication' (below).

  Fitness for duty for Category 2 workers will need to individually assessed based on the nature of the task.

- **'Safe' seizures (including prolonged aura)**. Some seizures do not impair consciousness; however, this must be well established without exceptions and corroborated by reliable witnesses or video-electroencephalography (EEG) recording because people may believe their consciousness is unimpaired when it is not. For example, some 'auras' are associated with impaired consciousness that the person does not perceive.

  Seizures may begin with a subjective sensation (the 'aura') that precedes impairment of consciousness. If this lasts long enough, the person may have time to stop work. However, this can be relied upon only when this pattern has been well established without exceptions and corroborated by witnesses or video-EEG monitoring. Furthermore, it may be impractical to stop Safety Critical Work immediately and safely (e.g. train driving).

  For these reasons, such seizures require the application of the default non-working period for Category 1 Safety Critical Workers. Fitness for duty for Category 2 workers will need to be individually assessed based on the nature of the task.
- **Sleep-only seizures**. Some seizures occur only in sleep. The default standard applies to all Category 1 Safety Critical Workers. Fitness for duty for Category 2 workers will need to be individually assessed based on the nature of the task.
- **Seizure in a person whose epilepsy has been previously 'well controlled' including provoked seizures**. In people with epilepsy, their seizures are often provoked by factors such as sleep deprivation, missed doses of anti-epileptic medication, over-the-counter medications, alcohol or acute illnesses. If the provoking factor is avoided, the risk of subsequent seizures may be sufficiently low to allow Category 2 work to be resumed after a shorter seizure-free period than when following an unprovoked seizure. However, this applies only if the epilepsy has been well controlled until the provoked seizure, and careful consideration needs to be given to the nature of the work and whether the provoking factor can be reliably avoided.

  There is no such allowance for Category 1 workers, and the default standard applies. Refer also to 'Medication noncompliance' (below).
- **Medication noncompliance**. Compliance with medical advice regarding medication intake is a requirement for fitness for duty. Where noncompliance with medication is suspected, the worker may be required to have drug-level monitoring. Where a person with a history of compliance with medication experiences a seizure because of a missed dose and there were no seizures in the 12 months leading up to that seizure, the situation can be considered a provoked seizure (refer to standard for 'Seizure in a person whose epilepsy has been previously well controlled'). Generally, there is no reduction in the non-working period for Category 1 workers. Category 2 workers should be individually assessed.
- **Withdrawal of all anti-epileptic medication**. Withdrawal of all anti-epileptic medication is incompatible with Category 1 Safety Critical Work. Category 2 workers should be individually assessed.
- **Seizure causing a crash/incident/near miss**. Not all seizures carry the same risk of causing a crash/incident/near miss on the network. People who have been involved in a crash/incident/near miss within the preceding 12 months as a result of a seizure are likely to have a higher risk of further incidents. For a Category 1 worker who has experienced a crash/incident as a result of a seizure, the default seizure-free non-working period applies, even if they fall into one of the categories that allows a reduction. Category 2 workers should be individually assessed.
- **Concurrent conditions**. Where epilepsy is associated with other impairments or conditions, the relevant sections covering those disorders should also be consulted.
- **Other conditions with risk of seizure**. Seizures can occur in association with many brain disorders. Some of these disorders may also impair safe working because of an associated neurological deficit. Both the occurrence of seizures, as well as the effect of any neurological deficit must be taken into account when determining fitness for duty (refer to Section 18.4.4, Other neurological and neurodevelopmental conditions).

Advice to Safety Critical Workers

All Safety Critical Workers with epilepsy should be advised of the following general principles for safety if continuing Safety Critical Work:

- The worker must continue to take anti-epileptic medication regularly when and as prescribed.
- The worker should ensure they get adequate sleep and should not work when sleep deprived.
- The worker should avoid circumstances or the use of substances (e.g. alcohol) that are known to increase the risk of seizures.

Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty are outlined in Table 8. These mainly apply to Category 1 workers. Category 2 workers should be individually assessed. Based on the individual assessment, some latitude may be allowed in the application of the standards set out in this section.

All Safety Critical Workers who need active management of epilepsy should be under review, including, where necessary, at least annual specialist appraisal. The use of an independent specialist may be considered.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 8 Medical criteria for Safety Critical Workers: Seizures and epilepsy

Condition	Criteria
All cases: Category 1 default standard (Category 2 workers should be individually assessed, refer to page 96).	
All cases (default standard) Applies to all Category 1 workers who have experienced a seizure. Exceptions may be considered only if the situation matches one of those listed below.	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has experienced a seizure. Fit for Duty Subject to Review may be determined, subject to annual review, taking into account information provided by a specialist in epilepsy as to whether the following criteria are met: • there have been no seizures for at least 10 years; and • an electroencephalography (EEG) shows no epileptiform activity; and • the person follows medical advice, including adherence to medication if prescribed. **Note: Category 2 Safety Critical Workers** should be individually assessed (refer to page 96).
Possible reductions in the non-working seizure-free periods for Fit for Duty Subject to Review for Category 1 workers (Category 2 workers should be individually assessed, refer to page 96).	
History of a benign seizure or epilepsy syndrome limited to childhood (e.g. febrile seizures, benign focal epilepsy, childhood absence epilepsy)	**Category 1 Safety Critical Workers** A history of a benign seizure or epilepsy syndrome limited to childhood does not disqualify the person from being Fit for Duty, as long as there have been no seizures after 11 years of age. If a seizure has occurred after 11 years of age, there is no reduction and the default standard applies unless the situation matches one of those listed below. **Category 2 Safety Critical Workers should be individually assessed** (refer to page 96).

Condition	Criteria
First seizure Note: 2 or more seizures in a 24-hour period are considered a single seizure.	**Category 1 Safety Critical Workers** Fit for Duty Subject to Review may be determined, subject to annual review, taking into account information provided by a specialist in epilepsy as to whether the following criteria are met: • there have been no seizures for least 5 years (with or without medication); and • an EEG shows no epileptiform at activity. **Category 2 Safety Critical Workers should be individually assessed** (refer to page 96).
Acute symptomatic seizures Seizures occurring only during a temporary brain disorder or metabolic disturbance in a person without previous seizures. This includes head injuries, and withdrawal from drugs or alcohol. This is not the same as provoked seizures in a person with epilepsy.	**Category 1 Safety Critical Workers** Fit for Duty Subject to Review may be determined, subject to annual review, taking into account information provided by a specialist in epilepsy as to whether the following criteria are met: • there have been no further seizures for at least 12 months; and • an EEG shows no epileptiform activity. If there have been 2 or more separate transient disorders causing acute symptomatic seizures, the default standard applies (refer above). **Category 2 Safety Critical Workers should be individually assessed** (refer to page 96).
Exceptional cases	**Category 1 Safety Critical Workers** Where a person with seizures or epilepsy does not meet the above criteria, Fit for Duty Subject to Review may be determined, based on consideration of the nature of the task and subject to annual review: • if, in the opinion of a medical specialist with specific expertise in epilepsy, and in consultation with the Authorised Health Professional and the operator's Chief Medical Officer (or an occupational physician experienced in rail), the risk to the network caused by a seizure is acceptably low; and • the person follows medical advice, including adherence to medication if prescribed. **Category 2 Safety Critical Workers should be individually assessed** (refer to page 96).
Other factors that may influence fitness for duty status	
Epilepsy treated by surgery	**Category 1 Safety Critical Workers** Fit for Duty Subject to Review may be determined, subject to annual review, taking into account information provided by a specialist in epilepsy as to whether the following criteria are met: • there have been no seizures for at least 10 years; and • an EEG shows no epileptiform activity; and • the person follows medical advice with respect to medication adherence. The vision standard may also apply if there is a visual field defect. Withdrawal of any anti-epileptic medication is incompatible with performing Safety Critical Work. **Category 2 Safety Critical Workers should be individually assessed.** (refer to page 96).

Condition	Criteria
All cases: Category 2 workers (refer also to text)	**Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has experienced a seizure. Fit for Duty Subject to Review may be determined, based on a consideration of the nature of the task and subject to annual review: • if, in the opinion of the treating specialist and in consultation with the Authorised Health Professional and the operator's Chief Medical Officer (or an occupational physician experienced in rail), the risk to the network caused by a seizure is acceptably low; and • the person follows medical advice, including adherence to medication if prescribed.

18.4.3 Vestibular and balance disorders

(Refer also to Sections 18.4.4, Other neurological conditions and 19.1, Hearing.)

Relevance to Safety Critical Work

Balance is required for rail safety work in various situations, including walking (and, in an emergency, running) on ballast, or climbing ladders into cabs, on to rolling stock or up to signals.

Balance may be affected by a range of neurological conditions, including disorders of the cerebellum, spinal cord, and central or peripheral vestibular systems. Chronic intermittent conditions with acute onset are of main concern due to their potential for unexpected impact on Safety Critical Work.

Vertigo resulting from vestibular disorders may also affect the ability to perform Safety Critical Work. Vertigo can occur suddenly and, with sufficient severity, performing Safety Critical Work can be impossible. It may be accompanied by oscillopsia (the illusion that the environment is moving), which compounds the disability in regard to Safety Critical Work. Some vestibular disorders may also affect hearing.

General assessment and management guidelines

In addition to establishing the worker's history, balance and vestibular function should be clinically assessed by the Romberg test. A pass requires the ability to maintain balance while standing with shoes off, feet together side by side, eyes closed and arms by sides for 30 seconds. This test is useful for chronic conditions, but not intermittent ones.

Benign paroxysmal positional vertigo

Benign paroxysmal positional vertigo attacks are usually triggered by lying down, turning over in bed and sitting up from lying. However, they are also commonly provoked by stooping and extending the neck to look up. If these movements are required by Safety Critical Workers, including when they are working around the track, they will not be fit for duty.

Ménière's disease

Ménière's disease often results in recurrent vertigo, despite treatment. The natural history is of progression in the affected ear associated with increasing hearing loss until, in the extreme, total loss of vestibular function and partial loss of cochlear function occurs in the affected ear. The attacks are often heralded by a sense of fullness in the affected ear that may enable the worker to cease work safely. However, this is not practical for most train or tram driving, and some other Safety Critical Work. Safe cessation of work may be possible for tasks such as train controlling. Safety of the worker around the track will also need to be considered. A risk assessment of the job may assist to determine the ability to cease work safely, both for Category 1 and Category 2 workers. In addition the worker, whether Category 1 or Category 2, must meet any required hearing standard (refer to Section 19.1, Hearing).

Disorders of balance

Other disorders of balance should be managed as set out in Section 18.4.4, Other neurological conditions.

Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty of Category 1 workers are outlined in Table 9. Generally, those who suffer from unheralded attacks of vertigo are not fit for Category 1 work. Category 2 workers may be fit for duty if a risk assessment determines that acute incapacity is not detrimental to safety. However, they will not be fit for duties requiring them to work around the track.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 9 **Medical criteria for Safety Critical Workers: Vestibular disorders**

Condition	Criteria
Benign paroxysmal positional vertigo (BPPV)	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person is required to perform movements, such as stooping or extending the neck to look up, that commonly provoke attacks of BPPV. Fit for Duty Subject to Review may be determined, subject to annual review, taking into account the nature of the work, work performance reports and information provided by the treating doctor as to whether the person has been free of attacks for at least 6 months. **Category 2 Safety Critical Workers** Category 2 workers require a risk assessment of their job (including any requirements to work around the track). They may be classed Fit for Duty if acute incapacity is not detrimental to safety. Restrictions in relation to work around the track may need to apply.
Ménière's disease	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has Ménière's disease. Fit for Duty Subject to Review may be determined, subject to annual review, taking into account the nature of the work and work performance reports, and information provided by the treating neurologist/ears, nose and throat specialist as to whether the following criteria are met: • there is sufficient presence of warning symptoms of an attack to enable the person to stop work safely and it is practical to do so; and • the appropriate hearing standard is met. **Category 2 Safety Critical Workers** Category 2 workers require a risk assessment of their job (including any requirements to work about the track). They may be classed Fit for Duty if acute incapacity is not detrimental to safety. Restrictions in relation to work around the track may need to apply.

18.4.4 Other neurological and neurodevelopmental conditions

Relevance to Safety Critical Work

Neurological disorders may affect the ability to perform Safety Critical Work due to their effect on cognitive function, vision, sensation or motor function.

Although evidence of accident or incident risk is limited, it is very likely that symptoms that are common to many neurological conditions, such as potential spontaneous loss of consciousness, confusional states and impairment of muscular power and coordination, are deleterious to Safety Critical Work. Sudden incapacity, such as from an intracranial bleed, is particularly relevant to Category 1 workers. This Standard generally applies to both Category 1 and Category 2 workers, although individual assessment of impairments and tasks may be required.

General assessment and management guidelines

A worker with a neurological disorder should be examined to determine the impact on the functions required for safe working as listed below. If the health professional is concerned about a person's ability to work safely, the person may be referred for a functional or practical assessment (refer to Section 5.2.4, Functional and practical assessments). Work performance reports may be a useful source of information regarding overall safe working skills. For progressive conditions, deterioration in work performance may be the basis for a triggered referral.

Checklist for neurological disorders

If the answer is YES to any of the following questions, the person may be unfit for Safety Critical Work and will warrant further assessment.

1. Are there significant impairments of any of the following?
   - visuospatial perception
   - insight
   - judgement
   - attention and concentration
   - reaction time
   - memory
   - sensation
   - muscle power
   - coordination
   - balance.
2. Are the visual fields abnormal? (Refer to Section 19.2, Vision and eye disorders.)
3. Have there been one or more seizures? (Refer to Section 18.4.2, Seizures and epilepsy.)
4. Is there loss of hearing or vertigo? If so refer to sections 18.4.3, Vestibular disorders and 19.1, Hearing.

Some neurological conditions are progressive, while others are static. In the case of static conditions in those who meet the criteria for Fit for Duty Subject to Review, more frequent reviews than required for the usual periodic assessment may not be needed.

Aneurysms (unruptured intracranial aneurysms and other vascular malformations)

Sudden severe haemorrhage from an intracranial aneurysm or vascular malformation may cause acute incapacity and affect working safely. However, the risk of sudden severe haemorrhage from some unruptured intracranial aneurysms and vascular malformations may be low enough to allow working. Workers should be individually assessed for suitability for Category 1 Safety Critical Work.

If the vascular malformation has bled and produced a neurological deficit, the worker should be assessed to determine if any of the functions listed above are impaired of sufficient severity to affect Safety Critical Work.

If treated surgically, the advice regarding intracranial surgery applies (see 'Intracranial surgery', below). If the person has had a seizure, the seizures and epilepsy standards also apply (refer to Section 18.4.2, Seizures and epilepsy).

Cerebral palsy

Cerebral palsy may impair a worker's ability to perform Safety Critical Work because of difficulty with motor control, or if it is associated with intellectual impairment or other disabilities. However, workers with mild cases may pass the necessary aptitude tests. As the disorder is usually static, periodic review is not normally required.

Head injury

There are various severities of head injury. Any person who has had a traumatic injury causing loss of consciousness should not perform Safety Critical Work for a minimum of 24 hours, and the effects on functions listed in the checklist on page 98 should be monitored. Minor head injuries involving a loss of consciousness of less than one minute with no complications do not usually result in any long-term impairment. Similarly, immediate seizures that occur within 24 hours of a head injury are not considered to be epilepsy, but part of the acute process (refer to 'Symptomatic seizures', page 96). Long-term risk of seizures will also need to be considered in light of the nature and severity of the head injury.

More significant head injuries may impair any of the neurological functions listed in the checklist on page 98 and can impair long-term fitness for both Category 1 and Category 2 Safety Critical Work. There may be a focal neurological injury affecting motor or sensory tracts as well as the cranial nerves. Also, personality or behavioural changes may affect judgement and tolerance, and be associated with a psychiatric disorder such as depression or post-traumatic stress disorder (PTSD). Clinical, neuropsychological or functional/practical assessments may be helpful in determining fitness for duty (refer to Section 5.2.4, Functional and practical assessments).

Neurological recovery from a traumatic brain injury may occur over a long period and some people who are initially unfit may recover sufficiently after many months such that Safety Critical Work can be resumed. Workers with appreciable impairments should initially be classed as Temporarily Unfit for Duty and then managed according to their progress.

Comorbidities such as drug or alcohol misuse, and musculoskeletal injuries may also need to be considered (refer to Sections 18.7, Substance misuse and 19.3, Musculoskeletal disorders).

Intellectual impairment (IQ less than 70)

The severity of intellectual impairment should be judged individually and will rely on appropriate professional advice including neurological and neuropsychological opinion. People with intellectual impairment will be unlikely to pass the aptitude and recruitment tests. People with an IQ less than 70 are not eligible for Safety Critical Work.

Intracranial surgery (non-working periods may be varied by the neurosurgeon)

Non-working periods are advised to allow for the risk of seizures occurring after certain types of intracranial surgery. Following supratentorial surgery or surgery requiring retraction of the cerebral hemispheres, the person generally should not perform Safety Critical Work for 12 months and should be classed as Temporarily Unfit for Duty. There is no specific restriction after infratentorial or trans-sphenoidal surgery. This precautionary approach primarily applies to Category 1 workers since, in the case of Category 2 workers, sudden collapse is unlikely to lead to a serious incident.

If one or more seizures occur, the standards for seizures and epilepsy apply for Category 1 and Category 2 workers (refer to Section 18.4.2, Seizures and epilepsy). Similarly, if there is long-term impairment of any of the functions listed in the checklist on page 98, fitness for work will need to be assessed for Category 1 and Category 2 workers.

Multiple sclerosis

Multiple sclerosis may produce a wide range of neurological deficits that may be temporary or permanent, and impair the performance of Category 1 and Category 2 workers. Possible deficits that may impair safe working include all of those listed on page 98. Where practical, job modifications may be made to assist with some of these impairments; the advice of an occupational therapist may be helpful in this regard (refer to Section 5.2.4, Functional and practical assessments).

Neuromuscular disorders

Neuromuscular disorders include diseases of the peripheral nerves, muscles or neuromuscular junction, and may impair the performance of Category 1 and Category 2 workers. Peripheral neuropathy may impair safe working due to difficulties with sensation (particularly proprioception) or from severe weakness. Disorders of the muscles or neuromuscular junction may also interfere with the ability to control a train or machinery. A functional or practical assessment may be required (refer to Section 5.2.4, Functional and practical assessments).

Parkinson's disease

Parkinson's disease is a common, progressive disease that may affect safe working in the advanced stages due to motor manifestations (bradykinesia and rigidity) or cognitive impairments (deficits in executive function and memory, and visuospatial difficulties) and hence may impair the performance of Category 1 and Category 2 workers. When assessing the response to treatment, the response over the whole dose cycle should be taken into account (e.g. in patients with motor fluctuations, it would not be appropriate to assess fitness only on the basis of the best 'on' response). Most patients with severe motor fluctuations will be unfit for Safety Critical Work. A functional or practical assessment may be required (refer to Section 5.2.4, Functional and practical assessments).

There may also be disturbances of sleep with episodes of sleepiness when working (refer to Section 18.6, Sleep disorders).

Stroke (cerebral infarction or intracerebral haemorrhage)

Stroke may impair safe working ability due to long-term neurological deficit, or due to the risk of a recurrent stroke or transient ischaemic attack (TIA) (refer below). However, stroke and TIA rarely cause loss of consciousness. (It is uncommon for undiagnosed strokes or TIA to result in motor vehicle crashes. When they do, it is usually due to an unrecognised visual field deficit.)

The risk of recurrent stroke is probably highest in the first month after the initial stroke, but is still sufficiently low (about 10% in the first year) that it does not on its own require suspension of Safety Critical Work. However, fatigue and impairments in concentration and attention are common after stroke (even in those with no persisting neurological deficits) and may impair the ability to perform Safety Critical Work. For this reason, there should be a non-working period after stroke for Category 1 and Category 2 workers, even in those with no detectable persisting neurological deficit.

For those with a persistent neurological deficit, subsequent fitness for duty will depend on the extent of impairment of the functions listed in the checklist on page 98. A functional or practical assessment may be required (refer to Section 5.2.4, Functional and practical assessments). The vision standard may also apply (refer to Section 19.2, Vision and eye disorders). If the person has had a seizure, the seizures and epilepsy standards also apply (refer to Section 18.4.2, Seizures and epilepsy).

Transient ischaemic attack

TIAs can be single or recurrent, and may be followed by stroke. They may impair safe working if they occur while at work. This is particularly relevant to Category 1 workers. The risk of a further TIA or stroke is about 15% in the first 3 months and about half of that risk occurs in the first week. In view of the low risk of TIA or stroke affecting safe working, Category 1 workers should not work for 4 weeks after a TIA (Temporarily Unfit for Duty) and should be reassessed at that point. The worker may then be classed as Fit for Duty Subject to Review by an appropriate specialist if there is no long-term impairment and risk of recurrence is low (refer to Section 12.3.6, Temporary conditions). A shorter non-working period of 2 weeks applies for Category 2 workers, who may then be classified as Fit for Duty Subject to Review.

Subarachnoid haemorrhage

Category 1 workers should not perform Safety Critical Work for at least 6 months, and Category 2 for at least 3 months, following a subarachnoid haemorrhage. Fit for Duty Subject to Review may be determined after this non-working period, taking into account the presence of neurological disabilities as described on page 98. The vision standard may also apply (refer to Section 19.2, Vision and eye disorders). If the person has had one or more seizures, the seizures and epilepsy standards also apply (refer to Section 18.4.2, Seizures and epilepsy). If a craniotomy has been performed, the advice for intracranial surgery also applies (refer to page 103). A functional or practical assessment may be considered (refer to Section 5.2.4, Functional and practical assessments).

Space-occupying lesions, including brain tumours

Brain tumours and other space-occupying lesions (e.g. abscesses, chronic subdural haematomas and cysticercosis) may cause diverse effects depending on their location and type. They may impair any of the neurological functions listed on page 98 and hence affect both Category 1 and Category 2 Safety Critical Work. If the person has had one or more seizures, the seizures and epilepsy standards also apply (refer to Section 18.4.2, Seizures and epilepsy). If a craniotomy has been performed, the advice regarding intracranial surgery also applies (refer above).

Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty are outlined in Table 10 (in alphabetical order), including standards for:

- aneurysms (unruptured intracranial aneurysms and other vascular malformations)
- cerebral palsy
- head injury
- intellectual impairments
- intracranial surgery
- multiple sclerosis
- neuromuscular conditions
- Parkinson's disease
- stroke
- transient ischaemic attacks
- space-occupying lesions, including brain tumours
- subarachnoid haemorrhage.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 10 Medical criteria for Safety Critical Workers: Neurological disorders

Condition	Criteria
Aneurysms (unruptured intracranial aneurysms) and other vascular malformations of the brain (refer also to Subarachnoid haemorrhage, page 104)	**Category 1 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has an unruptured intracranial aneurysm or other vascular malformation. Fit for Duty Subject to Review may be determined, subject to at least annual review, taking into account: • information provided by an appropriate specialist regarding the risk of symptomatic haemorrhage; and • the response to treatment. If there is any neurological deficit, the worker should be assessed to determine if there is impairment of any of the following: visuospatial perception, insight, judgement, attention, reaction time, sensation, memory, muscle power, balance, coordination or vision (including visual fields). If treated surgically, the intracranial surgery advice applies (page 103). If the person has had a seizure, the seizure and epilepsy standards apply (refer to Section 18.4.2, Seizures and epilepsy).
Cerebral palsy (refer also to neuromuscular, page 103 and/or intellectual disability, see below)	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has cerebral palsy producing significant impairment of any of the following: visuospatial perception, insight, judgement, attention, reaction time, sensation, muscle power, balance, coordination or vision (including visual fields). Fit for Duty Subject to Review may be considered, taking into account: • the nature of the work and reports on work performance; and • information provided by an appropriate specialist regarding the level of impairment. Periodic review is not required if the condition is static.
Head injury (refer also to intracranial surgery, page 103)	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has cerebral palsy producing significant impairment of any of the following: visuospatial perception, insight, judgement, attention, reaction time, sensation, muscle power, balance, coordination or vision (including visual fields). Fit for Duty Subject to Review may be considered, taking into account: • the nature of the work and reports on work performance; and • information provided by an appropriate specialist regarding the level of impairment and the presence of other disabilities that may impair Safety Critical Work according to this Standard; and • the results of neuropsychological testing, as appropriate. Periodic review is not required if the condition is static.
Intellectual disability	**Category 1 and Category 2 Safety Critical Workers** People with an IQ of less than 70 are not eligible to perform Safety Critical Work.

Condition	Criteria
Intracranial surgery	**Category 1 Safety Critical Workers** A person should be categorised Temporarily Unfit for Duty for 12 months following supratentorial surgery or surgery that involves retraction of the cerebral hemispheres. **Category 1 and 2 Safety Critical Workers** If there are seizures or long-term neurological deficits, refer to Section 18.4.2, Seizures and epilepsy or Section 18.4.4, Other neurological and neurodevelopmental conditions.
Multiple sclerosis	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has multiple sclerosis. Fit for Duty Subject to Review may be determined, subject to at least annual review, taking into account: • the nature of the work and reports on work performance; and • information provided by an appropriate specialist regarding the level of impairment of any of the following: visuospatial perception, insight, judgement, attention, reaction time, memory, sensation, muscle power, balance, coordination or vision (including visual fields).
Neuromuscular conditions (peripheral neuropathy, muscular dystrophy, etc.)	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has peripheral neuropathy, muscular dystrophy or any other neuromuscular disorder that significantly impairs muscle power, sensation or coordination. Fit for Duty Subject to Review may be determined, subject to at least annual review, taking into account: • the nature of the work and reports on work performance; and • information provided by an appropriate specialist regarding the level of impairment of muscle power, sensation balance or coordination.
Parkinson's disease	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has Parkinson's disease. Fit for Duty Subject to Review may be determined, subject to at least annual review, taking into account: • the nature of the work and reports on work performance; and • information provided by an appropriate specialist regarding the level of motor and cognitive impairment, and the response to treatment.
Stroke **(cerebral infarction or intracerebral haemorrhage)**	**Category 1 and Category 2 Safety Critical Workers** A person should be categorised Temporarily Unfit for Duty for at least 3 months following a stroke. A person is not Fit for Duty Unconditional: • if the person has had a stroke. Fit for Duty Subject to Review may be determined subject to at least annual review, taking into account: • the nature of the work and reports on work performance; and • information provided by an appropriate specialist regarding the level of impairment of any of the following: visuospatial perception, insight, judgement, attention, reaction time, memory, sensation, muscle power, balance, coordination or vision (including visual fields).

Condition	Criteria
Transient ischaemic attack (TIA)	**Category 1 Safety Critical Workers** A person should be categorised Temporarily Unfit for Duty for at least 4 weeks following a TIA. The worker may then be classed as Fit for Duty Subject to Review by an appropriate specialist if there is no long-term impairment and risk of recurrence is low. **Category 2 Safety Critical Workers** A person should be categorised Temporarily Unfit for Duty for at least 2 weeks following a TIA. The worker may then be classed as Fit for Duty Subject to Review by an appropriate specialist if there is no long-term impairment and risk of recurrence is low.
Space-occupying lesions (including brain tumours) (refer also to Intracranial surgery, page 103)	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has a space-occupying lesion. Fit for Duty Subject to Review may be determined, subject to at least annual review, taking into account: • the nature of the work and reports on work performance; and • information provided by an appropriate specialist about the level of impairment of any of the following: visuospatial perception, insight, judgement, attention, reaction time, sensation, memory, muscle power, balance, coordination or vision (including visual fields). If seizures occur, the standards for seizures and epilepsy apply (refer to Section 18.4.2, Seizures and epilepsy). If surgically treated, the criteria for intracranial surgery apply (page 103).
Subarachnoid haemorrhage (refer also to aneurysms, page 102)	**Category 1 and Category 2 Safety Critical Workers** A Category 1 worker should be categorised Temporarily Unfit for Duty for at least **6 months** after a subarachnoid haemorrhage and a Category 2 worker for **3 months**. A person is not Fit for Duty Unconditional: • if the person has had a subarachnoid haemorrhage. Fit for Duty Subject to Review may be determined after **6 months** (Category 1) or **3 months** (Category 2), taking into account: • the nature of the work and reports on work performance; and • information provided by an appropriate specialist about the level of impairment of any of the following: visuospatial perception, insight, judgement, attention, reaction time, sensation, memory, muscle power, balance, coordination or vision (including visual fields).
Other neurological conditions	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has a neurological disorder that significantly impairs any of the following: visuospatial perception, insight, judgement, attention, reaction time, sensation, memory, muscle power, coordination, balance or vision (including visual fields). Fit for Duty Subject to Review may be determined subject to at least annual review, taking into account: • the nature of the work and reports on work performance; and • information provided by an appropriate specialist about the likely impact of the neurological impairment on Safety Critical Work. Periodic review may not be necessary if the condition is static.

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed to by the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed to, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

References and further reading—Dementia

Alzheimers Australia <http://www.alzheimers.com.au>

Austroads Inc. & NTC (National Transport Commission) 2011, *Assessing fitness to drive, commercial and private vehicle drivers: medical standards for licensing and clinical management guidelines*, Austroads Inc. & NTC, Sydney.

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References and further reading—Seizures and epilepsy

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Taylor, J & Chadwick, D 1996, 'Risk of accidents in drivers with epilepsy', *Journal of Neurolology, Neurosurgery and Psychiatry*, vol. 60, pp. 621–7.

References and further reading—Vestibular disorders

Austroads Inc. & NTC (National Transport Commission) 2011, *Assessing fitness to drive, commercial and private vehicle drivers: medical standards for licensing and clinical management guidelines*, Austroads Inc. & NTC, Sydney.

Charlton, JL et al. 2010, *Influence of chronic illness on crash involvement of motor vehicle drivers*, 2nd edn, Monash University Accident Research Centre, Melbourne. <http://monashuniversity.mobi/muarc/reports/muarc300.html>

Mckiernan, D & Jonathon, D 2001, 'Driving and vertigo', *Clinical Otolaryngology*, vol. 26, pp. 1–2.

References and further reading—Other neurological conditions

Austroads Inc. & NTC (National Transport Commission) 2011, *Assessing fitness to drive, commercial and private vehicle drivers: medical standards for licensing and clinical management guidelines*, Austroads Inc. & NTC, Sydney.

Charlton, JL et al. 2010, *Influence of chronic illness on crash involvement of motor vehicle drivers*, 2nd edn, Monash University Accident Research Centre, Melbourne. <http://monashuniversity.mobi/muarc/reports/muarc300.html>

Hawley, CA 2001, 'Return to driving after head injury', *Journal of Neurology, Neurosurgery and Psychiatry*, vol. 70, no. 6, pp. 761–6.

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18.5 Psychiatric conditions

(Refer also to Sections 18.4, Neurological conditions and 18.7, Substance misuse.)

Psychiatric disorders encompass a range of cognitive, emotional and behavioural disorders such as schizophrenia, depression, anxiety disorders and personality disorders. They also include dementia and substance abuse disorders, which are addressed elsewhere in the Standard (refer to sections 18.4.1, Dementia and 18.7, Substance misuse).

18.5.1 Relevance to Safety Critical Work

Effects of psychiatric conditions on Safety Critical Work

Safety Critical Work is a complicated psychomotor performance that depends on fine coordination between the sensory and motor systems. It is influenced by factors such as arousal, perception, learning, memory, attention, concentration, emotion, reflex speed, time estimation, auditory and visual functions, decision-making ability and personality. Complex feedback systems interact to produce the appropriate coordinated behavioural response. Anything that interferes with any of these factors to a significant degree may impair the ability to perform Safety Critical Work.

Psychiatric disorders may be associated with disturbances of behaviour, cognitive abilities and perception, and therefore have the potential to affect performance of Safety Critical Work. They do, however, differ considerably in their aetiology, symptoms and severity, and may be occasional or persistent.

The impact of mental illness also varies depending on a person's social circumstances, job and coping strategies. Assessment of fitness for duty must therefore be individualised, and should rely on evaluation of the specific pattern of illness and potential impairments as well as severity, rather than the diagnosis per se. The range of potential impairments for various conditions is described below.

People with **schizophrenia** may have impairments across many domains of cognitive function related to safe working, including:

- reduced ability to sustain concentration or attention
- reduced cognitive and perceptual processing speeds, including reaction time
- reduced ability to perform in complex conditions, such as when there are multiple distractions
- perceptual abnormalities, such as hallucinations, that distract attention or are pre-occupying
- delusional beliefs that interfere with working—for example, persecutory beliefs may include being followed, and result in erratic working and unsafe decisions being made.

People with **bipolar affective disorder** may demonstrate:

- depression and suicidal ideation
- mania or hypomania, with impaired judgement about safe working, skill and associated recklessness
- delusional beliefs that directly affect work
- grandiose beliefs that may result in extreme risk taking.

People with **depression** may demonstrate:

- disturbances in attention, information processing and judgement, including reduced ability to anticipate situations
- psychomotor retardation and reduced reaction times
- sleep disturbances and fatigue
- suicidal ideation that may manifest in reckless conduct.

People with **anxiety disorders**, including post-tramautic stress disorder (PTSD) may:

- be preoccupied or distractible
- experience panic attacks or obsessional behaviours that may impair safe working.

People with **personality disorders** may be:

- aggressive or impulsive
- resentful of authority or reckless.

People with **adult attention deficit hyperactivity disorder** (ADHD) may demonstrate problems with sustaining attention, planning, procrastination, organisation and prioritisation.

These impairments are difficult to determine because impairment differs at various phases of the illness and may vary markedly between individuals.

Effects of Safety Critical Work on mental health

Front-line rail workers such as train drivers also have a unique risk in the course of their work due to people suiciding on railways. These incidents are usually managed through a rail operator's critical event management program (refer to Section 2.6, Critical incident management). However, such events, particularly when recurrent, may lead to depression, anxiety (in the form of PTSD) and substance misuse.

Evidence of crash risk

There is no specific data on the impact of psychiatric illness on the incidence of crashes or incidents in rail, but by extrapolation information may be derived from road accident data. Some studies have shown that drivers with a psychiatric illness have an increased crash risk compared with drivers without a psychiatric illness. There is also specific evidence for increased risk among those with schizophrenia and personality disorders.

Impairments associated with medication

Medications prescribed for treating psychiatric disorders may impair performance of Safety Critical Work. There is, however, little evidence that medication, if taken as prescribed, contributes to road crashes; in fact, it may even help reduce the risk of a crash (refer to Section 12.3.9, Drugs and Safety Critical Work).

The assessment of medication effects should be individualised and rely upon self-report, observation, clinical assessment and collateral information to determine if particular medications might affect Safety Critical Work. Authorised Health Professionals should have heightened concern when sedative medications are prescribed, but should also consider the need to treat psychiatric disorders effectively (also refer to Section 18.7, Substance misuse). Further advice may be obtained from GP Psych Support (see box).

GP Psych Support

GP Psych Support is a free service providing patient management advice for general practitioners in the areas of general adult psychiatry, child and adolescent psychiatry, geriatric psychiatry, and drug and alcohol psychiatry.

The service is provided by psychiatrists, who respond to enquiries within 24 hours.

Free phone: 1800 200 588. Callers will be asked some brief questions concerning the enquiry and a psychiatrist will call back within 24 hours.

Free fax: 1800 012 422. Using the **faxback form**, enquirers provide details regarding the issue for discussion. A psychiatrist will then fax or phone back to discuss case details.

Web: <http://www.psychsupport.com.au> is a secure and password-protected website. Questions can be submitted online once logged in. A username and password can be obtained by calling 1800 200 588.

18.5.2 General assessment and management guidelines

General considerations

When assessing the impact of a mental illness on the ability to work safely, the focus should be on assessing the severity and significance of likely functional effects, rather than the simple diagnosis of a mental illness. The review period should be tailored to the likely prognosis or pattern of progression of the disorder in an individual with a conservative approach to Safety Critical Work. Work performance reports may be a useful source of information regarding overall safe working skills. Reports of critical incidents, such as suicides on railways, should also be considered.

Mild mental illness does not usually have a significant impact on functioning. Moderate levels of mental illness commonly affect functioning, but many people will be able to manage usual activities, often with some modification. Severe mental illness often impairs multiple domains of functioning, and it is this category that is most likely to impact on the functions and abilities required for Safety Critical Work. A person's medication requirements should not be used as the only measure of disease severity.

Mental illness, particularly if accompanied by paranoid beliefs or lack of insight, may lead to noncompliance with requests to attend medical reviews or take prescribed medication, and may lead to difficulty obtaining a full picture of the workers condition and functioning. In cases where the Authorised Health Professional is not satisfied that they have a complete picture of the worker's condition, the worker should be classed Temporarily Unfit for Duty until adequate information can be obtained.

Screening for anxiety/depression

Substantial anxiety/depression affects up to 10% of the adult population. This has led to the introduction of the K10 Questionnaire, a well-validated tool for screening for anxiety and depression. It is included in the Safety Critical Worker Questionnaire. Note that the K10 is a screening instrument, not a diagnostic tool; thus, examining health professionals should apply clinical judgement in the interpretation of the score and the action required. A detailed explanation of the tool and scoring is provided on page 113. If the person appears unduly familiar with the K10, other validated questionnaires may be applied after consultation with the rail operator's CMO or equivalent.

Neuropsychological testing may be helpful to forming an overall opinion of fitness for duty.

Mental state examination

The mental state examination can be usefully applied in identifying areas of impairment that may affect fitness for duty.

- **Appearance**. Appearance is suggestive of general functioning (e.g. attention to personal hygiene, grooming, sedation, indications of substance use).
- **Attitude**. This may, for example, be described as cooperative, uncooperative, hostile, guarded or suspicious. Although subjective, it helps to evaluate the quality of information gained in the rest of the assessment and may reflect personality attributes.
- **Behaviour**. This may include observation of specific behaviours or general functioning, including ability to function in normal work and social environments.
- **Mood and affect**. This includes elevated mood (increase in risk taking) and low mood (suicidal ideation).
- **Thought form, stream and content**. This relates to the logic, quantity, flow and subject of thoughts, which may be affected by mania, depression, schizophrenia or dementia. Delusions with specific related content may impact on safe working ability.
- **Perception**. This relates to the presence of disturbances, such as hallucinations, that may interfere with attention or concentration, or may influence behaviour.
- **Cognition**. This relates to alertness, orientation, attention, memory, visuospatial functioning, language functions and executive functions. Evidence from formal testing, screening tests and observations related to adaptive functioning may be sought to determine if a psychiatric disorder is associated with deficits in these areas that are relevant to safe working.

- **Insight**. This relates to self-awareness of the effects of the condition on behaviour and thinking. Assessment requires exploration of the person's awareness of the nature and impacts of their condition, and has major implications for management.
- **Judgement**. The person's ability to make sound and responsible decisions has obvious implications for safety.

Treatment

As described in the previous sections, the effects of prescribed medication should be considered, including:

- how medication may help to control or overcome aspects of the condition that may impact on working safely
- what medication side effects may affect working safely, including risk of sedation, impaired reaction time, impaired motor skills, blurred vision, hypotension or dizziness.

Alternative treatments—including 'talking therapies'—may be useful as an alternative or supplement to medication, and lessen the risk of medication affecting working safely.

Substance misuse

(Also refer to Section 18.7, Substance misuse.)

People with a 'dual diagnosis' of a psychiatric disorder, and drug or alcohol abuse are likely to be at higher risk and warrant careful consideration. The assessment should seek to identify the potential relevance of:

- problematic alcohol consumption
- use of illicit substances
- prescription drug abuse (e.g. increased use of sedatives or painkillers).

If a person is prescribed stimulants (e.g. dexamphetamine) for treating ADHD, this should be known to the Authorised Health Professional in case the person is subject to drug testing in the future.

Insight

The presence or absence of insight has implications for management:

- The person with insight may recognise when they are unwell and self-limit their working.
- Limited insight may be associated with reduced awareness or deficits, and may result in markedly impaired judgement or self-appraisal. Workers with lack of insight should be classed as Temporarily or even Permanently Unfit for Duty as required.

Acute psychotic episodes

A person suffering an acute severe episode of mental illness (e.g. psychosis, moderate–severe depression or mania) may pose a significant risk. They should be classed as Temporarily Unfit for Duty.

Severe chronic conditions

A person with a severe chronic or relapsing psychiatric disorder (including neurodevelopmental disorders) needs to be assessed regarding the impairments associated with the condition and the skills needed to work safely. This may include a clinical assessment (e.g. neuropsychological) and/or consideration of work performance reports. They may be classed as Temporarily Unfit or Fit for Duty Subject to Review pending referral for appropriate specialist assessment.

Interfacing programs

There may be a number of support programs that are available to workers to which an Authorised Health Professional may refer as required, for example, an Employee Assistance Program or peer support (refer to Section 2, Legislative and program interfaces).

18.5.3 Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty are outlined in Table 11.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 11 **Medical criteria for Safety Critical Workers: Psychiatric disorders**

Condition	Criteria
K10 score	**Category 1 and Category 2 Safety Critical Workers** If the person has a K10 score of ≥ 19, the person may be classified as Temporarily Unfit for Duty or Fit for Duty Subject to Review while the causes are being assessed and managed (refer to Table 16): • For scores of 19–24, the worker may be classified Fit for Duty Subject to Review without external referral if the examining doctor feels the issues can be managed within the consultation. • For scores of 25–29, the worker must be referred back to their treating doctor for further management. • If score is > 30, the worker must be classified Temporarily Unfit for Duty pending further management.
Psychiatric disorders	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has a psychiatric disorder of sufficient severity that it may impair behaviour, cognitive ability or perception required for Safety Critical Work (refer to Section 18.5.1, Effects of psychiatric conditions on Safety Critical Work); or • if the examining doctor believes that there is a significant risk of a previous psychiatric condition relapsing. Fit for Duty Subject to Review may be determined, subject to annual review, taking into account the nature of the work, work performance reports and information provided by a psychiatrist as to whether the following criteria are met: • the condition is well controlled and the person is compliant with treatment over a substantial period, and the person has insight into the potential effects of their condition on safe working; and • there are no adverse medication effects that may impair their capacity for safe working; and • the impact of comorbidities has been considered (e.g. substance abuse).

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed to by the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed to, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

References and further reading

Austroads Inc. & NTC (National Road Transport Commission) 2011, *Assessing fitness to drive, commercial and private vehicle drivers: medical standards for licensing and clinical management guidelines*, Austroads Inc. and NTC, Sydney.

Charlton JL et al. 2010, *Influence of chronic illness on crash involvement of motor vehicle drivers*, 2nd edn, Monash University Accident Research Centre, Melbourne. <http://monashuniversity.mobi/muarc/reports/muarc300.html>

Box 1 Anxiety/depression: K10 Questionnaire

In recognition of the potential impact of psychological problems on attentiveness to Safety Critical Work, and the increasing incidence of these problems in the community, the K10 (a psychological screening tool) is included in the Health questionnaire for safety critical rail safety workers. The questionnaire aims to identify workers with significant levels of psychological distress so that they may be appropriately managed with respect to their work and their ongoing health and wellbeing.

The Kessler Psychological Distress Scale (K10) was developed in 1992 by Kessler for use in population surveys. It has been widely used in the United States as well as in Australia, where it has been included in the Australian Survey of Mental Health and Wellbeing (1997) and the Australian National Health Surveys. It has been validated for use in Australia by Professor Gavin Andrews and is available in the public domain.

Research has revealed a strong association between high scores on the K10 and the Composite International Diagnostic Interview (CIDI) diagnosis of anxiety and affective disorders. There is a lesser but significant association between the K10 and other mental disorder categories, and with the presence of any current mental disorder (Andrews & Slade 2001).

Sensitivity and specificity data analysis also supports the K10 as an appropriate screening instrument to identify likely cases of anxiety and depression in the community, and to monitor treatment outcomes.

Thus, the K10 is widely recommended as a simple measure of psychological distress and as a means to monitor progress following treatment for common mental health disorders such as anxiety and depression.

The K10 is a screening instrument, thus examining health professionals are required to apply clinical judgement in the interpretation of the score and the action required.

The K10 scale is based on 10 questions about negative emotional states experienced during the 4-week period leading up to the assessment (refer to Table 12).

For each item, there is a 5-level response scale based on the amount of time the respondent reports experiencing the particular problem. The response options are ‘none of the time’, ‘a little of the time’, ‘some of the time’, ‘most of the time’ and ‘all of the time’.

Each item is scored from 1 for ‘None of the time’ to 5 for ‘All of the time’. Scores for the 10 items are then summed, yielding a minimum possible score of 10 and a maximum possible score of 50. Low scores indicate low levels of psychological distress and high scores indicate high levels of psychological distress.

Questions 3 and 6 do not need to be asked if the response to the preceding question was ‘None of the time’. In such cases, questions 3 and 6 will automatically receive a score of 1.

Table 12 K10 Questionnaire

Please tick the answer that is correct for you:	All of the time (Score 5)	Most of the time (Score 4)	Some of the time (Score 3)	A little of the time (Score 2)	None of the time (Score 1)
1. In the past 4 weeks, about how often did you feel tired out for no good reason?	☐	☐	☐	☐	☐
2. In the past 4 weeks, about how often did you feel nervous?	☐	☐	☐	☐	☐
3. In the past 4 weeks, about how often did you feel so nervous that nothing could calm you down?	☐	☐	☐	☐	☐
4. In the past 4 weeks, about how often did you feel hopeless?	☐	☐	☐	☐	☐
5. In the past 4 weeks, about how often did you feel restless or fidgety?	☐	☐	☐	☐	☐
6. In the past 4 weeks, about how often did you feel so restless you could not sit still?	☐	☐	☐	☐	☐
7. In the past 4 weeks, about how often did you feel depressed?	☐	☐	☐	☐	☐
8. In the past 4 weeks, about how often did you feel that everything was an effort?	☐	☐	☐	☐	☐
9. In the past 4 weeks, about how often did you feel so sad that nothing could cheer you up?	☐	☐	☐	☐	☐
10. In the past 4 weeks, about how often did you feel worthless?	☐	☐	☐	☐	☐

Box 1 Anxiety/depression: K10 Questionnaire

Interpreting K10 scores

The creators of the K10 have not developed or published details on scoring the scale, thus various interpretations of scoring have been used.

The 2001 Victorian Population Health Survey adopted a set of cut-off scores based on how practitioners use the K10 as a screening tool. These scores are outlined in Table 13 and provide a useful overview of how the K10 can be applied for screening purposes in general practice.

Table 13 K10 cut-off scores

K10 score	Likelihood of having a mental disorder
10–19	Likely to be well
20–24	Likely to have a mild disorder
25–29	Likely to have a moderate mental disorder
30–50	Likely to have a severe mental disorder

Source: 2001 Victorian Population Health Survey *to estimate the prevalence of levels of psychological distress*

National population results based on this scoring system (National Health Survey 2001) are shown in Table 14, indicating that 85.8% of males and 79.6 % of females have low levels of psychological distress or are likely to be well with respect to their mental health.

The table also shows that 8.3% of males and 10.6% of females are likely to have a mild mental disorder, 3.1% of males and 5.5% of females are likely to have a moderate disorder and 2.7% of males and 4.4% of females are likely to have a severe disorder.

Table 14 National Health Survey 2001—level of psychological distress

Level of psychological distress (K10 score)	Males (%)*	Females (%)*
Low (10–19)	85.8	79.6
Moderate (20–24)	8.3	10.6
High (25–29)	3.1	5.5
Very high (30–50)	2.7	4.4
Total	100.0	100.0

* Age standardised percentages

When defining the cut-off scores for Safety Critical Work, key considerations are the specificity and sensitivity of the test—sensitivity being the measure of a test's ability to detect an illness and specificity being a measure of a test's ability to only diagnose those people who have the condition, not those who do not have it. The aim is to optimise the ability to detect people with the illness while limiting the number of false positives.

Table 15 (Andrews & Slade 2001) shows the sensitivity and specificity for the K10 at various scoring levels. A cut-off score of 19 results in a sensitivity of 71% and a specificity of 90% (i.e. 10% incorrect detection). A cut-off score of 20 results in lower sensitivity (66%) and slightly higher specificity. Given the importance of psychological health for Safety Critical Work, the cut-off of 19 with 71% sensitivity has been identified for initiating intervention in these workers, albeit with a 10% false positive rate.

Table 15 Sensitivity and specificity of the K10 in identifying people who met Composite International Diagnostic Interview criteria for any current anxiety or affective disorder (prevalence 7.1%)

K10 score greater than or equal to	Sensitivity (hit rate)	Specificity correct (rejection rate)
14	0.94	0.63
15	0.90	0.72
16	0.86	0.78
17	0.81	0.83
18	0.77	0.87
19	0.71	0.90
20	0.66	0.92
21	0.60	0.94
22	0.55	0.95
23	0.50	0.97
24	0.45	0.97
25	0.41	0.98
26	0.36	0.98
27	0.33	0.99
28	0.31	0.99
29	0.27	0.99
30	0.24	0.99
31	0.21	1.00
32	0.16	1.00

Box 1 Anxiety/depression: K10 Questionnaire

Use of the K10 for Safety Critical Workers

The purpose of applying the K10 to Safety Critical Workers is to screen for mental health disorders that may affect attentiveness and thus the ability to perform Safety Critical Work.

The examining health professional is required to evaluate the responses to the questionnaire in conjunction with supporting information provided by the organisation, such as absenteeism and accident history, which may provide indications of a mental health problem. The examining health professional should also form a clinical impression of the patient and consider if this is consistent with the score on the K10.

The examining health professional may also feel it is appropriate to make contact with a worker's general practitioner to discuss their history. Based on these inputs, the examining health professional will form a view as to whether they believe there is a significant current risk that the worker might be impaired at work.

Administering the K10

In the Safety Critical Worker health assessment, the *K10 Questionnaire* is administered in a self-report format; however, it can also be administered by interview if necessary.

The cognitive capacities (e.g. literacy, forgetfulness) and the level of cooperation or defensiveness of the worker should be considered in selecting the appropriate format.

Dishonest completion may be an issue, so review of the responses with the worker is desirable, as is consideration of the overall clinical picture. It may be helpful to reassure the worker that all responses are confidential and are not forwarded to the operator.

Scoring the K10 and managing Safety Critical Workers

As previously indicated, a total score of 50 is possible.

Higher scores indicate a greater likelihood of mental disorder and a need for more intensive treatment.

Table 8 provides a guide for managing workers according to their K10 score. Examining health professionals should also consider supporting information such as accident/incident history and sick leave, as well as the clinical examination when selecting the appropriate intervention.

As a general rule, patients who rate most commonly 'Some of the time' or 'All of the time' categories are in need of a more detailed assessment, and may not be fit to continue Safety Critical Work.

Workers who rate most commonly 'A little of the time' or 'None of the time', generally do not require further assessment; however, the clinical examination may indicate otherwise and will guide the final decision in this regard.

It is important to note that high scores may be the result of acute distress brought on by domestic or work stress, or may be due to endogenous causes. Interventions appropriate to the particular situation will therefore need to be identified.

Where work stress is identified as a factor in a raised score, the examining health professional is in a good position to constructively intervene and advise on remedial steps regarding work load, job re-organisation, training, conflict resolution and so on.

Risk Zone I — K10 scores between 10 and 19

Scores below 19 indicate that the worker is likely to be well but should be considered in the context of the overall clinical impression of the patient.

Although no formal intervention is required, reference to the importance of mental health for Safety Critical Work is appropriate. Information and resources may also be provided to highlight symptoms and sources of support.

Risk Zone II — K10 scores between 19 and 24

Scores in this zone indicate that the worker is likely to have a mild disorder (specificity greater than 90%). The examining health professional should explore possible reasons including domestic or work stress, and provide brief counselling as required. The examining health professional should identify sources of support or guidance that may be helpful to the worker, including work-based employee assistance programs, community support services or the worker's general practitioner.

The examining health professional may assess the worker as Fit for Duty Subject to Review to flag the issue for attention at subsequent assessments. The period of review may be earlier or in line with normal periodic frequencies, depending on the clinical assessment and other indicators.

Box 1 Anxiety/depression: K10 Questionnaire

Risk Zone III — K10 scores between 25 and 29

This zone indicates the worker is likely to suffer from a moderate mental disorder (specificity greater than 98%).

Again, the examining health professional should explore possible reasons and consider the supporting information and clinical picture.

Workers in this zone should be managed by a combination of brief counselling, referral to the worker's general practitioner and continued monitoring.

The examining health professional may assess the worker as Fit for Duty Subject to Review and should refer for external assessment via the worker's general practitioner. Alternatively, the examining health professional may classify the worker as Temporarily Unfit for Duty if there are immediate concerns for safe working.

Risk Zone IV — K10 scores equal to or greater than 30

Scores in this zone indicate that the worker is likely to have a severe mental disorder (specificity greater than 99%).

They should be assessed as Temporarily Unfit for Duty pending further assessment, and referred to their general practitioner in the first instance.

Table 16 **K10 risk levels and interventions**

Risk levels	K10 score	Intervention	Assessment conclusion for Safety Critical Work
Zone I	**10–18**	No formal intervention. Consider the consistency of the clinical impression with the score. General advice about the importance of mental health for Safety Critical Work, and alert to further information and resources.	Fit for Duty
Zone II	**19–24**	Brief counselling and reference to self-help materials and support services as applicable to the situation.	May be assessed as Fit for Duty Subject to Review. Review period may be in line with normal periodic review periods, or more frequently if the situation warrants it.
Zone III	**25–29**	Brief counselling, referral to general practitioner and continued monitoring.	May be assessed as Fit for Duty Subject to Review or Temporarily Unfit for Duty, depending on the situation. The review period will depend on the individual situation.
Zone IV	**30–50**	Refer for diagnostic evaluation and treatment. Review as appropriate.	Should be assessed as Temporarily Unfit for Duty while being evaluated and while treatment is initiated. Return to work will depend on the effectiveness of treatment.

18.6 Sleep disorders

18.6.1 Relevance to Safety Critical Work

Effects of sleep disorders on Safety Critical Work

A number of sleep disorders may cause excessive daytime sleepiness, which manifests itself as a tendency to doze at inappropriate times when intending to stay awake, and which has obvious implications for rail safety.

Relevant disorders include:

- sleep apnoea syndromes (obstructive sleep apnoea, central sleep apnoea and nocturnal hypoventilation)
- periodic limb movement disorder
- circadian rhythm disturbances (e.g. advanced or delayed sleep-phase syndrome)
- some forms of insomnia
- narcolepsy.

Such disorders may affect the ability to perform Safety Critical Work due to sleepiness and/or due to altered blood gases and hypoxia affecting mental function. These effects are relevant to both Category 1 and Category 2 Safety Critical Workers.

Evidence of crash risk

Information about risk of accidents due to sleep disorders mainly comes from road crash data. Studies have shown an increased rate of motor vehicle accidents of between 2 and 7 times that of control subjects in those with sleep apnoea. Studies have also demonstrated increased objectively measured sleepiness while driving (electroencephalography and eye closure measurements) and impaired driving-simulator performance in sleep apnoea patients. This performance impairment is similar to that seen due to illegal alcohol impairment or sleep deprivation. Drivers with severe sleep disordered breathing (respiratory disturbance index greater than 34) may have a much higher rate of accidents than those with a less severe sleep disorder.

Patients with narcolepsy present with excessive sleepiness, and can have periods of sleep with little or no warning of sleep onset. Other symptoms include cataplexy, sleep paralysis and vivid hypnagogic hallucinations, which present a significant risk for Safety Critical Work. Those with narcolepsy perform worse than control subjects on simulated driving tasks and are more likely to have (motor vehicle) accidents.

18.6.2 General assessment and management guidelines

Sleep apnoea is present on overnight monitoring in 9% of adult women and 24% of adult men. **Sleep apnoea syndrome** (excessive daytime sleepiness in combination with sleep apnoea on overnight monitoring) is present in 2% of women and 4% of men. Some studies have suggested a higher prevalence in transport vehicle drivers, which may have implications for rail:

- Obstructive sleep apnoea involves repetitive obstruction to the upper airway during sleep, precipitated by relaxation of the dilator muscles of the pharynx and tongue and/or narrowing of the upper airway, resulting in cessation (apnoea) or reduction (hypopnoea) of breathing.
- Central sleep apnoea refers to a similar pattern of cyclic apnoea or hypopnoea caused by oscillating instability of respiratory neural drive, and not due to upper airways factors. This condition is less common than obstructive sleep apnoea, and is associated with cardiac or neurological conditions, or may be idiopathic. Hypoventilation associated with chronic obstructive pulmonary disease (COPD) or chronic neuromuscular conditions may also interfere with sleep quality, causing excessive sleepiness.

Increased sleepiness during the daytime may also occur in otherwise normal people and may be due to either:

- previous sleep deprivation (restricting the time for sleep); or
- poor sleep hygiene habits; or
- irregular sleep–wake schedules (e.g. rosters); or
- the influence of sedative medications including alcohol.

These factors may increase the severity of sleep disorders and result in more severe sleepiness in workers with sleep disorders.

Unexplained episodes of 'sleepiness' may also require consideration of the several causes of blackouts (refer to Section 18.1, Blackouts).

Clinical indicators

Common clinical indicators of sleep apnoea include:

- habitual loud snoring during sleep
- witnessed apnoeic events (often in bed by a partner) or falling asleep inappropriately (particularly during non-stimulating activities such as watching TV, sitting and reading, travelling in a car or when talking with someone, as measured by the Epworth Sleepiness Scale [ESS])
- feeling sleepy despite adequate time in bed.

Poor memory and concentration, morning headaches and insomnia may also be presenting features. The condition is more common in men and with increasing age.

The presence of the following risk factors should also increase the suspicion of sleep apnoea, even in the absence of self-reported sleepiness:

- a body mass index (BMI) ≥ 40
- a BMI ≥ 35 and either
  - diabetes type 2; or
  - high blood pressure requiring 2 or more medications for control.

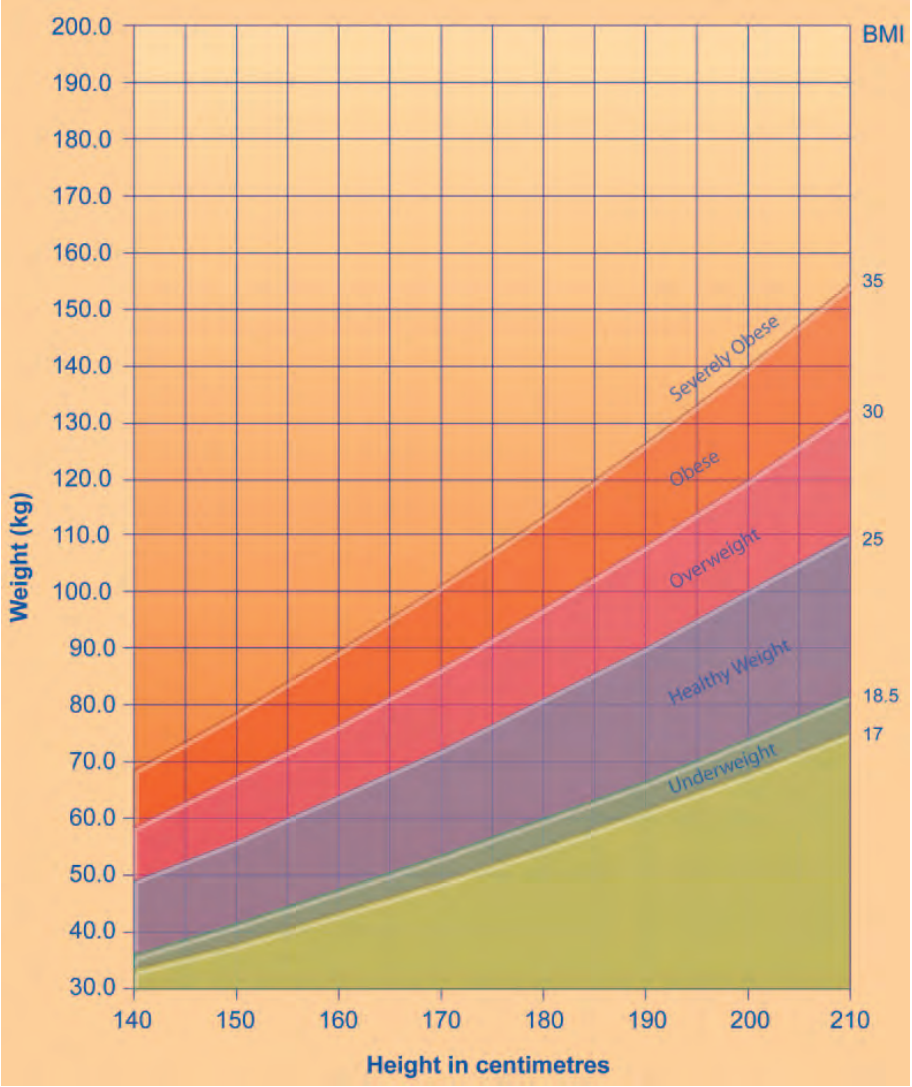
BMI should therefore be calculated routinely as part of the periodic health assessment for Safety Critical Workers (refer to Figure 22). Sleep apnoea may be present without the above features; however, the standard identifies these risk factors as a basis for further investigation and classification as Fit for Duty Subject to Review (refer to Table 17).

The Standard also identifies characteristics of high risk individuals, including:

- those who experience moderate to severe excessive daytime sleepiness (ESS score of 16–24) (see below)
- those with a history of frequent self-reported sleepiness while driving or working
- those for whom work performance reports indicate excessive sleepiness
- those who have had a motor vehicle crash or other incident caused by inattention or sleepiness.

Workers with these high-risk features have a significantly increased risk of sleepiness-related incidents. They should be referred to a sleep disorders specialist to assess if sleep apnoea or another medical condition is causing their excessive daytime sleepiness. These workers should be classed as Temporarily Unfit for Duty until the disorder is investigated, treated effectively and fitness for duty status determined.

Figure 22 **Body mass index nomogram**



Source: Queensland Health http://www.health.qld.gov.au/patientsafety/pupp/documents/bodymassindex.pdf

Screening for excessive daytime sleepiness: the Epworth Sleepiness Scale

Determining excessive daytime sleepiness may be assisted with screening tools. Subjective measures include tools such as the ESS (refer to Figure 23), which is incorporated into the health questionnaire. The ESS is scored by summing the numeric values in the boxes in the questionnaire; the maximum possible is 8 x 3 = 24. A score of 0–10 is within the normal range.

Mild to moderate self-reported sleepiness (ESS score of 11–15) may be associated with a significant sleep disorder, although the degree of increased risk of sleepiness-related (motor vehicle) accidents is unknown. Scores of 16–24 are consistent with moderate to severe sleepiness, and are associated with an increased risk of sleepiness-related accidents.

If the score is raised (≥ 16) or other clinical findings warrant it (see above), discuss the findings with the worker to determine possible explanations, such as the demands of shift work, lifestyle factors or sleep disorders, to help guide the approach to management. This may include referral to their general practitioner or to a sleep clinic for polysomnography. In most cases, the worker will need to be immediately classed Temporarily Unfit for Duty pending further assessment.

Figure 23 Epworth Sleepiness Scale questions

Epworth Sleepiness Scale questions

How likely are you to doze off or fall asleep in the following situations?

(scored 0–3, where: 0 = never, 1 = slight chance, 2 = moderate chance, 3 = high chance of dozing)

	SCORE
1. Sitting and reading	☐
2. Watching TV	☐
3. Sitting, inactive in a public place (e.g. a theatre or meeting)	☐
4. As a passenger in a car for an hour without a break	☐
5. Lying down to rest in the afternoon when circumstances permit	☐
6. Sitting and talking to someone	☐
7. Sitting quietly after a lunch without alcohol	☐
8. In a car, while stopped for a few minutes in the traffic	☐
Total Score :	

Referral and management

Workers in whom sleep apnoea is suspected, or who have chronic excessive sleepiness or another medical sleep disorder, should be referred to a specialist sleep physician for further investigation such as overnight polysomnography and, when appropriate, referral to an ear, nose and throat (ENT) surgeon for assessment of the upper airways.

Initial screening may be conducted using polysomography packages that are available for home assessment. The investigation (during a period of sleep) should include as a minimum:

- respiratory function testing (including oro-nasal airflow, rib cage/abdominal movement, heart rate and oximetry).

The investigation preferably should also include the following where logistics and practicality permits:

- a continuous recording of an electrocardiograph (ECG)
- a continuous recording of an electroencephalograph (EEG).

These parameters should be interpreted and reported on by a specialist sleep physician who has established quality assurance procedures for the data acquisition.

Safety Critical Workers who are diagnosed with obstructive sleep apnoea syndrome and require treatment should have annual review by a sleep specialist to ensure that adequate treatment is maintained.

The CMO of a rail organisation may determine that review by the workers treating general practitioner is sufficient if there is an established pattern of compliance and good response to treatment. The initial granting of Fit for Duty Subject to Review must be based on information provided by a specialist.

For workers who are treated with continuous positive airflow pressure (CPAP), it is recommended that they use CPAP machines with a usage meter to allow objective assessment and recording of treatment compliance. Assessment of sleepiness should be made and objective measurement of sleepiness should be considered (maintenance of wakefulness test or multiple sleep latency test), particularly if there is concern regarding persisting sleepiness or treatment compliance.

Advice to workers

All workers suspected of having, or found to have, sleep apnoea or other sleep disorders should be advised about potential impact on Safety Critical Work and strategies for maintaining fitness for duty. General advice should include:

- minimising unnecessary activity at times when normally asleep
- allowing adequate time for sleep
- avoiding working after having missed a large portion of their normal sleep
- avoiding alcohol and sedative medications
- resting if sleepy.

Safety Critical Workers are responsible for:

- notifying management if they are sleepy so safety critical duties may be avoided
- complying with treatment, including management of lifestyle factors
- maintaining their treatment device
- attending review appointments
- honestly reporting their condition to their treating physician and the Authorised Health Professional.

Narcolepsy

Narcolepsy is present in 0.05% of the population and usually starts in the second or third decade of life. Sufferers present with excessive sleepiness and can have periods of sleep with little or no warning of sleep onset. Other symptoms include cataplexy, sleep paralysis and vivid hypnagogic hallucinations.

The majority of sufferers are HLA-DR2 (a serotype) positive. There is a subgroup of people who are excessively sleepy, but do not have all the diagnostic features of narcolepsy.

Diagnosis of narcolepsy is made on the combination of clinical features, HLA typing and multiple sleep latency test (MSLT), with a diagnostic sleep study on the previous night to exclude other sleep disorders and aid interpretation of the MSLT.

Subjects suspected of having narcolepsy should be referred to a respiratory or sleep physician or neurologist for assessment (including a MSLT) and management. They should have a review at least annually by their specialist.

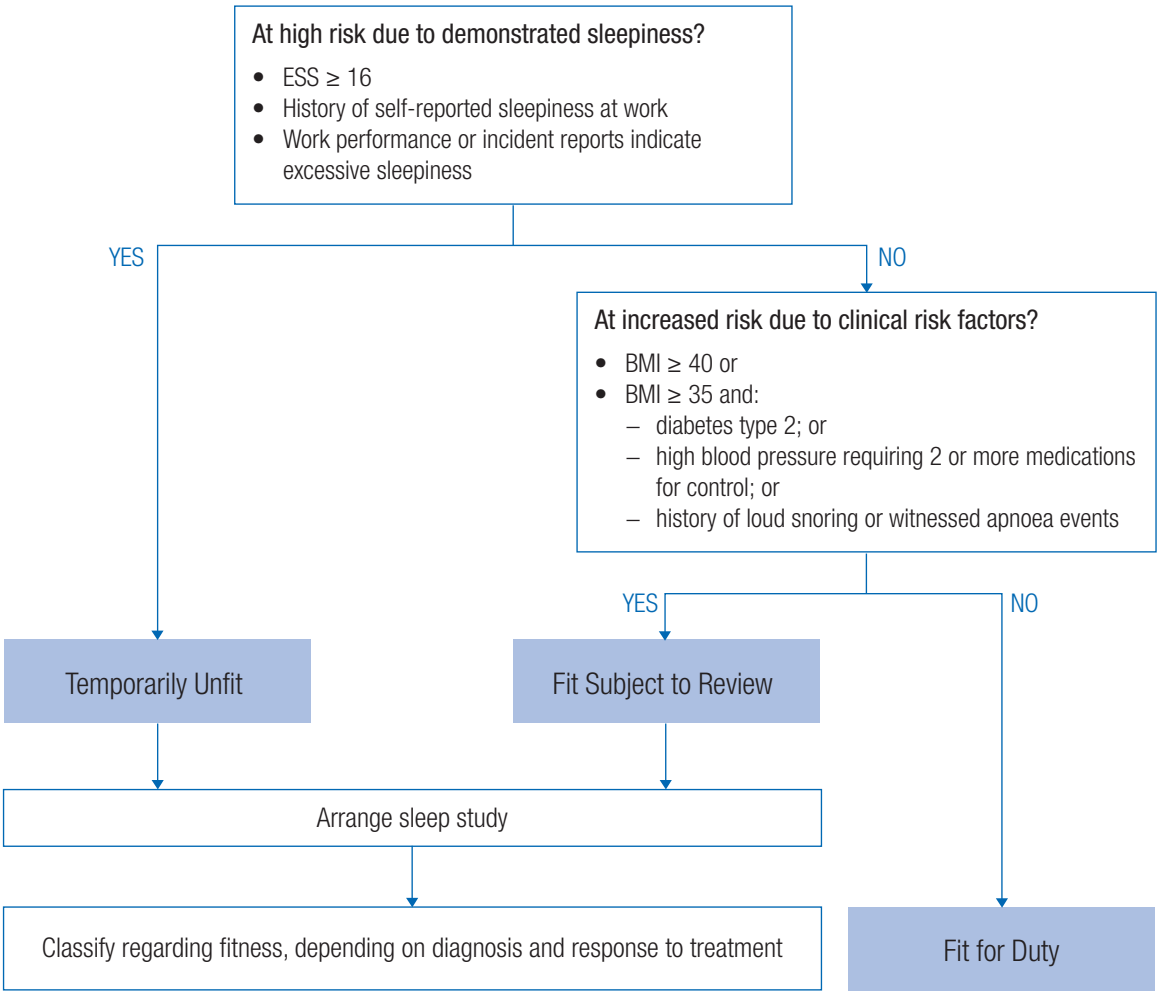
Sleepiness in narcolepsy may be managed effectively with scheduled naps and stimulant medication. Tricyclic antidepressants and monoamine oxidase (MAO) inhibitors are used to treat cataplexy.

Fatigue

Fatigue is a major cause of road accidents and, by extrapolation, poses a significant risk to rail safety. Sleepiness and sleep disorders are one important aspect of managing the risks of fatigue. Fatigue programs typically involve attention to rosters and sensible financial rewards, as well as education about the importance of sleep, sleep hygiene (including adequate facilities for sleeping), and advice on diet, alcohol use and medication.

It is important to distinguish sleepiness (the tendency to fall asleep) from fatigue or tiredness, which is not associated with a tendency to fall asleep. Many chronic illnesses cause fatigue without causing increased sleepiness.

Figure 24 Sleep disorder assessment for Safety Critical Work



18.6.3 Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty are outlined in Table 17.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 17 **Medical criteria for Safety Critical Workers: Sleep disorders**

Condition	Criteria
Sleep disorder risk assessment	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional if they are assessed as being at risk of sleep disorder, as evidenced by: • a BMI ≥ 40; or • a BMI ≥ 35 and either: – diabetes type 2; or – high blood pressure requiring 2 or more medications for control; or – a history of habitual loud snoring during sleep or of witnessed apnoeic events (such as in bed by a partner). A person meeting the above criteria should be promptly assessed in relation to a possible sleep disorder. They should be classed Fit for Duty Subject to Review pending investigation. Persons with or without the above risks, and with evidence of excessive sleepiness such as: • an ESS score of 16 or greater; or • a history of self-reported sleepiness at work; or • work performance reports indicating excessive sleepiness; or • incident reports plausibly caused by inattention or sleepiness should be classed Temporarily Unfit for Duty while the further assessment is being conducted. If a sleep disorder is diagnosed, see relevant standards below.
Sleep apnoea	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has established sleep apnoea syndrome (see Section 18.6.2); or • if the person has severe sleep apnoea on a diagnostic sleep study with or without self-reported excessive daytime sleepiness. Fit for Duty Subject to Review may be determined, subject to annual review, taking into account the nature of the work and information provided by a specialist* in sleep disorders as to whether the following criteria are met: • the person is compliant with treatment; and • the response to treatment is satisfactory. *The Chief Medical Officer of a rail organisation may determine that review by the worker's treating general practitioner is sufficient if there is an established pattern of compliance and good response to treatment. The initial granting of Fit for Duty Subject to Review must be based on information provided by a specialist.

Condition	Criteria
Narcolepsy	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if narcolepsy is confirmed. Fit for Duty Subject to Review may be determined, subject to annual review, taking into account the nature of the work and information provided by a specialist in sleep disorders as to whether the following criteria are met: • a clinical assessment has been made by a sleep physician; and • cataplexy has not been a feature in the past; and • medication is taken regularly; and • there have been no symptoms for 6 months; and • normal sleep latency present on Maintenance of Wakefulness Test (MWT) (on or off medication).
Other causes of excessive daytime sleepiness	Refer to guidelines in the text.

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified as Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified as Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed to by the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed to, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

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18.7 Substance misuse

This section focuses on chronic regular heavy use of, and dependence on, alcohol and other substances (including illicit and pharmaceutical drugs), which is relevant to both Category 1 and Category 2 workers. The standards for fitness for duty do not address acute intoxication, which is subject to drug and alcohol policies and on-site screening by rail transport operators in accordance with their drug and alcohol management program as required under the Rail Safety National Law. However, it is possible for a long-term dependent person to be impaired due to both chronic use and recent consumption, and these risks are factors in considering the fitness for work of such people.

18.7.1 Relevance to Safety Critical Work

Features of chronic substance misuse

Chronic misuse of alcohol and other substances can lead to a syndrome of dependence, characterised by several of the following features:

- tolerance, as defined by either a need for markedly increased amounts of the substance to achieve intoxication or desired effect, or a markedly diminished effect with continued use of the same amount of substance
- withdrawal, as manifested by either the characteristic withdrawal syndrome for the substance, or the same (or a closely related) substance is taken to relieve or avoid withdrawal symptoms
- the substance is often taken in larger amounts or during a longer period of time than was intended
- there is a persistent desire or unsuccessful efforts to cut down or control substance use
- a great deal of time is spent in activities to obtain the substance, use the substance or recover from its effects
- important social, occupational or recreational activities are given up or reduced because of substance use
- the substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance (e.g. continued drinking despite recognition that an ulcer was made worse by alcohol consumption).

Effects of long-term alcohol use and other substance use on Safety Critical Work

Alcohol

Chronic heavy alcohol use carries some risk of neurocognitive deficits relevant to safe working capability, including:

- short-term memory and learning impairments, which become more evident as the task difficulty increases
- impaired perceptual–motor speed
- impairment of visual search and scanning strategies
- deficits in executive functions such as mental flexibility and problem-solving skills; difficulty in planning, organising and prioritising tasks; difficulty focusing attention, sustaining focus, shifting focus from one task to another, or filtering out distractions; difficulty monitoring and regulating self-action; or impulsivity (Charlton et al. 2010).

Long-term heavy alcohol use is also associated with various end-organ pathologies that may affect ability to work safely; for example, Wernicke–Korsakoff syndrome or peripheral neuropathies experienced as numbness or paresthesia of the hands or feet. In the event of end-organ effects relevant to safe working, the appropriate requirements should be applied as set out elsewhere in this publication.

Alcohol-dependent people may experience a withdrawal syndrome on cessation or significant reduction of intake, which carries some risk of generalised seizure, confusional states and hallucinations.

Other substances

Substances (prescribed, over-the-counter and illicit drugs) can be misused for their intoxicating, sedative or euphoric effects. Workers who are under the acute influence of these drugs, or craving for them or withdrawing from them, are more likely to behave in a manner incompatible with safe working. This may involve, but not be limited to, risk taking, aggression, feelings of invulnerability, narrowed attention, altered arousal states and poor judgement.

Illicit substances are a heterogeneous group. Chronic effects of their use vary and are not as well understood as those of alcohol. Some evidence suggests cognitive impairment is associated with chronic stimulant, opioid and benzodiazepine use. Illicit substance users may be at risk of brain injury through hypoxic overdose, trauma or chronic illness.

End-organ damage, including cardiac, neurological and hepatic damage, may be associated with some forms of illicit substance use, particularly injection drug use. Cocaine and other stimulant misuse have been linked with cardiovascular pathology. In the event of end-organ effects relevant to Safety Critical Work, the appropriate requirements should be applied as set out elsewhere in this publication.

Evidence of crash or incident risk

This information is based on information from road crash studies, but it is reasonable in principle to extrapolate it to Safety Critical Work in rail.

Alcohol

The relationship between raised alcohol levels and crash risk is well established, and it has been estimated that driving while intoxicated contributes to 30–50% of fatal crashes, 15–35% of crashes involving injury and 10% of crashes not involving injury.

Increasing levels of intoxication result in disproportionate increases in the risk of a motor vehicle crash. For example, with a blood alcohol concentration (BAC) of 0.05 g/100 mL, a driver is twice as likely to be involved in a fatal crash as one with no alcohol; at 0.10 a driver has 5 times the relative risk; and at 0.20, there is a 25 times greater risk of a fatal crash.

Individuals with alcohol dependency have approximately twice the risk of crash involvement as those who do not have that dependency. In addition, drivers with alcohol dependency are more likely to drive while intoxicated despite any previous convictions for drink-driving.

Drugs

Although there is limited evidence regarding crash risk and drug dependency, approximately 13% of fatal crashes are attributed to drug use. The risk is amplified with alcohol–drug and impairing drug–drug combinations.

Amphetamine-type stimulants (ATSs) are a particular hazard for long-distance truck drivers. An Australian culpability study found ATSs in 4.1% of all fatally injured drivers and 23% of fatally injured truck drivers.

Cannabis. The relationship between blood levels of tetrahydrocannabinol (THC) and crash risk is not as well understood as for other drugs. This is because of the complex pharmacokinetoics of THC. An Australian culpability study found a fatal crash risk odds ratio of 6.6 at levels of THC at or above 5 ng/mL compared with drug-free drivers (sex and age adjusted), with risk rising at higher levels.

Benzodiazepines also increase the risk of a crash or incident. In Australian studies, they are found in about 4% of fatalities and 16% of injured drivers. In many cases the benzodiazepines were not abused but were used in combination with other impairing substances.

Impairment from benzodiazepine use can result from the parent drug and also from active metabolites. Elimination requires 5 to 7 half lives for acute use, and up to a further week for chronic use.

Effects of alcohol or drugs on other diseases

People who are frequently intoxicated and who also suffer from certain other medical conditions are often unable to give their other medical problems the careful attention required, which has implications for safe working.

Epilepsy

Many people with epilepsy are quite likely to have a seizure if they miss their prescribed medication even for a day or two, particularly when this omission is combined with inadequate rest, emotional turmoil, irregular meals, and alcohol or other substances. Patients under treatment for any kind of epilepsy are not fit for duty if they are frequently intoxicated.

Diabetes

People with insulin-dependent diabetes have a special problem if they are frequently intoxicated. Not only might they forget to inject their insulin at the proper time and in the proper quantity, but their food intake can also get out of balance with the insulin dosage. This may result in a hypoglycaemic reaction or the slow onset of diabetic coma. Such workers would not be fit for duty.

18.7.2 General assessment and management guidelines

Screening for substance misuse disorders

Screening tests may be useful for assessing substance use disorders. The Alcohol Use Disorders Identification Test (AUDIT) is used to screen for alcohol dependence and is included in the ***Safety Critical Worker Questionnaire***. Details of application and interpretation of the score are provided on page 134. If the person appears unduly familiar with the AUDIT, other validated questionnaires may be applied (after consultation with the rail operator's CMO or equivalent) and clinical judgement may be needed.

Assessment of workers with misuse disorders

Careful individual assessment must be made of workers who misuse or are suspected of misusing alcohol or other substances (prescribed or illicit). Assessment will require consideration of the worker's substance use history, response to treatment and their level of insight.

During clinical assessment, patients may understate or deny substance use for fear of consequences of disclosure. The acute and chronic cognitive effects of some substance use also contribute to difficulty in obtaining accurate history and identification of substance use. Assessment should therefore incorporate a range of indicators of substance use in addition to self-reporting.

Secondary opinion from an appropriate specialist, such as an addiction medicine specialist or addiction psychiatrist, may be necessary, and further assessment such as neuropsychological assessment may be indicated. In particular, people with combined substance use disorder and mental illness ('dual diagnosis') may have a level of complexity requiring specialist assessment.

Chronic misuse of drugs is incompatible with safe working. Thus, generally workers would be classed as Temporarily Unfit for Duty while their condition is being investigated and treated.

Remission

A strong response to treatment and well-documented abstinence and recovery (remission) may enable determination of Fit for Duty Subject to Review. Remission is attained when there is abstinence from use of illicit drugs or where the use of other substances, such as alcohol, has reduced in frequency to the point where it is unlikely to cause impairment or to result in a positive test at work. The worker's substance use history, response to treatment and level of insight should be considered, as well as the drug and alcohol and rehabilitation policies of the rail transport operator. Remission should be confirmed by biological monitoring during a period of at least 6 months.

Patients with severe substance use problems who have had previous high rates of relapse and fluctuation in stabilisation would not be considered fit to return to Safety Critical Work.

Occasional use of drugs also requires very careful assessment, and consideration of the drug and alcohol policy of the rail transport operator.

Workers being treated for opioid dependence

Workers on a stable dose of buprenorphine and methadone for their opioid dependency may not have a higher risk of a crash or incident, providing the dose has been stabilised during a substantial period of time and they are not abusing other impairing drugs. The risk of impairment due to unsanctioned use of opioids or other substances is a consideration in making determinations about fitness for duty. Short-acting opioids, particularly parenteral forms, may cause fluctuation in blood levels of opioids, which would be expected to be incompatible with safe working. Workers being treated with buprenorphine and methadone should be referred for assessment by an appropriate specialist, such as an addiction medicine specialist or addiction psychiatrist.

Drug and alcohol screening

Preplacement or change of risk category health assessments may include a drug screen, depending on the jurisdiction's legislation and the rail operator's requirements.

Periodic health assessments should not routinely include a drug or alcohol screen. However, testing may occur as part of a return to work program for a person with a substance misuse condition.

In the event that a person is suspected of being intoxicated by alcohol or drugs at the time of an examination, the Authorised Health Professional should assess them and enquire about possible reasons for their condition. Under these specific circumstances the doctor may conduct a drug and alcohol test in accordance with relevant legislation. If drug or alcohol intoxication is suspected or confirmed, the Authorised Health Professional should classify the worker as Temporarily Unfit for Duty and notify the employer.

18.7.3 Medical criteria for Safety Critical Workers

Requirements for fitness for duty are outlined in Table 18.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 18 Medical criteria for Safety Critical Workers: Substance misuse

Condition	Criteria
AUDIT Questionnaire	**Category 1 and Category 2 Safety Critical Workers** If the person has an AUDIT score of > 8, the person may be classified as Fit for Duty Subject to Review or Temporarily Unfit for Duty while causes are being assessed and managed (refer to page 133): • Workers with scores of 8–15 may be managed within the consultation by providing simple advice and information on the alcohol guidelines and risk factors. If the risk is assessed as being low, they should be classified as Fit for Duty Subject to Review. • Workers with scores of 16–19 should be managed by a combination of simple advice, brief counselling and continued monitoring. Follow-up and referral to the worker's general practitioner is necessary. They should be classified as Fit for Duty Subject to Review or Temporarily Unfit for Duty pending further assessment. • Workers with scores of 20 or more should be referred to specialist services to consider withdrawal, pharmacotherapy and other more intensive treatments. They should be assessed as Temporarily Unfit for Duty pending further assessment.

Condition	Criteria
Substance misuse	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if there is evidence of illicit drug use, or abuse or dependence of any substance. Fit for Duty Subject to Review may be determined, subject to at least annual review, taking into account the nature of the work and information provided by an appropriate specialist (such as an addiction medicine specialist or addiction psychiatrist) as to whether the following criteria are met: • the person is involved in a treatment program and has been in remission* for at least 6 months; and • there is an absence of cognitive impairments relevant to safe working; and • there is absence of end-organ effects that impact on safe working (as described elsewhere in this Standard); and • the risk of further illicit drug use or other substance misuse is assessed as being low. * Remission is defined in the text (refer to page 128).

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed to by the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed to, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

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Frishman, WH, Del Vecchio, A, Sanal, S & Ismail, A 2003, 'Cardiovascular manifestations of substance abuse: part 2, alcohol, amphetamines, heroin, cannabis and caffeine', *Heart Disease*, vol. 5, no. 4, pp. 253–71.

Box 2 AUDIT Questionnaire

The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization (WHO) as a simple method of screening for excessive alcohol consumption. It provides a framework for intervention to help at-risk or high-risk drinkers to reduce or cease their alcohol consumption. It also helps to identify alcohol dependence.

The AUDIT is included in the *Health Questionnaire for Safety Critical Workers* to help identify patterns of alcohol use that may impact on their Safety Critical Work. Identification of harmful alcohol consumption, as well as indicators of alcohol dependence, is therefore particularly important.

The periodic health assessment also provides an opportunity to counsel Safety Critical Workers about hazardous drinking patterns.

The AUDIT provides an accurate measure of risk across gender, age and cultures. Its validity, brevity and flexibility make it the most widely used screening instrument around the world.

The standard AUDIT has 10 questions to which there is a choice of up to 5 answers in a tick-a-box format.

The questions are designed to seek information in 3 domains as shown in Table 19.

AUDIT Questionnaire

Please tick the answer that is correct for you:

Scoring:

(0) (1) (2) (3) (4)

1. **How often do you have a drink containing alcohol?**

☐ Never *(skip to Q9)* ☐ Monthly or less ☐ 2 to 4 times a month ☐ 2 to 3 times a week ☐ 4 or more times a week

2. **How many drinks containing alcohol do you have on a typical day when you are drinking?**

☐ 1 or 2 ☐ 3 or 4 ☐ 5 or 6 ☐ 7, 8 or 9 ☐ 10 or more

3. **How often do you have six or more drinks on one occasion?**

☐ Never ☐ Less than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily

4. **How often during the last year have you found that you were not able to stop drinking once you had started?**

☐ Never ☐ Less than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily)

5. **How often during the last year have you failed to do what was normally expected from you because of drinking?**

☐ Never ☐ Less than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily

6. **How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?**

☐ Never ☐ Less than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily

7. **How often during the last year have you had a feeling of guilt or remorse after drinking?**

☐ Never ☐ Less than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily

8. **How often during the last year have you been unable to remember what happened the night before because you had been drinking?**

☐ Never ☐ Less than monthly ☐ Monthly ☐ Weekly ☐ Daily or almost daily

9. ***Have you or someone else been injured as a result of your drinking?***

☐ No ☐ Yes, but not in the last year ☐ Yes, during the last year

10. **Has a relative or friend or a doctor or other health worker been concerned about your drinking or suggested you cut down?**

☐ No ☐ Yes, but not in the last year ☐ Yes, during the last year

Box 2 AUDIT Questionnaire

Table 19 Domains and item content of the AUDIT

Domains	Question No.	Item content
Risky or hazardous alcohol use	1	Frequency of drinking
	2	Typical quantity
	3	Frequency of heavy drinking
Dependence symptoms	4	Impaired control over drinking
	5	Increased salience of drinking
	6	Morning drinking
High-risk or harmful alcohol use	7	Guilt after drinking
	8	Blackouts
	9	Alcohol-related injuries
	10	Others concerned about drinking

Definitions

Risky or hazardous alcohol use

Hazardous drinking is a pattern of alcohol consumption that increases the risk of harmful consequences for the user or others, including the risk of accidents, injuries and social problems.

High-risk or harmful alcohol use

Harmful use refers to alcohol consumption that results in long-term consequences to physical and mental health (e.g. gastritis, liver damage or depression).

Alcohol Dependence

Alcohol dependence is a cluster of behavioural, cognitive and physiological phenomena that may develop after repeated alcohol use. Typically, these include a strong desire to consume alcohol, impaired control over use, persistent drinking despite harmful consequences, a higher priority given to drinking than to other activities and obligations, increased alcohol tolerance and physical withdrawal reaction.

Use of the AUDIT for Safety Critical Workers

The purpose of applying the AUDIT to Safety Critical Workers is to ensure that individuals are not impaired at work, either by the direct effects of alcohol or the health and/or social problems associated with alcohol use.

The examining health professional is required to evaluate the responses to the questionnaire in conjunction with results of the clinical examination, and form a view as to whether they believe there is a significant current risk that the worker might be impaired at work, either by the direct effects of alcohol, or by associated health or social problems.

Note that it is possible to accumulate 8 or more points as a result of binge drinking on days off, or highlight excessive drinking in the past, without necessarily being at risk of being impaired at work. The health assessment does, however, provide a valuable opportunity to provide brief advice about risky alcohol consumption.

Note also that through separate drug and alcohol policies and procedures, Safety Critical Workers may be subject to random testing by their operator. Safety Critical Workers are also liable for testing following incidents, and may be prosecuted by the police if alcohol is detected while working.

Administering the AUDIT

In the Safety Critical Worker health assessment, the *AUDIT Questionnaire* is administered in a self-report format; however, it can also be administered by interview if necessary. The cognitive capacities (e.g. literacy, forgetfulness) and the level of cooperation or defensiveness of the worker should be considered in selecting the appropriate format.

Dishonest completion is believed to be an issue among workers, so review of the responses with the worker is desirable. It may be helpful to reassure the worker that all responses are confidential and are not forwarded to the operator.

Box 2 AUDIT Questionnaire

Scoring the AUDIT and managing safety critical workers

Each of the questions has a range of responses, and each response has a score ranging from 0 to 4. Questions are scored for the response from left to right. A total score of 40 is possible.

Higher scores indicate a greater likelihood of hazardous or harmful drinking, and reflect a greater severity of alcohol problems and dependence, as well as a greater need for more intensive treatment.

AUDIT results are classified into particular risk levels (or 'zones') to guide the appropriate intervention. Table 20 illustrates the general guidelines for World Health Organisation (WHO) assignment of risk levels based upon AUDIT scores and describes the intervention appropriate to that level.

Table 20 **AUDIT risk levels**

Risk level	Intervention	AUDIT score
Zone I	Alcohol education	0–7
Zone II	Simple advice	8–15
Zone III	Simple advice plus brief counselling and continued monitoring	16–19
Zone IV	Refer for diagnostic evaluation and treatment	20–40

Risk Zone I — AUDIT scores between 0 and 7

This score generally indicates low-risk drinking. Although no formal intervention is required, alcohol education is appropriate for the following reasons:

- it contributes to the general awareness of alcohol risks and the relevance to Safety Critical Work
- it may be effective for workers who have experienced alcohol problems but who have already reduced their drinking levels, or whose circumstances may change
- it could be effective for those workers who have minimised the extent of their drinking on the AUDIT questions.

Risk Zone II — AUDIT scores between 8 and 15

Scores in this zone are likely to be recorded by a significant proportion of workers. They indicate alcohol use in excess of the low-risk guidelines.

People in Zone II would generally be drinking at risky or hazardous levels, and would be at moderate risk of alcohol-related harm. This zone, however, may also include workers experiencing actual harm and low levels of dependence. Generally, simple advice and information on the alcohol guidelines and risk factors, and the importance of attentiveness for Safety Critical Work, would be an appropriate intervention.

The examining health professional may assess the worker as Fit for Duty Subject to Review to flag the issue for attention at subsequent assessments. The period of review may be earlier than or in line with normal periodic frequencies, depending on the clinical assessment and other indicators.

Risk Zone III — AUDIT scores between 16 and 19

This zone indicates risky drinking and problems related to higher levels of consumption. This score indicates a pattern of consumption that is already causing harm to the drinker who may also have symptoms of dependence. Workers in this zone should be managed by a combination of simple advice, brief counselling and continued monitoring. Follow-up and referral to the worker's general practitioner is necessary.

The examining health professional should assess the worker as Fit for Duty Subject to Review and should refer for external assessment via the worker's general practitioner. They may also classify as Temporarily Unfit for Duty if there are immediate concerns for safe conduct of safety critical tasks.

Risk Zone IV — AUDIT scores in excess of 20, and where combined scores on questions 4, 5 and 6 are > 4

Scores in this zone indicate that the person falls into the high-risk category of alcohol-related harm. Workers in this zone are likely to be alcohol dependent and require more intensive intervention. Health professionals should note that dependence varies along a continuum of severity and might be clinically significant at lower AUDIT scores.

Box 2 AUDIT Questionnaire

Workers in this zone should be referred to specialist services to consider withdrawal, pharmacotherapy and other more intensive treatments. They should be assessed as Temporarily Unfit for Duty pending further assessment and referred in the first instance to their general practitioner.

Steps in identifying a drinking problem

If a person has a total score of > 8 on the *AUDIT Questionnaire*, the following additional steps are recommended:

1. Check the accuracy of the high scoring questions with the worker.
2. Ask some additional questions to help determine the person's potential for alcohol dependence. The following question may be helpful to confirm accuracy and obtain more information:

How many drinks did you have on your last drinking day—and on the previous occasion? (this is a good guide to the usual intake).

19 Senses and task-specific requirements

19.1 Hearing

(Refer also to Section 18.4.3, Vestibular and balance conditions)

Important

- This standard should be applied on the basis of a risk assessment for hearing and rail safety work whether the job is classified as Category 1 or Category 2 (refer to Section 6.6, Step 6: Identify task-specific health requirements).
- The standard assumes closed-loop communication, as recommended by the Rail Industry Safety and Standards Board (RISSB), is in place (Rail Industry Safety and Standards Board 2007). Where closed-loop communication is not enforced, expert advice should be sought and a more stringent hearing standard applied.
- This standard should not be confused with the requirements for audiometric monitoring required by OHS regulations for noise-exposed workers.
- Workers who are around the track and who require hearing only for their own safety should meet the criteria as set out for track safety health assessment (Part 5). However, track workers who wear personal protective equipment to protect themselves from the noise of machinery cannot be expected to hear warning sounds such as train horns. They should be under the immediate supervision of a team leader who directs them to stop work and clear the track when appropriate.

19.1.1 Relevance to Safety Critical Work

Substantial hearing loss may affect the ability to perform Safety Critical Work due to the inability to communicate or failure to hear sounds indicating a hazard.

The ability to hear radio communication is particularly important for communication of train orders, as well as for managing emergency situations. Closed-loop communication, whereby the essence of a message is repeated back to the sender to ensure correct reception, is recommended for use in rail industry and is assumed to be in place (Rail Industry Safety and Standards Board 2007).

The hearing requirements of safety critical tasks vary and are independent of whether the task is Category 1 or Category 2, as described in the following sections.

Train drivers

Train drivers work in cabs with background noise that may reach up to 85 decibels (dB). Drivers need to be able to hear radio communication from central control, as well as alarm systems and track detonators. Binaural hearing is helpful in distinguishing speech in a noisy environment. Most radios in engine cabs can be amplified to help hearing against the background noise. Drivers also exit the cab from time to time and are required to be on track, and thus need to hear the sound of oncoming trains and other warning sounds.

Other Safety Critical Workers

Workers such as train controllers or shunters may be required to hear and respond to spoken safety critical information. In addition, any rail safety worker who is working in yards or near tracks (e.g. shunters) needs to be able to hear warning sounds such as train horns, whistles or verbal warnings for their own safety. Also refer to Section 6.6, Step 6: Identify task-specific health requirements.

Tram drivers

For tram drivers, the main safety requirement is to hear other traffic on the road. Therefore, these workers require a reasonable level of hearing to ensure their awareness of noises that may signal developing problems, or hearing emergency vehicles or other warning horns, bells or sirens, as well as signals from passengers regarding stopping. Because trams share the road environment, the hearing standard should be the same as for commercial vehicle drivers, as set out in Assessing Fitness to Drive (Austroads Inc, National Road Transport Commission 2011). However, if drivers are required to use radio communications to hear speech, the job should be assessed as described in Section 1.1.2 and the worker managed as described in this Standard.

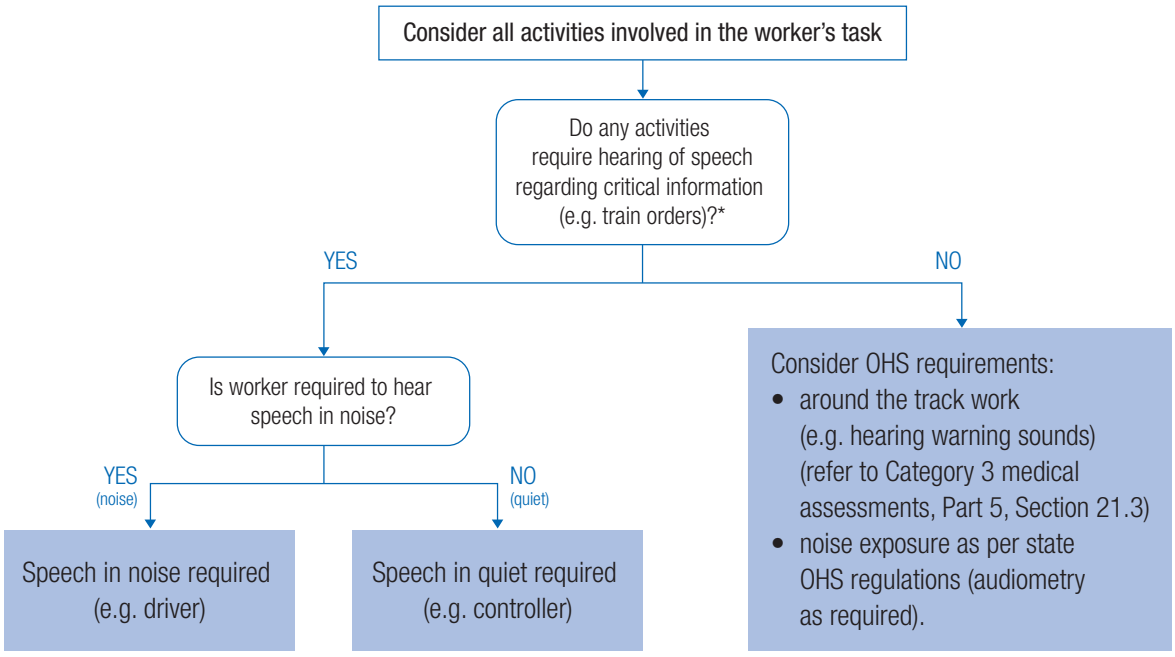
19.1.2 Risk assessment of Safety Critical Workers

All Safety Critical tasks should be assessed in relation to their individual hearing requirements.

Risk assessment of Safety Critical Work divides the hearing task into 2 categories: 'hearing in quiet', which occurs where hearing takes place in a quiet background (typically indoors such as in a control room); and 'hearing in noise', which occurs where hearing is required against a continuously or intermittently noisy background (typically drivers in a train cab, or shunters, site controllers, flagmen, etc.).

Rail transport operators should assess the hearing requirements based on the flow chart shown in Figure 25 and communicate these requirements to the Authorised Health Professional.

Figure 25 **Hearing and rail safety work—risk assessment**



OHS = occupational health and safety

* The Standard assumes closed-loop communication as recommended by the Rail Industry Safety and Standards Board (RISSB) is in place. Where closed-loop communication is not enforced, expert advice should be sought and a more stringent hearing standard applied.

19.1.3 General assessment and management guidelines

The requirements for assessment of Safety Critical Workers are summarised in Figure 26.

All Safety Critical Workers who are required to hear speech should be screened by pure tone audiometry at 0.5, 1, 2, 3, 4, and 6 kHz as per AS/ISO 8253:2009 Parts 1-3. Hearing levels do not meet this Standard if the hearing loss is ≥ 40 dB averaged over 0.5, 1, 2, and 3 kHz in the better ear. Hearing aids should not be worn during pure tone audiometry.

All those who fail screening audiometry must be referred to an audiologist* or ears, nose and throat specialist (ENT) for a more detailed audiological evaluation. This evaluation should involve:

- diagnostic test of hearing sensitivity
- conduct of a speech in quiet or noise test according to the protocol overleaf
- an evaluation of whether hearing aids would enable the worker to meet the Standard and an assessment of whether the aids are suitable for work in the rail environment.

Safety Critical Workers who have hearing aids always require an evaluation of ability to hear speech in noise or quiet.

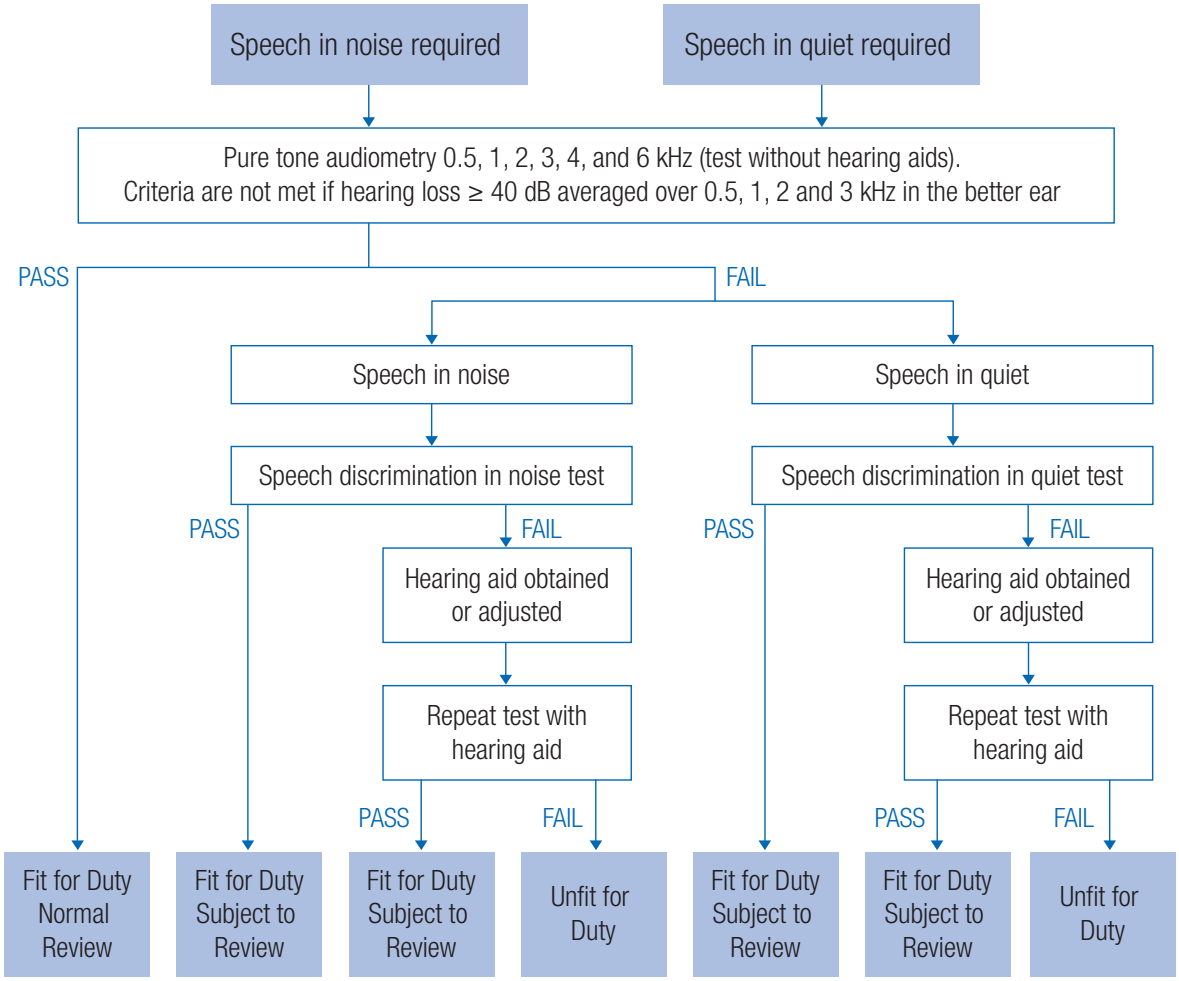
*An audiologist should be a member of the Audiological Society of Australia Inc. (ASA). Contacts of members are available at <http://www.audiology.asn.au>.

Speech discrimination in quiet test

- Speech discrimination in quiet is assessed using phonemically balanced monosyllabic word lists (PBMs).** These are 25-word lists, plus 5 practice items.
- As the work environment involves binaural listening to speech in quiet, the test should be binaural free-field PBMs.
- The presentation level should be 70 dB via a calibrated single speaker stationed at 0 degrees azimuth with the candidate seated at approximately one metre from the speaker.
- Scoring for PBMs is calculated as: score = percentage words correctly identified, excluding practice items. Therefore, the number of words correct multiplied by 4 = % correct.
- A pass score should be set at 70% of words accurately identified. This standard assumes closed-loop communication is practised.
- In jobs where use of hearing aids is permitted, they may be used as long as they are self-contained and fit within or behind the ear.
- Workers using hearing aids must provide evidence from an accredited audiologist using functional-gain or real-ear measurements that the hearing aids meet the stipulated manufacturer's standards.
- Workers using a hearing aid must have aided free-field speech discrimination testing in quiet.
- Workers should be classed as Fit for Duty Subject to Review and reviewed at periods determined by the prognosis of the underlying pathology.

**PBM and PBN wordlists are available on CD from the National Acoustic Laboratories, 126 Greville St, Chatswood NSW, 2067 (product number P4747, cost $50.00).

Figure 26 **Hearing assessment for Safety Critical Work**



Speech discrimination in noise test

- Speech discrimination ability in noise will be assessed using phonemically balanced monosyllabic word lists in noise (PBNs).** These are 50-word lists. PBN wordlists are imbedded in noise (at a +10 signal:noise ratio).
- The work environment involves binaural listening to speech in background noise; therefore, the test should be binaural free-field PBN's.
- The presentation level should be 70 dB via a calibrated single speaker stationed at 0 degrees azimuth with the candidate seated at approximately 1 metre from the speaker.
- Scoring for PBNs is calculated as: score = percentage words correctly identified. Therefore, number of words correct multiplied by 2 = % correct.
- A pass score should be set at 50% of words accurately identified. This standard assumes closed-loop communication is practised.
- In jobs where use of hearing aids is permitted, they may be used as long as they are self-contained and fit within or behind the ear (refer overleaf).
- Workers using hearing aids must provide evidence from an accredited audiologist using functional-gain or real-ear measurements that the hearing aids meet the stipulated manufacturer's standards.
- Workers using a hearing aid must have aided free-field speech discrimination testing in noise.
- Workers should be classed Fit for Duty Subject to Review and reviewed at periods determined by the prognosis of the underlying pathology.

**PBM and PBN wordlists are available on CD from the National Acoustic Laboratories, 126 Greville St, Chatswood NSW, 2067 (product number P4747, cost $50.00).

Hearing aids

Hearing aids, particularly modern (digital) ones, present particular problems in the rail industry. Modern hearing aids have the ability to recognise speech patterns and to screen out non-speech noise, which helps the user understand speech. However, this diminishes the ability to hear important sounds, such as a warning alarm or detonators when the user is in a cab, or horns of trains when the user is around the track. In addition, modern hearing aids may have directional microphones that facilitate hearing speech when facing a person and help exclude background 'noise'. However, forward-directional microphones would adversely affect a driver's ability to hear speech from a speaker positioned behind them; a wearer walking about the tracks may not hear a warning horn sounded from behind.

All hearing aids amplify sound, and if sounds are already loud (as in some cabs or near locomotives), it may contribute to noise-induced hearing loss (NIHL). Workers with a cochlear implant will generally have difficulty with speech recognition amid occupational background noise. A hearing aid or cochlear implant may also suddenly malfunction. For these reasons, hearing aids or cochlear implants generally should be carefully assessed for use in rail safety work.

Hearing aids used to hear speech in noisy environments (e.g. in some cabs) should meet the following requirements:

- amplification should be limited to 80 dB
- there should be no directional microphones, or they should be switched off
- noise-cancelling technology should be disabled
- feedback suppression should be enabled.

Hearing aids worn in quiet surroundings (e.g. by a train controller) require no specific characteristics. They should be set for optimal hearing in the relevant environment.

Workers who use hearing aids should be advised of the following requirements:

- They should wear the aid at all times at the recommended settings.
- They should carry a supply of batteries.
- They should report the development of any medical condition that may temporarily reduce efficient function of the hearing aid (e.g. ear infection, wax build-up), or if a hearing aid fails or is lost. Monaural aid use, when binaural hearing loss is present, results in reduced ability to localise warning sounds and discriminate speech against background noise.
- They should have the hearing aid serviced annually.
- In the event of replacement or upgrading of hearing aids, or further deterioration in hearing, speech discrimination in noise or quiet should be re-examined.

Cochlear implants

Workers with cochlear implants should be assessed on an individual basis by an ENT specialist, who should consider:

- the characteristics of the implant, including the risk of sudden device failure
- the nature of the relevant background noise
- the nature of the duties of Safety Critical Workers, including the need for efficient and reliable use of communication devices, such as mobile phones and radiocommunication devices, and the need to reliably detect emergency alarms against background noise.

A speech discrimination test in noise or quiet, as appropriate to their job risk assessment, must be passed.

19.1.4 Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty are outlined in Table 21.

See also Section 26.5, Transition arrangements, Requirements for meeting the new hearing standard.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 21 **Medical criteria for Safety Critical Workers: Hearing**

This standard is to be applied on the basis of the risk assessment for hearing and rail safety work regardless of the job being classified as Category 1 or Category 2—see Figure 25.	
Condition	**Criteria**
Hearing Safety Critical Workers required to hear speech in quiet or in noise	Compliance with the Standard should be initially assessed by audiometry without hearing aids. A person is not Fit for Duty Unconditional: • if hearing loss is ≥ 40 dB averaged over 0.5, 1, 2, and 3 kHz in the better ear. If the person passes an appropriate speech discrimination test with or without hearing aids, they may be determined to be Fit for Duty Subject to Review, taking into account the opinion of an audiologist*or ears, nose and throat (ENT) specialist and the nature of the work, and if periodic reviews are specified. Hearing aids are to be used as per the text (refer to page 140). Cochlear implantees should be assessed on an individual basis by an ENT surgeon or audiologist. An appropriate speech discrimination test must be passed. * An audiologist should be a member of the Audiological Society of Australia Inc. (ASA). Contacts of members are available at <http://www.audiology.asn.au>.
Hearing—tram drivers If hearing speech is required, tram drivers should be managed as per Safety Critical Workers (above)	Compliance with the Standard should be initially assessed by audiometry without hearing aids. A person is not Fit for Duty Unconditional: • if hearing loss is ≥ 40 dB averaged over 0.5, 1, 2, and 3 kHz in the better ear. If the person is able to meet the Standard with a hearing aid, they may be determined to be Fit for Duty Subject to Review taking into account the opinion of an audiologist*/ENT specialist and the nature of the work, and if periodic reviews are specified. Hearing aids are to be used as per the text (refer to page 140). Cochlear implantees should be assessed on an individual basis by an ENT surgeon or audiologist.* An appropriate speech discrimination test must be passed. * An audiologist should be a member of the Audiological Society of Australia Inc. (ASA). Contacts of members are available at <http://www.audiology.asn.au>.

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified as Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified as Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed to by the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed to, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

References and further reading

Austroads Inc. & NTC (National Transport Commission) 2011, *Assessing fitness to drive, commercial and private vehicle drivers: medical standards for licensing and clinical management guidelines*, Austroads Inc, and NTC, Sydney.

Dineen, R 2007, *Hearing standards for rail safety workers: a report to the National Transport Commission*, NTC, Melbourne.

RISSB (Rail Industry Safety and Standards Board) 2007, *Australian network rules and procedures*, Network Communication, Canberra.

19.2 Vision and eye disorders

19.2.1 Relevance to Safety Critical Work

Good vision is essential for Safety Critical Work. Visual information is crucial to operating machinery and walking about the track, thus any marked loss of visual acuity or visual fields will diminish a person's ability to work safely. For example, a worker with a significant visual defect may fail to detect another train or member of the public, and will take appreciably longer to perceive and react to a potentially hazardous situation. Peripheral vision is particularly important in certain common train-driving and tram-driving tasks, such as the use of side mirrors (which are important for monitoring the integrity of the train or tram). The standards for visual acuity and visual fields are therefore applicable to workers performing both Category 1 and Category 2 Safety Critical Work.

Colour vision is also important for some safety critical tasks. For example, the identification and correct interpretation of red, green and other coloured signals, flags and lights is necessary for the safe operation of trains. Good visual acuity is integral to good colour vision. The colour vision standard should be applied on the basis of the colour vision risk assessment irrespective of the job being classified as Category 1 or Category 2.

19.2.2 Colour vision risk assessment for Safety Critical Workers

Not all safety critical tasks require colour vision, thus risk assessments of the colour vision requirements should be undertaken by rail transport operators as per Figure 27 and communicated to the Authorised Health Professional.

Assessment of a job requires consideration of:

- whether there is a need for colour vision
- if there is a need for colour vision, whether there is redundancy of information so obviating the need for colour vision (e.g. semaphore arms)
- if there is no redundancy, whether the job can be redesigned to eliminate the need for colour vision.

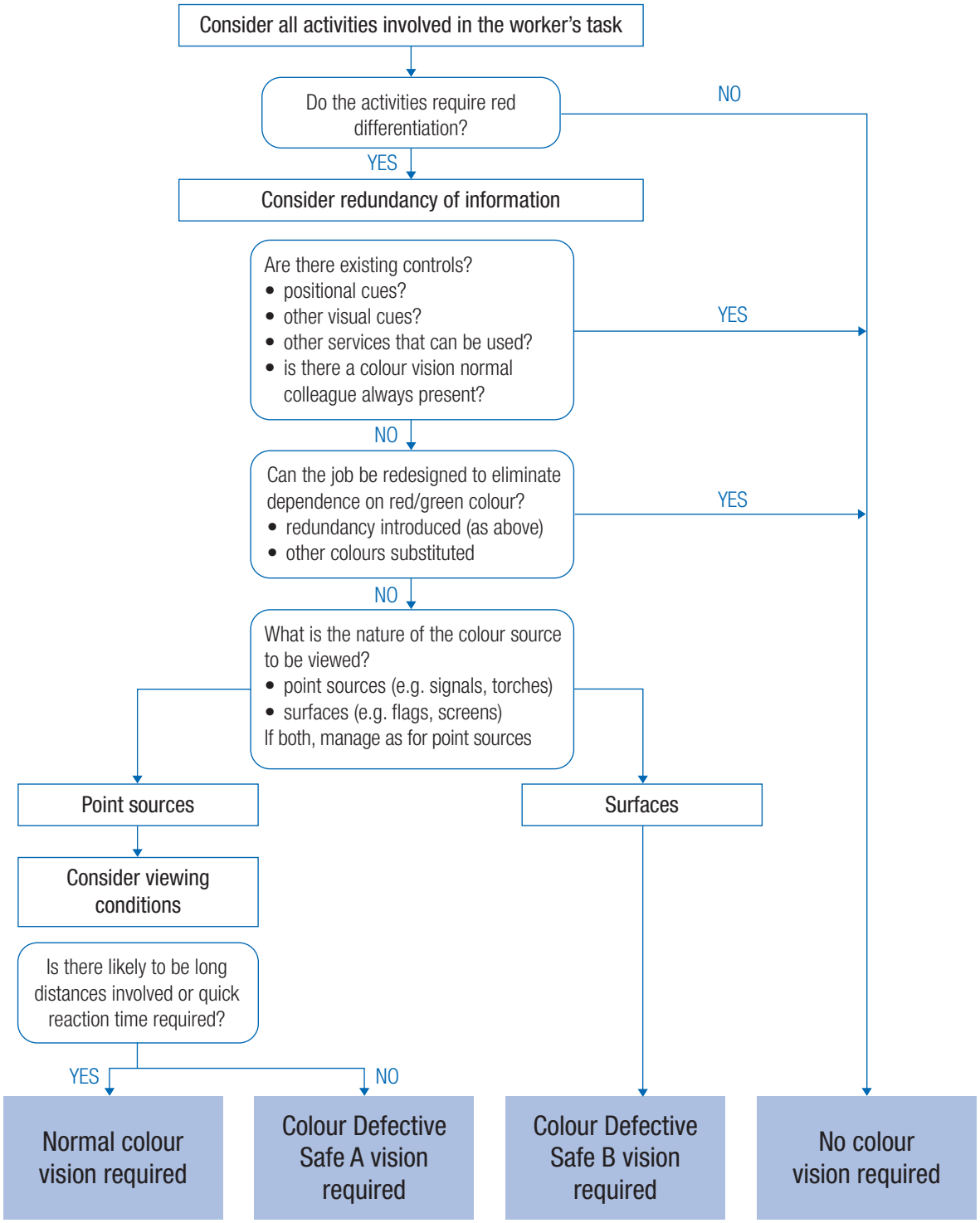
If colour vision is required, consideration should then be given as to whether the task requires seeing colour as point sources (typically signals) or flat surfaces (typically flags or screens, or 'Colour Defective Safe B vision'). Jobs requiring seeing point sources may be further subdivided on the basis of viewing conditions, with the most adverse requiring 'Normal colour vision' (typically drivers) and lesser conditions requiring 'Colour Defective Safe A vision'.

The following descriptions of rail safety jobs illustrate typical colour vision requirements but they are not necessarily correct for any one network.

Train drivers must be able to recognise colour signals. Positional cues are not always available because red/green lights often operate from a single lens signal; lights from a signal may have no background or illumination at night to help their identification; there may be dazzle from a low sun behind the signal; and red lights may be shone from a lantern in emergency situations, requiring rapid reaction. Combinations of red/yellow/green signals are used to inform the train driver of a safe speed and routing.

Heritage and tourist train drivers who are not on a main line may have a semaphore arm on a signal that gives a positional cue (redundancy) as well as a red/green light. This only applies for daylight driving. The trains usually travel at low speed.

Figure 27 Colour vision risk assessment



Signallers may be required to rapidly and accurately identify all signal lights in the event of signal failure occurring.

Shunters may need to identify all colours, including purple in some cases, although the trains they are guiding are generally moving slowly. They may work at night and be required to see red/green signals and use red/green lanterns for signalling.

Flagmen need to identify red/yellow/green flags and be able to interpret signal lights as warning of an oncoming train.

Signal repairers need to recognise red/green at a distance from a single lens signal to check correctness of their repairs and to ensure safety of the network. However, they are not under time pressure to read the signal.

Train controllers who work with multicolour screen-based equipment may need to distinguish colours such as red, magenta, blue and green, which may be difficult for dichromats.

Around the Track Personnel do not require colour vision testing.

Tram drivers usually have to use traffic lights similarly to vehicle drivers. Traffic lights have positional cues and hence redundancy of information, so colour vision is not required to be tested.

> People who are Colour Vision Normal have normal colour vision on testing on the Ishihara tests, whereas those who are Colour Defective Safe A are not normal, but can distinguish red/green with time and may work in jobs where, for example, quickness or distance are not crucial in signal recognition.

19.2.3 General assessment and management guidelines

Visual acuity

For the purposes of this publication, visual acuity is defined as a person's clarity of vision with or without glasses or contact lenses. Where a person does not meet the visual acuity standard at initial assessment, they may be referred for further assessment by an optometrist or ophthalmologist.

Assessment method

Visual acuity should be measured for each eye separately and without optical correction. If optical correction is needed, vision should be retested with appropriate corrective lenses.

Acuity should be tested using a standard visual acuity chart (Snellen or LogMAR chart, or equivalent, with 5 letters on the 6/12 line). Standard charts should be placed 6 metres from the person tested; otherwise, a reverse chart can be used and viewed through a mirror from a distance of 3 metres. Other calibrated charts can be used at a minimum distance of 3 metres. More than 2 errors in reading the letters of any line is regarded as a failure to read that line. Refer to the management flow chart (Figure 28).

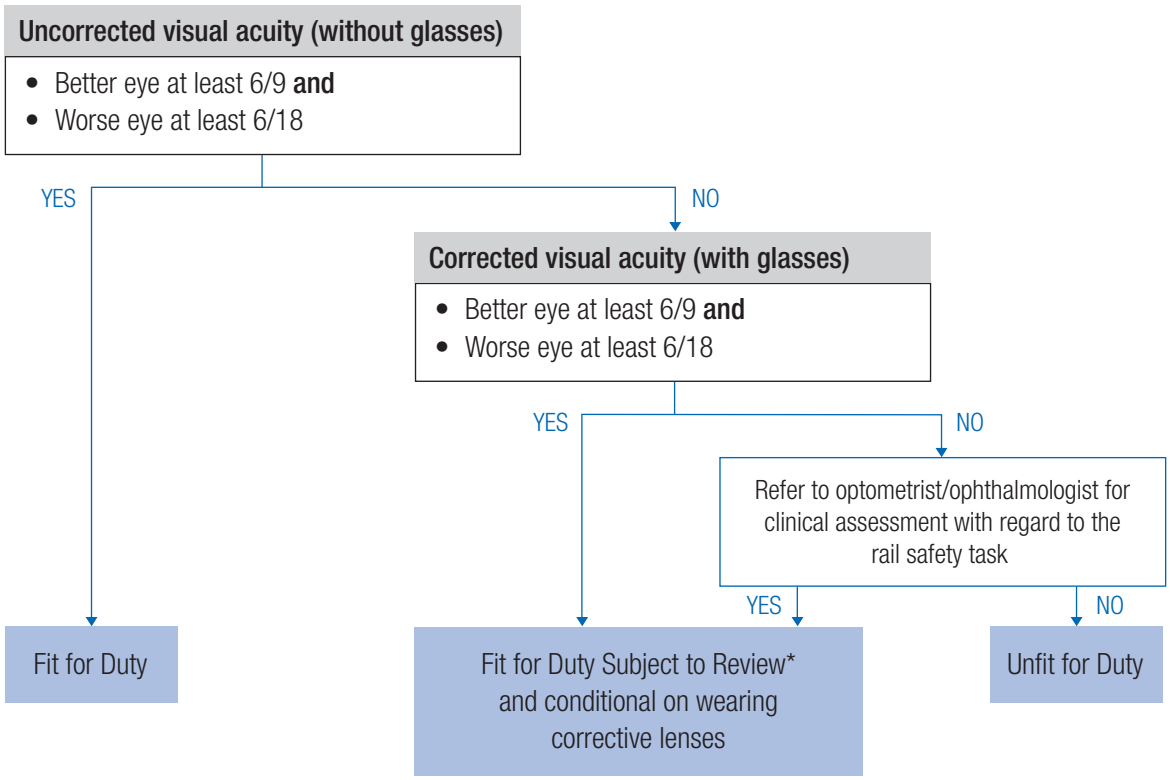
The visual acuity standard can be met with or without corrective spectacle lenses or contact lenses. People who require glasses to perform duties should be classed as Fit for Duty Conditional, which relies on wearing corrective lenses and being reviewed at an appropriate time interval depending on the underlying condition. If workers meet the criteria with corrective lenses they should be able to be passed by the Authorised Health Professional without reference to an ophthalmologist, optometrist or general practitioner. In appropriate circumstances, a referral may be made.

There is also some flexibility for Safety Critical Work depending on the task, providing the visual acuity in the better eye (with or without corrective lenses) is 6/9 or better.

In the case of corneal surgery, corneal pathology or a cataract, acuity should be assessed with a dilated pupil in the presence of a glare source.

It is not required that workers carry spare sets of glasses at work. However, people who wear contact lenses must carry a spare set of glasses in case a foreign body enters the eye (requiring removal of the lens).

Figure 28 **Visual acuity requirements for Safety Critical Workers**



* Specialist review is not required for stable ophthalmic conditions. Workers may not require more frequent review, but their vision should be specifically reviewed at the next periodic assessment.

Visual fields

For the purposes of this Standard, visual fields are defined as a measure of the extent of peripheral (side) vision. Visual fields may be reduced as a result of many neurological or ocular diseases or injuries.

Assessment method

Visual fields may be initially screened by confrontation. The assessor should sit close to and directly opposite the person, and instruct the person to cover one eye. The opposite eye should be occluded like a mirror image. The person should fixate on the non-occluded eye and count the number of fingers held up in each of the 4 corners of the assessor's visual field. Other extreme upper, lower and side points may also be tested. The test should then be repeated for the other eye.

Confrontation is an inexact test. Any person who has, or is suspected of having, a visual field defect should be referred for assessment by an optometrist or ophthalmologist. Assessment will involve automated perimetry using an automated static perimeter (e.g. Kinetic Goldman Visual Field, Humphrey Field Analyser, Medmont M700, Octopus). If the automated perimetry suggests that the requirements for an unconditional licence are not met, then the Esterman binocular field test should be performed. Although opinions on fitness to work can be based on testing visual fields for each eye separately, the Esterman binocular field is the preferred method of assessment.

Monocular vision (one-eyed workers)

People with monocular vision may have a reduction of visual fields due to the nose obstructing the medial visual field. They also have impaired depth perception for some months after loss of an eye and may have other deficits in visual functions. However, train and tram drivers often have a good view of the road due to the elevation of their seat above the track, as well as large windscreens and wing mirrors that may help compensate for loss of visual fields. The safety of their driving record should also be taken into account.

Monocularity in either a Category 1 or Category 2 Safety Critical Worker does not meet the standard for Fit for Duty; however, Fit for Duty Subject to Review may be recommended if the visual field in the remaining eye meets the standard. In exceptional circumstances, subject to a risk assessment of the job by an occupational physician, if an ophthalmologist/optometrist assesses that the person may be safe for Safety Critical Work, the worker may be classed as Fit for Duty Subject to (annual) Review of the remaining eye. Good rotation of the neck is also necessary to ensure adequate overall fields of vision, particularly for people with monocular vision (refer to Section 19.3, Musculoskeletal conditions).

Train controllers usually require only a limited field of vision and may be exempted from this criterion subject to a risk assessment by an occupational physician knowledgeable in rail.

Sudden loss of unilateral vision

A person who has lost an eye or has permanently lost most of the vision in an eye has to adapt to their new visual circumstances and re-establish depth perception. They should therefore be classified as Temporarily Unfit for Duty for an appropriate period (usually 3 months) and be assessed for monocularity if need be.

Colour vision

Defective colour vision mainly affects perception of red and green colours. Various degrees of colour-defective vision affect up to 5% of men.

Assessment method

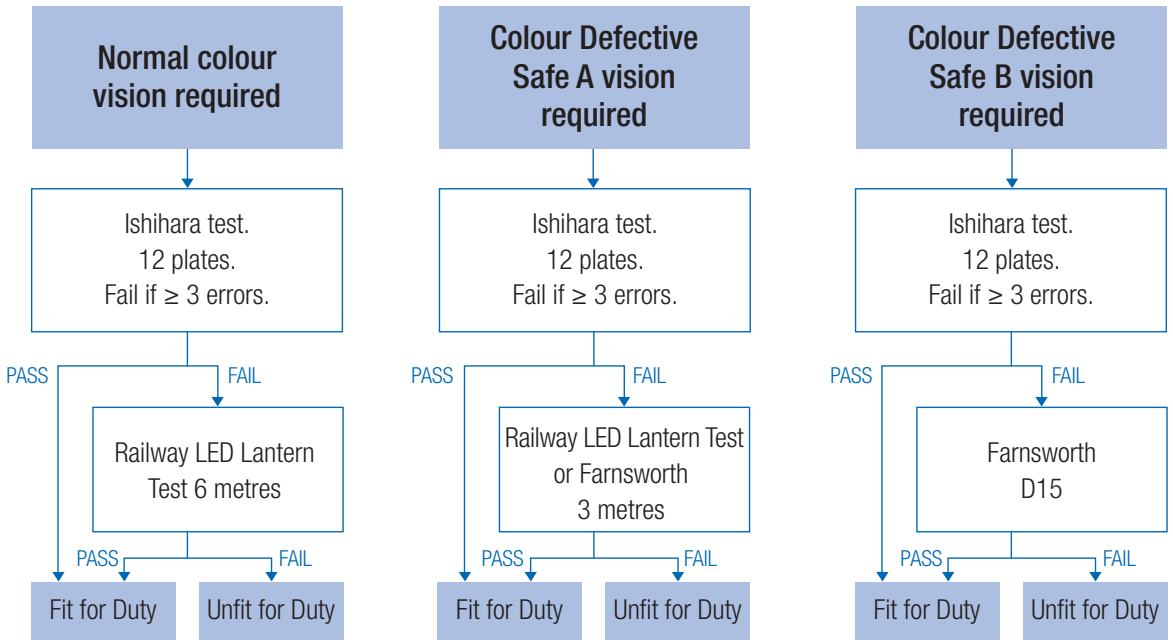
Figure 29 summarises the testing procedures for colour vision.

Colour vision should be screened using 12 Ishihara plates; 3 or more errors out of 12 plates is a fail. No colour lenses or sunglasses should be used when testing. Workers who fail the Ishihara screening test do not meet the criteria for Fit for Duty.

A small number of false positives (incorrect ‘fails’) occur with the Ishihara test:

- Workers who fail and are required to see point sources may be further tested with a lantern test, preferably the Railway LED Lantern Test (previously know as the RailCorp Lantern) or the Farnsworth Lantern. If found to be Colour Vision Normal (i.e. false positive) they may be classed as Fit for Duty.
- Workers who fail and are required to see red/green colours on flat surfaces (e.g. controllers and workers using screen-based equipment) may be further tested by the Farnsworth D15 test. The Farnsworth D15 test should be applied 3 times. A pass is 2 or more correct trials that identifies ‘Colour Defective Safe B’. An incorrect trial is 2 or more errors on the test.

Figure 29 **Colour vision clinical assessment**



Other eye conditions and treatments

Diplopia

People suffering from all but minor forms of diplopia (double vision) are generally not fit for Safety Critical Work. Any person who reports or is suspected of experiencing diplopia should be referred for assessment by an optometrist or ophthalmologist. They should be classed as Temporarily Unfit for Duty Subject to Review. Fit for Duty Subject to Review may be determined if the standard is met with suitable treatment.

Progressive eye conditions

People with progressive eye conditions, such as cataract, glaucoma, optic neuropathy and retinitis pigmentosa, should be monitored regularly, and should be advised in advance regarding the potential future impact on their working ability and possible alternative employment.

Congenital and acquired nystagmus

Nystagmus may reduce visual acuity. Safety Critical Workers with nystagmus must meet the visual acuity standard. Any underlying condition must be fully assessed to ensure there is no other issue that relates to fitness to work. Those who have congenital nystagmus may have developed coping strategies that are compatible with safe working and should be individually assessed by an appropriate specialist.

Telescopic lenses (bioptic telescopes) and electronic aids

These devices are becoming available in Australia. At present, there is little information on the safety or otherwise of the use of these devices for Safety Critical Work. In particular, their use may reduce visual perception in the periphery. No standards are set, but it is recommended that Safety Critical Workers who wish to use these devices be individually assessed by an ophthalmologist/optometrist with expertise in the use of these devices.

19.2.4 Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty are outlined in Table 22.

There may be a degree of flexibility allowed at the optometrist's or ophthalmologist's discretion for workers who barely meet visual criteria but who are otherwise alert, have normal reaction times and good muscular coordination.

Specialist review is not required for stable ophthalmic conditions. Although such workers will be classified as Fit for Duty Subject to Review, they may not require more frequent review, but the condition should be specifically discussed and assessed at the next periodic health assessment.

See also Section 26.6, Transition arrangements, requirements for meeting the new colour vision standard.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 22 Medical criteria for Safety Critical Workers: Vision and eye disorders

Condition	Criteria
Acuity	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person's uncorrected visual acuity is worse than 6/9 in the better eye; or • if the person's uncorrected visual acuity is worse than 6/18 in either eye. Fit for Duty Subject to Review may be determined if the standard is met with corrective lenses. If the person's vision is worse than 6/18 in the worse eye, Fit for Duty Subject to Review may be determined, provided the visual acuity in the better eye is 6/9 (with or without corrective lenses). In cases of latent nystagmus made manifest by the occlusion of one eye for the purpose of testing, a binocular visual acuity of 6/9 is acceptable if the visual acuity of the better eye is below 6/9 with occlusion of the fellow eye. The same minimum standard of vision in the worse eye applies.
Visual fields (including monocular vision)	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person has any visual field defect or has monocular vision. Fit for Duty Subject to Review may be determined subject to annual review, taking into account the nature of the work and information provided by the treating optometrist or ophthalmologist as to whether the following criteria are met: • the binocular visual field has an extent of at least 140° within 10° above and below the horizontal midline; and • the person has no significant visual field loss (scotoma, hemianopia, quadrantanopia) that is likely to impede work performance; and • the visual field loss is static and unlikely to progress rapidly. Safety Critical Workers who do not work on or around the track (e.g. train controllers) usually require only a limited field of vision and may be exempted from this criterion. A person is not Fit for Duty Unconditional: • if the person is monocular. A monocular person may be determined to be Fit for Duty Subject to (annual) Review, taking into account the nature of the work and if the treating optometrist or ophthalmologist states that the visual field of the remaining eye is 140°. In exceptional circumstances, the Chief Medical Officer may classify a worker with less than that visual field in the remaining eye as Fit for Duty Subject to (annual) Review if an ophthalmologist or optometrist with expertise in visual fields assesses that the person may be safe for Safety Critical Work. Safety Critical Workers who do not work on or around the track (e.g. train controllers) usually require only a limited field of vision and may be exempted from this criterion.

Condition	Criteria
Colour vision	**Colour vision requirements are determined by a risk assessment and communicated by the rail operator to the Authorised Health Professional.** Colour vision should be screened using Ishihara plates; 3 or more errors out of 12 plates is a fail. In the event of a fail, further assessment may be done as per the text and flow chart in Figure 29.
Diplopia	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if the person experiences any diplopia (other than physiological diplopia) when fixating objects within the central 20° of the primary direction of gaze. The person may be determined to be Fit for Duty Subject to Review, if it is considered appropriate taking into account the nature of the work and if the treating optometrist or ophthalmologist states that the following criteria are met: • the standard can be met with suitable treatment; and • other criteria are met as per this section, including visual fields.

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified as Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified as Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed to by the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed to, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

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19.3 Musculoskeletal conditions

19.3.1 Relevance to Safety Critical Work

Musculoskeletal disorders may affect the ability to perform Safety Critical Work due to the inability to carry out the prescribed work tasks or respond appropriately to emergency situations, thus placing the network at risk.

19.3.2 General assessment and management guidelines

It is not possible to make generic statements regarding the musculoskeletal capacity required for Safety Critical Work because the nature of such work can vary widely. All jobs, whether Category 1 or Category 2, need to be assessed regarding their inherent requirements and hence the necessary musculoskeletal capacities to do them. Most Category 1 Safety Critical Workers require soundness of limbs, neck, back and good balance. For example:

- train driving requires good musculoskeletal capacity to:
  - sit and drive the train using the arms and legs
  - walk about the train on uneven track and ballast
  - join heavy couplings, bend and check bogies
  - enter and exit the cab to and from the ground routinely and in an emergency
  - move rapidly from the path of an oncoming train
- flagman (hand signaller) duties require good musculoskeletal capacity to:
  - move quickly over uneven track and ballast
  - place detonators quickly and accurately on the track
  - signal to trains
  - move rapidly from the path of an oncoming train
- shunting requires good musculoskeletal capacity to:
  - move over uneven track and ballast
  - rapidly board or alight trucks or carriages
  - open or close stiff, large coupling mechanisms
  - switch points
  - move rapidly from the path of an oncoming train.

Train controlling requires only limited musculoskeletal capacity. Controllers typically work in an indoor environment and do not have to access the track. They require musculoskeletal capacity to work with computer screens and keyboards, paper records and telephones.

The aim the health assessment is to detect those Safety Critical Workers who may have difficulty in performing their duties due to a musculoskeletal condition, or who may be at increased risk of injury, and to identify those workers who would benefit from job modification.

The examining doctor should take a thorough history, noting information such as:

- the person's day-to-day functional capacity
- performance in other roles
- history of injuries, the circumstances of any injuries, their severity and recovery time
- exacerbating and relieving factors.

The examination should evaluate the following in regard to the anticipated tasks as described above:

- gait—the ability to walk on flat and uneven surfaces
- spine—the strength and range of movement of the cervical and lumbar–sacral spine
- limbs—the power and range of movement of the upper and lower limbs
- pain—the presence of musculoskeletal pain that may impede movement and its adequacy of treatment
- balance—the person's sense of balance, which may be assessed using the Romberg test.

In some cases, the treating doctor may also be contacted to discuss the worker's condition and fitness.

The clinical examination may need to be supplemented by a functional assessment or practical demonstration that the worker can meet particular requirements (refer to Section 5.2.4, Functional and practical assessments). Such practical assessment tasks (PATs) cannot override the medical standards, they can only supplement the doctor's decision about the ability to perform rail safety tasks where the Standard is imprecise.

Job modification

Fit for Duty Subject to Job Modification may be determined, taking into consideration the nature of the work. However, modification to cabs and other equipment is usually impractical because operators may be expected to drive different trains on different shifts. The decision on whether a proposed job modification can be accommodated rests with the rail operator. A worksite visit or functional assessment may also be considered.

19.3.3 Medical criteria for Safety Critical Workers

Medical criteria for fitness for duty for Safety Critical Workers are outlined in Table 23. It is not possible to detail all the tasks of Safety Critical Workers and the musculoskeletal criteria to be met in this Standard. Preferably, the Authorised Health Professional should be acquainted first hand with the job, or at least be provided with a position description, task analysis or job dictionary so as to conduct the examination with insight when matching demands and musculoskeletal capacities, such as given in the examples above.

A rail operator may develop its own standards appropriate to the risk assessment of a job and with advice from an occupational physician. Such standards may incorporate functional assessments that are based on the job demands of the position in question.

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 23 Medical criteria for Safety Critical Workers: Musculoskeletal disorders

Condition	Criteria
Musculoskeletal disorders	**Category 1 and Category 2 Safety Critical Workers** A person is not Fit for Duty Unconditional: • if lack of range of movement, pain, weakness, instability or another impairment from a musculoskeletal condition results in either of the following: - inability to perform the inherent job requirements of the rail safety work in question - increased risk of exacerbation of a pre-existing injury or condition. The person may be determined to be Fit for Duty Subject to Review, if, after taking into account the opinion of the treating doctor and the nature of the work, the condition can be adequately treated and function can be restored. Conditions that are stable, such as amputations, do not need to be reviewed more frequently than the usual periodic assessment. The person may be determined to be Fit for Duty Subject to Job Modification, after taking into consideration the nature of the work. It is the employer's decision whether any job modifications can be accommodated. A functional assessment or practical assessment at the workplace may also be considered.

Temporary illnesses. This Standard does not deal with the myriad conditions that may affect health on a short-to-medium-term basis and for which a Safety Critical Worker may be referred for assessment regarding fitness to resume duty. Clinical judgement is usually required on a case-by-case basis, although the text in each section gives some advice on the clinical issues to be considered.

Undifferentiated illness. A Safety Critical Worker may present with symptoms that could have implications for their job, but the diagnosis is not clear. Referral and investigation of the symptoms will mean that there is a period of uncertainty before a definitive diagnosis is made, and before the worker and employer can be confidently advised. Each situation will need to be assessed individually, with due consideration being given to the probability of a serious disease that will affect Safety Critical Work. Generally, workers presenting with symptoms of a potentially serious nature should be classified as Temporarily Unfit for Duty until their condition can be adequately assessed. However, they may be suitable for alternative duties. Workers who are fit to continue work while being investigated should be classified as Fit Subject to Review.

Specialist review. This Standard generally requires Safety Critical Workers who are assessed as Fit for Duty Subject to Review to be seen by a specialist leading up to their review appointment with the Authorised Health Professional. Any exceptions to this should be agreed to by the Chief Medical Officer, examining specialist, treating general practitioner and Authorised Health Professional as clinically indicated. If this is agreed to, a report from the treating general practitioner will suffice at the time of review by the Authorised Health Professional.

Part 5: Medical criteria for Category 3 workers

20 Introduction

Rail safety workers who work on or near the track but not in a Controlled Environment (Category 3 workers) require a Track Safety Health Assessment. The medical criteria are described in this section.

Note that workers who access the track receive track safety awareness training on a regular basis, which is another key aspect of their ability to protect their own safety and that of fellow workers.

Although the medical criteria for health assessments of Category 3 workers relate only to hearing, vision and musculoskeletal capacity, it is recognised that a number of other conditions may affect their safety around the track. Rail operators should ensure that workers are advised to notify their supervisor and/or request a triggered health assessment if they develop a condition that could lead to collapse on track; if they incur serious injury or illness to their eyes, hearing or limbs; if they suffer a serious brain injury; or if they develop a cognitive or psychiatric disorder. Substance abuse should also be declared in accordance with the employer's drug and alcohol policies. Workers making such notifications should be referred for a triggered assessment to assess implications for safety around the track and action taken should be taken accordingly, including job modification as required.

21 Hearing

21.1 Relevance to safety around the track

There are appreciable risks from moving trains, which can be surprisingly quiet even at high speed, so the ability to hear a train horn is important. A horn is intended to emit about 88 decibels (dB) at 200 metres in the country and 85 dB at 100 metres in towns. The standard has been set with a margin of safety to allow for adverse environmental conditions and the worker facing away from the train. The need is to hear (warning) sounds, rather than speech, in noise.

Note: This hearing standard and testing should not be confused with the requirements for audiometric monitoring required by occupational health and safety (OHS) regulations for noise-exposed workers. When working with hearing protection, the worker should not be expected to hear warning sounds but should be communicated with by gesture or touch by the gang supervisor.

21.2 General assessment and management guidelines

Pure tone audiometry may be performed with or without hearing aids, and the standard applies to the better ear. If the standard is not met with hearing aids, the audiogram may be repeated once the aids have been upgraded. Fit for Duty Subject to Review may also be recommended if a sound discrimination in noise test has been passed. Practical on-site tests are no longer recommended due to issues with validity and repeatability.

Fit subject to job modification may also be recommended.

21.3 Medical criteria for Category 3 workers

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 24 **Medical criteria for Category 3 workers: Hearing**

Condition	Criteria
Hearing	Compliance with the Standard should be initially assessed by audiometry without hearing aids. A person is not Fit for Duty Unconditional: • if hearing loss is ≥ 40 dB averaged over 0.5, 1 and 2 KHz in the better ear without hearing aids Fit for Duty conditional on wearing hearing aids may be recommended if the standard is met with hearing aids. If a rail safety worker requires hearing aids, the aids should: • suppress feedback • be noise limited to 80 dB • have no noise-cancellation feature • have no directional microphones. Fit for Duty Subject to Job Modification may be considered; for example, if the worker is to be escorted at all times when around the track.

22 Vision and eye disorders

22.1 Relevance to safety around the track

Good visual acuity and fields are important to sense an oncoming train.

There are no requirements for colour vision unless the specific task requires it (refer to Section 19.2.2, Colour vision assessment of Safety Critical Workers).

22.2 General assessment and management guidelines

22.2.1 Visual acuity

The standard for visual acuity relates to the better eye. This includes workers who are monocular. Visual acuity should be measured for each eye separately and without optical correction. If optical correction is needed, vision should be retested with appropriate corrective lenses.

Acuity should be tested using a standard visual acuity chart (Snellen or LogMAR chart or equivalent) with five letters on the 6/12 line. Standard charts should be placed six metres from the person tested, or a reverse chart can be used and viewed through a mirror from a distance of three metres. Other calibrated charts can be used at a minimum distance of three metres. More than two errors in reading the letters of any line is regarded as a failure to read that line. The visual acuity standard can be met with or without corrective spectacle lenses or contact lenses. People who require glasses to perform duties should be classed as Fit for Duty Conditional on wearing corrective lenses. Fit for Duty Subject to Review may be indicated in cases with degenerative conditions where the visual acuity may deteriorate between standard periodic assessments. If workers meet the criteria with corrective lenses, they should be able to be passed by the Authorised Health Professional without reference to an ophthalmologist, optometrist or general practitioner. In appropriate circumstances, a referral may be made.

22.2.2 Visual fields

Visual fields may be initially screened by confrontation. The tester should sit close to and directly opposite the person, and instruct the person to cover one eye. The opposite eye should be occluded like a mirror image. The person should be asked to fixate on the tester's non-occluded eye and to count the number of fingers held up in each of the four corners of the tester's own visual field. Other extreme upper, lower and side points may also be tested. The test should then be repeated for the other eye.

Confrontation is an inexact test. Any person who has, or is suspected of having, a visual field defect should be referred for assessment by an optometrist or ophthalmologist. Assessment will involve automated perimetry using an automated static perimeter (Kinetic Goldman Visual Field, Humphrey Field Analyser, Medmont M700, Octopus, etc.). If the automated perimetry suggests that the requirements for Category 3 are not met, then the Esterman binocular field test should be performed. Although opinions on fitness to work can be based on testing visual fields for each eye separately, the Esterman binocular field is the preferred method of assessment.

Monocular vision (one-eyed worker)

People with monocular vision may have a reduction of visual fields due to the nose obstructing the medial visual field. They also have no stereoscopic vision for some months after loss of an eye and may have other deficits in visual functions. Fit for Duty Subject to Review may be recommended if the visual field in the remaining eye meets the standard. In borderline cases, subject to a risk assessment of the job by an occupational physician, if an ophthalmologist or optometrist assesses that the person may be safe for around the track, the worker may be classed as Fit for Duty Subject to annual review of the remaining eye. Good rotation of the neck is also necessary to ensure adequate overall fields of vision particularly for people with monocular vision.

22.3 Medical criteria for Category 3 workers

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 25 **Medical criteria for Category 3 workers: Vision and eye disorders**

Condition	Criteria
Visual acuity	A person is not Fit for Duty Unconditional: • if the person's best corrected visual acuity is worse than 6/12 in the better eye. Fit for Duty conditional on wearing corrective lenses may be determined if the standard is met with spectacles or contact lenses. Fit for Duty Subject to Review may be determined if the person meets the standard but has a condition that may result in their vision deteriorating before the next routine review date.
Visual fields	A person is not Fit for Duty Unconditional: • if their binocular visual field (or the visual field in the remaining eye in the case of monocular vision) does not have a horizontal extent of at least 110° within 10° above and below the horizontal midline; or • if there is any significant visual field loss (scotoma within a central radius of 20° of the foveal fixation or hemianopia). Fit for Duty Subject to Review may be determined if the visual field standard is met and provided that the visual field loss is unlikely to progress rapidly. Fit for Duty Subject to Job Modification may be considered; for example, if the worker is to be escorted at all times when around the track.

23 Musculoskeletal function

23.1 Relevance to safety around the track

Track safety requires sufficient soundness of limb function to permit rapid movement away from an oncoming train.

23.2 General assessment and management guidelines

The *National Standard for Health Assessment of Rail Safety Workers* (the Standard) only relates to a person's ability to move quickly from the path of an oncoming train; it is not intended to cover all of the inherent job requirements and job demands that individuals may undertake on track as part of their jobs. Where a rail operator or contracting company wish advice in relation to such issues, a more comprehensive assessment would need to be requested.

Moving rapidly from the path of an oncoming train may require a worker to negotiate steep and unstable ballast shoulders in order to reach a safe area. The standard relates to any rheumatolological, neurological or chronic pain condition that affects musculoskeletal function.

23.3 Medical criteria for Category 3 workers

It is important that health professionals familiarise themselves with both the general information above and the tabulated standards before making an assessment of a person's fitness for duty.

Table 26 **Medical criteria for Category 3 workers: Musculoskeletal function**

Condition	Criteria
Musculoskeletal function	A person is not Fit for Duty Unconditional: • if pain, weakness, instability or other impairment from a musculoskeletal or medical condition results in interference with the ability to walk on coarse ballast and/or move rapidly from the path of an oncoming train. Fit for Duty Subject to Review may be determined, taking into consideration the opinion of the treating doctor and the nature of the work if the condition is adequately treated and function is restored. Fitness for Duty Subject to Job Modification may be considered, for example, if the person is to be accompanied at all times when around the track.

Part 6: Forms, case studies and transition arrangements

24 Model forms

This section contains the model forms and explanations for completion.

The pdf forms for conducting the health assessments may be downloaded from the National Transport Commission website at <http://www.ntc.gov.au>.

24.1 Risk assessment template

This template may be used to guide conduct of the risk assessment, which guides determination of the worker's risk category and health assessment requirements.

RAIL SAFETY WORKER TASK:		
ASSESSMENT RECORD:		
WORKSITE INSPECTION	Date:	Completed by:
JOB DESCRIPTION	Date:	Reviewed by:

CONTEXT:

ACTIVITIES AND WORKING CONDITIONS:	HEALTH ATTRIBUTES: *Health attributes relating to the safety of the rail network:* *Health attributes relating to the safety of the rail worker (OHS):*

ENGINEERING AND PROCEDURAL ENVIRONMENT:

RISK ANALYSIS AND CATEGORISATION:	CATEGORY

HEALTH ASSESSMENT REQUIREMENTS:

24.2 Request and Report Form

The *Request and Report Form* is the key means of communication between the rail organisation and the Authorised Health Professional.

The form is used as follows:

1. **Part A**. The employer completes Part A, encloses copies of relevant supporting information (e.g. a previous health assessment report, sick leave summary, relevant workers compensation reports or critical incident reports) and a copy of the health professional record (Form 24.4, Record for health professional), and forwards them to the Authorised Health Professional.
2. **Part B**. Upon completion of the assessment, the health professional completes Part B of the form.
3. **Part C**. The worker/applicant completes Part C of the form to indicate agreement to the portability of the health assessment report.

The original form is sent to the employer, the health professional retains a copy on file and a further copy is provided to the worker.

Insert name of rail transport operator

Rail Safety Worker Health Assessment Category 1, 2 and 3 Request and Report Form

CONFIDENTIAL:

THE COMPLETED FORM SHOULD BE RETURNED TO THE RAIL TRANSPORT OPERATOR A COPY SHOULD BE RETAINED BY THE AUTHORISED HEALTH PROFESSIONAL

Instructions for the Authorised Health Professional

- You are requested to conduct a health assessment to assess the rail safety worker's fitness for duty according to the details provided in PART A of this form and according to the *National Standard for Health Assessment of Rail Safety Workers*.
- You must sight photo identification of the rail safety worker/applicant (e.g. driver's licence).
- Please perform the assessment, complete PART B of this form and return the whole form to the rail transport operator according to contact details in PART A below, within 7 days of the assessment, OR should the worker be assessed Unfit for Duty, please contact the operator immediately by phone so that appropriate rostering changes may be made. Please keep a copy of this form for your own records.
- Before presenting for the appointment, Category 1 Safety Critical Workers are required to present for fasting cholesterol (total and HDL), fasting glucose and an ECG for Preplacement, Change of Risk Category and Periodic Health Assessments. Results should have been forwarded to you prior to this examination.
- Requirements for audiometry are noted in Part A of the form. This will be arranged separately if audiometry facilities are not available at your practice.
- You may need to contact the worker's nominated doctor to discuss conditions that may affect their fitness for duty. Such contact should be made with the worker's signed consent (see Record for Health Professional).
- Details of the examination should be recorded on the Record for Health Professional. This record is confidential and should be retained by you, not returned to the operator.
- For more detailed information about the conduct of health assessments for safety critical workers see the *National Standard for Health Assessment of Rail Safety Workers*.

PART A. Request for Health Assessment - Rail transport operator to complete

A health assessment is requested to assess fitness for rail safety duty.

Date of request	

1. Rail transport operator details

Rail transport operator			
Supervisor / contact			
Phone		Facsimile	
Email			

Account and report to be sent to Supervisor at the following address (*please insert postal address or fax no.*)	

PART A (continued)

2. Worker / Applicant details

Family name		First names	
Employee no. (If applicable)		Date of birth	

3. Worker's health assessment appointment details

Doctor / practice			
Address		Phone	
Appointment date		Time	

4. Assessment requirements

4.1 Risk Category / Level of assessment

☐ Category 1 ☐ Category 2 ☐ Category 3

4.2 Description of duties (or see attached Job Description or Task Risk Assessment)

4.3 Type of assessment required *(tick one)*

☐ Preplacement / Change of Risk Category health assessment

☐ Periodic health assessment

☐ Triggered health assessment *(provide details below)*

☐ Other *(provide details below)*

Please provide details of reasons for Triggered Health Assessment and / or any other assessment requirements

4.4 Task specific requirements *(Category 1 and 2 workers)*

Colour vision

☐ Normal
☐ Colour Defective Safe A
☐ Colour Defective Safe B
☐ No colour vision requirement

Hearing

☐ Speech - In Quiet
☐ Speech - In Noise

Musculoskeletal *(note specific requirements)* ▼

PART A (continued)

4.5 Specific tests required

The following tests are required for Preplacement, Change of Risk Category and Periodic Health Assessments. They are not routinely required for Triggered Health Assessments.

- ☐ Fasting cholesterol (total and HDL) *(Category 1 only)*
- ☐ Fasting plasma glucose *(Category 1 only)*
- ☐ Resting ECG *(Category 1 only)*
- ☐ Audiometry (Category 1, 2 and 3) *(Category 1, 2 and 3)*

Audiometry ordered from

- ☐ Drug Screen *(Preplacement only)*

Pathology ordered from

5. Supporting information relevant to the assessment *(tick information provided)*

- ☐ Previous relevant Health Assessment Report(s)
- ☐ Relevant sick leave for last 12 months ► (number of days, not details)
- ☐ Relevant Workcover history
- ☐ Relevant Critical Incident episodes
- ☐ Positive drug and alcohol assessment reports
- ☐ Record of involvment in serious rail safety incidents
- ☐ Other (*specify*) ►

Rail transport operator to complete after the assessment

6. Action taken as a result of health assessment *(tick as appropriate and record details)*

- ☐ Period health assessment scheduled as per Standard
- ☐ Job modification
- ☐ Triggered review
- ☐ Alternative duties / Redeployment
- ☐ Drug assessment (Preplacement only)

Request and Report Form (Page 3 of 4)

Worker's name ☐ Category 1 ☐ Category 2 ☐ Category 3

PART B. Health Assessment Report - Health professional to complete

☐ I have sighted the worker's photo ID (e.g. driver's licence, passport) Number

I certify that I have examined the worker in accordance with the medical standards contained in the *National Standard for Health Assessment of Rail Safety Workers* and in my opinion the worker is *(tick one box only)*:

☐ **Fit for Duty Unconditional** - meets all relevant medical criteria for rail safety work

☐ **Fit for Duty - Conditional**
- ☐ Conditional on corrective lenses being worn
- ☐ Conditional on hearing aid being worn
- ☐ Other condition *(specify)* ▼

☐ **Fit for Duty Subject to Review** - does not meet all medical criteria, but could perform current duties if the condition is sufficiently under control and worker is more frequently reviewed than prescribed under periodic review.

NOTE: A new worker may be judged Fit for Duty Subject to Review and recommended for more frequent medical assessment from commencement of employment.

▶ I recommend:
- ☐ Review at this practice ▼
  Date of review
- ☐ Specialist referral
- ☐ Local doctor referral
- ☐ Laboratory tests

☐ **Fit for Duty Subject to Job Modification** – does not meet all medical criteria, but could perform current duties if suitable job modifications were made.

▶ I recommend the following job modifications (including timeframes):

☐ **Temporarily Unfit for Duty** – does not meet all medical criteria and cannot perform current duties. May perform alternative tasks. May return to full duty pending: improvement in condition; response to treatment; confirmed diagnosis of undifferentiated illness.

NOTE: A new worker may be judged Temporarily Unfit for Duty. The rail transport operator may advise of the opportunity for a renewed application upon the medical issues being resolved.

▶ I recommend the following in terms of management and review (including timeframes):

☐ **Permanently Unfit for Duty** – does not meet the medical criteria for current duties and cannot perform these duties in the foreseeable future (> 12 months).

▶ I recommend the following in terms of management and review (including timeframes):

Health professional details (stamp acceptable)

Name

Address

Assessment date

Signature

PART C. Portability of assessment result - Worker to complete

I,

(Print name)

give permission for this health assessment to be forwarded to another rail transport operator as confirmation of fitness for duty

Signature

24.3 Worker Notification and Health Questionnaire

This form contains the *Worker Notification and Health Questionnaire*. There is a version of this form for Category 1 and Category 2 workers, and a version for Category 3 workers.

The self-administered questionnaire in the Category 1 and Category 2 form is a screening tool to help identify conditions that might affect the performance of rail safety work. The questionnaire is not a diagnostic tool and no decision can be made regarding the worker's fitness for duty until the full clinical examination is performed.

The Authorised Health Professional may need to guide or assist with completion of the questionnaire if literacy or cultural background presents a barrier to self-administration by the worker. The health professional will also need to review the answers with the worker to ascertain relevant detail.

Dishonest completion of the questionnaire may be an issue. Workers are required to sign the completed questionnaire in the presence of the Authorised Health Professional and the health professional should countersign.

The form is used as follows:

1. **Part A**: The employer requests that the worker/applicant sign the front of the form to indicate that they have read and understood the statements concerning the health information to be provided. The employer completes PART A including appointment details and instructions to the worker/applicant.
2. **Part B**: The worker/applicant completes PART B and presents it to the Authorised Health Professional.
3. **Part C**: Existing workers complete PART C and present it to the Authorised Health Professional.
4. **Part D**: The worker/applicant signs the form as a true statement and the health professional countersigns.
5. The employer discusses the results with the worker/applicant. The form is retained by the health professional and filed in the worker's medical record.

Insert name of rail transport operator

Rail Safety Worker Health Assessment
Category 1 and 2
Worker Notification and Health Questionnaire

CONFIDENTIAL:

FOR PRIVACY REASONS THE COMPLETED FORM SHOULD BE RETAINED BY THE AUTHORISED HEALTH PROFESSIONAL AND NOT RETURNED TO THE RAIL TRANSPORT OPERATOR

Instructions for the worker / applicant

- You are required to attend a health assessment as a condition of your employment, to assess your fitness for rail safety work.
- The health assessment must be completed by _____ *(date)* to ensure that you are able to carry out normal duties.
- Complete the enclosed questionnaire **before attending the appointment** and provide it to the examining doctor. **The last page of the questionnaire must be signed by you in the presence of the examining doctor.**
- Please take to appointment:
  - glasses, hearing aid or any other aids required for conduct of your work.
  - all medication that you are currently taking or a list of such medications.
  - photo identification.
- If you are a **Category 1 Safety Critical Worker** you will be required to have a blood test as part of your assessment. To get a true reading of your blood sugar and cholesterol (total and HDL) you must not eat for a minimum of 8 hours (and no longer than 14 hours) before your blood test. You may drink water but should not take sweetened drinks. This appointment/test should take place at least 48 hours before the appointment with the doctor so that he/she has the results.

What happens if the examining doctor suspects there is a health problem?

If the examining doctor finds or suspects something is wrong with your health that you did not know about, they will ask your permission to inform your own doctor. The examining doctor will not treat any medical condition but will give you a letter to take to your own doctor.

If the doctor finds that you do not meet all relevant medical criteria, your supervisor at the rail transport operator will discuss with you the appropriate action to be taken. This may include:

- modification of the duties that you undertake for the rail transport operator; and/or
- scheduling of a further review, tests or specialist referral.

Disclosure of health information – please read carefully and sign to indicate you understand how health information is reported, stored and accessed.

All your detailed medical papers including your questionnaire responses, test results and the complete record of clinical findings are kept confidentially, and are not available to your managers. The examining doctor sends only the completed report form directly to the rail transport operator indicating your fitness or otherwise for duty.

If the rail transport operator uses the services of a Chief Medical Officer (CMO), the CMO may access a copy of your health record to aid in the management of your health in relation to your work or for audit purposes or to compile statistics. The CMO must maintain the confidentiality of these records and ensure that your personal information is not made available to, or discussed with, any other person within the organisation.

Other than the above, your personal information will be not be disclosed to any other person or organisation without your written permission, except:

- when the rail transport operator appoints a health professional to conduct an audit of the system for the health assessment of rail safety workers, then the appointed health professional will have access to the information for the purpose of undertaking the audit; and
- where required by law.

You have the right to access your health records including those held by the Authorised Health Professional and the reports held by the rail transport operator.

Worker's declaration

I, _____ *(Print name)*

certify that I have read and understood the above statement concerning the health information provided in this document.

Signature _____ Date _____

PART A - Rail transport operator to complete

Date of request

Worker / Applicant details

Family name

First names

Employee no.

Date of birth

Risk Category ☐ Category 1 ☐ Category 2

Health assessment appointment details

Doctor / practice

Address

Phone

Appointment date

Time

PART B - Health Questionnaire - Worker / Applicant to complete

This questionnaire must be completed in order to help assess your fitness for rail safety duties. Please answer the questions by ticking the appropriate box or circling the appropriate response. If you are not sure, leave the question blank and ask the examining health professional what it means. The health professional will ask you more questions during the assessment.

1. Are you currently attending a health professional for any illness or injury?

☐ No

☐ Yes ▼ *Briefly describe including any medical treatment or medication (prescribed or otherwise) that you are receiving*

2. Have you ever had, or been told by a doctor that you had any of the following?

	Yes	No
High blood pressure	☐	☐
Heart disease	☐	☐
Chest pain, angina	☐	☐
Any condition requiring heart surgery	☐	☐
Abnormal shortness of breath or chest disease	☐	☐
Palpitations / irregular heartbeat	☐	☐
Head injury, spinal injury	☐	☐
Seizures, fits, convulsions, epilepsy	☐	☐
Blackouts or fainting	☐	☐
Stroke	☐	☐

	Yes	No
Dizziness, vertigo, problems with balance	☐	☐
Double vision, difficulty seeing, or difficulty adapting to changing light conditions	☐	☐
Colour blindness	☐	☐
Memory loss or difficulty with attention or concentration	☐	☐
Diabetes	☐	☐
Neck, back or limb disorders	☐	☐
Hearing loss or deafness or had an ear operation or use a hearing aid?	☐	☐
A psychiatric illness or nervous disorder?	☐	☐

3. Have you ever had any other serious injury, illness, operation, or been in hospital for any reason?

☐ No

☐ Yes *(briefly describe)* ▶

Worker Notification and Health Questionnaire (Page 2 of 4)

PART B (continued)

4. The following questions relate to your intake of alcohol. Please circle the answer that is correct for you:

		(0)	(1)	(2)	(3)	(4)	*Official use only*
4.1	How often do you have a drink containing alcohol?	Never *(Go to Q5)*	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week	☐
4.2	How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 to 4	5 to 6	7 to 9	10 or more	☐
4.3	How often do you have six or more drinks on one occasion?	Never	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week	☐
4.4	How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week	☐
4.5	How often during the last year have you failed to do what was normally expected from you because of drinking?	Never	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week	☐
4.6	How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week	☐
4.7	How often during the last year have you had a feeling a guilt or remorse after drinking?	Never	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week	☐
4.8	How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week	☐
4.9	Have you or someone else been injured as a result of your drinking?	No		Yes but not in the last year		Yes during the last year	☐
4.10	Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?	No		Yes but not in the last year		Yes during the last year	☐
						TOTAL	☐

5. The following questions are about your sleeping patterns:

		Yes	No
5.1	Have you ever had, or been told by a doctor that you had a sleep disorder, sleep apnoea or narcolepsy?	☐	☐
5.2	Has anyone noticed that your breathing stops or is disrupted by episodes of choking during your sleep?	☐	☐

Please use the following scale (Epworth Sleepiness Scale) to choose the most appropriate description for each situation. The questions refer to your usual way of life in recent times. Even if you haven't done some of these things recently try to work out how they would have affected you.

5.3 How likely are you to doze off or fall asleep (rather than just feeling tired) in the following situations:	Would never doze off (0)	Slight chance of dozing (1)	Moderate chance of dozing (2)	High chance of dozing (3)	***Official use only***
• Sitting and reading	☐	☐	☐	☐	☐
• Watching TV	☐	☐	☐	☐	☐
• Sitting, inactive in a public place (e.g. a theatre or meeting)	☐	☐	☐	☐	☐
• As a passenger in a car for an hour without a break	☐	☐	☐	☐	☐
• Lying down to rest in the afternoon when circumstances permit	☐	☐	☐	☐	☐
• Sitting and talking to someone	☐	☐	☐	☐	☐
• Sitting quietly after a lunch without alcohol	☐	☐	☐	☐	☐
• In a car, while stopped for a few minutes in the traffic	☐	☐	☐	☐	☐
				TOTAL	☐

Worker Notification and Health Questionnaire (Page 3 of 4)

PART B (continued)

6. Do you smoke or have you ever been a smoker?

☐ No
☐ Ex-smoker ► *Quit date* ☐
☐ Yes ► *Number of cigarettes per day* ☐

7. Do you use illicit drugs?

☐ No
☐ Yes *(describe)* ► ☐

8. The following questions relate to how you are feeling. Please tick the answer that is correct for you.

In the past 4 weeks, about how often did you:	All of the time (5)	Most of the time (4)	Some of the time (3)	A little of the time (2)	None of the time (1)	*Official use only*
• Feel tired out for no good reason?	☐	☐	☐	☐	☐	☐
• Feel nervous?	☐	☐	☐	☐	☐	☐
• Feel so nervous that nothing could calm you down?	☐	☐	☐	☐	☐	☐
• Feel hopeless?	☐	☐	☐	☐	☐	☐
• Feel restless or fidgety?	☐	☐	☐	☐	☐	☐
• Feel so restless you could not sit still?	☐	☐	☐	☐	☐	☐
• Feel depressed?	☐	☐	☐	☐	☐	☐
• Feel that everything was an effort?	☐	☐	☐	☐	☐	☐
• Feel so sad that nothing could cheer you up?	☐	☐	☐	☐	☐	☐
• Feel worthless?	☐	☐	☐	☐	☐	☐
					TOTAL	☐

PART C - For existing employees only

9. Have you experienced difficulty completing any tasks required for your work (e.g. walking on ballast, hearing train instructions)?

☐ No
☐ Yes *(briefly describe)* ► ☐

10. Have you been involved in any accidents or near misses at work in the period since your last assessment?

☐ No
☐ Yes *(briefly describe)* ► ☐

PART D - Worker's declaration

(To be completed by the worker in the presence of the health professional after completing the questionnaire)

I, ☐ *(Print name)*

certify that to the best of my knowledge the information provided by me is true and correct.

Signature of worker ☐

Signature of doctor ☐ Date ☐

Clinician notes

☐

Worker Notification and Health Questionnaire (Page 4 of 4)

Insert name of rail transport operator

Rail Safety Worker Health Assessment
Category 3
Worker Notification

CONFIDENTIAL:

FOR PRIVACY REASONS THE COMPLETED FORM SHOULD BE RETAINED BY THE AUTHORISED HEALTH PROFESSIONAL AND NOT RETURNED TO THE RAIL TRANSPORT OPERATOR

Instructions for the worker / applicant

- You are required to attend a health assessment as a condition of your employment, to assess your fitness for rail safety work.
- The health assessment must be completed by _____ *(date)* to ensure that you are able to carry out normal duties.
- Complete the enclosed questionnaire **before attending the appointment** and provide it to the examining doctor. **The last page of the questionnaire must be signed by you in the presence of the examining doctor.**
- Please take to appointment:
  - glasses, hearing aid or any other aids required for conduct of your work.
  - all medication that you are currently taking or a list of such medications.
  - photo identification.

What happens if the examining doctor suspects there is a health problem?

If the examining doctor finds or suspects something is wrong with your health that you did not know about, they will ask your permission to inform your own doctor. The examining doctor will not treat any medical condition but will give you a letter to take to your own doctor.

If the doctor finds that you do not meet all relevant medical criteria, your supervisor at the rail transport operator will discuss with you the appropriate action to be taken. This may include:

- modification of the duties that you undertake for the rail transport operator; and/or
- scheduling of a further review, tests or specialist referral.

Disclosure of health information – please read carefully and sign to indicate you understand how health information is reported, stored and accessed.

All your detailed medical papers including your questionnaire responses, test results and the complete record of clinical findings are kept confidentially, and are not available to your managers. The examining doctor sends only the completed report form directly to the rail transport operator indicating your fitness or otherwise for duty.

If the rail transport operator uses the services of a Chief Medical Officer (CMO), the CMO may access a copy of your health record to aid in the management of your health in relation to your work or for audit purposes or to compile statistics. The CMO must maintain the confidentiality of these records and ensure that your personal information is not made available to, or discussed with, any other person within the organisation.

Other than the above, your personal information will be not be disclosed to any other person or organisation without your written permission, except:

- when the rail transport operator appoints a health professional to conduct an audit of the system for the health assessment of rail safety workers, then the appointed health professional will have access to the information for the purpose of undertaking the audit; and
- where required by law.

You have the right to access your health records including those held by the Authorised Health Professional and the reports held by the rail transport operator.

Worker's declaration

I, _____ *(Print name)*

certify that I have read and understood the above statement concerning the health information provided in this document.

Signature _____ Date _____

PART A - Rail transport operator to complete

Date of request

Worker / Applicant details

Family name | First names

Employee no. | Date of birth

Health assessment appointment details

Doctor / practice

Address | Phone

Appointment date | Time

PART B - Health Questionnaire - Worker / Applicant to complete

1. Medical history *(tick appropriate box)*

1.1	Do you have any serious illness?	☐ Yes	☐ No
1.2	Do you have any difficulty with your vision?	☐ Yes	☐ No
1.3	Do you have any difficulty with your hearing?	☐ Yes	☐ No
1.4	Do you have any difficulty walking?	☐ Yes	☐ No

PART C - For existing employees only

2. Have you experienced difficulty completing any tasks required for your work (e.g. walking on ballast, hearing warning sounds)?

☐ No

☐ Yes *(briefly describe)* ▶

3. Have you been involved in any accidents or near misses at work in the period since your last assessment?

☐ No

☐ Yes *(briefly describe)* ▶

PART D - Worker's declaration

(To be completed by the worker in the presence of the health professional after completing the questionnaire)

I, *(Print name)*

certify that to the best of my knowledge the information provided by me is true and correct.

Signature of worker

Signature of doctor | Date

Category 3 Worker Notification (Page 2 of 2)

24.4 Record for health professional

The *Health Assessment Record for Health Professionals* is a tool that guides the health assessment process. It provides a standard format for recording the results of the assessment, which should then be filed by the Authorised Health Professional in the worker/patient's medical history.

The form should be used as follows:

1. **Part A**. The employer completes Part A, and includes the form with the '*Request and Report Form*' (Form 24.2) and forwards it to the Authorised Health Professional.
2. **Part B**. The worker/patient is able to provide signed consent for the health professional to contact their treating doctor.
3. **Part C–E**. The health professional records the results of the clinical examination.
   - Part C relates to hearing, vision and musculoskeletal capacity and should be completed for all categories of workers.
   - Part D relates to conditions that might affect safety critical work and should be completed for Category 1 and Category 2 workers only.
   - Part E summarises the findings and actions.
4. The completed health assessment record is not to be forwarded to the employer for reasons of privacy. The Authorised Health Professional should summarise the results in terms of fitness for duty on the *Request and Report Form* (Form 24.2).

Insert name of rail transport operator

Rail Safety Worker Health Assessment
Category 1, 2 and 3
Record for Health Professional

CONFIDENTIAL:

FOR PRIVACY REASONS THE COMPLETED FORM SHOULD BE RETAINED BY THE AUTHORISED HEALTH PROFESSIONAL AND NOT RETURNED TO THE RAIL TRANSPORT OPERATOR

PART A - Rail transport operator to complete

1. Worker / Applicant details

Family name | First names

Employee no. | Date of birth

Risk Category ☐ Category 1 ☐ Category 2 ☐ Category 3

2. Category 1 pathology tests

Conducted at

Date of appointment

PART B. Patient consent - Worker to complete

(If required to consult with general practitioner or other treating doctor)

I, _____ *(Print name)* ☐ **give** ☐ **do not give** *(please indicate)*

permission for the examining health professional to contact my treating doctor(s) to discuss or clarify information relating to my current health status

Signature

(1) Name of doctor | (2) Name of doctor

Phone | Phone

PART C. Examination Record - Health Professional to complete

Hearing, Vision and Musculoskeletal requirements (Category 1, 2 & 3)

Hearing, vision and musculoskeletal assessments are required for all rail safety tasks (Category 1, 2 and 3). For Category 1 workers the criteria for fitness for duty will depend on the risk assessment of the job, as provided by the rail transport operator.

1. Hearing (Audiometry results)

Are hearing aids worn? Yes ☐ No ☐

Category 1 or 2 workers with hearing aids to be tested as per Section 19.1. Category 3 workers to be tested as per Section 21.2.

	0.5 kHz	1.0 kHz	1.5 kHz	2.0 kHz
Right				
Left				

	3.0 kHz	4.0 kHz	6.0 kHz	8.0 kHz
Right				
Left				

Notes ▼

2. Vision

2.1 Visual acuity

Uncorrected		Corrected	
R	L	R	L
6 /	6 /	6 /	6 /

Are glasses worn? Yes ☐ No ☐

Are contact lenses worn? Yes ☐ No ☐

2.2 Visual fields *(Confrontation to each eye)*

Normal ☐ Abnormal ☐

2.3 Colour vision Required ☐ Not required ☐ *(go to Q3)*

If required
(Ishihara: ≥ 3 errors / 12 screening plates is a fail)

Pass ☐ Fail ☐

If fail *(as appropriate for task)*

RailCorp Lantern (Point sources) Pass ☐ Fail ☐
or
Farnsworth D15 (Flat surfaces) Pass ☐ Fail ☐

Notes (Colour vision) ▼

3. Musculoskeletal / Neurological (Category 1, 2 & 3)

3.1 Cervical spine movements Normal ☐ Abnormal ☐

3.2 Back movements Normal ☐ Abnormal ☐

3.3 Upper limbs

Appearance Normal ☐ Abnormal ☐

Joint movements Normal ☐ Abnormal ☐

3.4 Lower limbs

Appearance Normal ☐ Abnormal ☐

Joint movements Normal ☐ Abnormal ☐

3.5 Gait Normal ☐ Abnormal ☐

3.6 Romberg's test *(a pass requires the ability to maintain balance while standing with shoes off, feet together side by side, eyes closed and arms by sides, for thirty seconds)*

Normal ☐ Abnormal ☐

3.7 Functional / practical assessment required?

Yes ☐ No ☐

Notes ▼

PART D. Examination Record - Category 1 and 2 additional requirements

4. Cardiovascular System

4.1 Blood pressure *(repeat if necessary)*

Systolic ☐ *mm Hg*

Diastolic ☐ *mm Hg*

4.2 Pulse rate ☐ *beats per minute*

Regular ☐ Irregular ☐

4.3 Heart sounds Normal ☐ Abnormal ☐

4.4 Peripheral pulses Normal ☐ Abnormal ☐

4.5 Calculation of Cardiac Risk Level (refer Cardiovascular chapter) **(Category 1 only)** (www.cvdcheck.org.au)

	Data
Age / sex	
Smoker: Y / N	
Blood pressure (systolic)	
Fasting cholesterol - TOTAL	
- HDL	
- Ratio	
Fasting plasma glucose (diabetes)	

Other considerations e.g. physical activity, diet, symptoms, family and past history, co-morbidity, work conditions:

Stress ECG

- Cardiac risk level 5-9% - Does overall risk assessment require Stress ECG? Yes ☐ No ☐
- Cardiac risk level >10% - Refer for Stress ECG

4.6 Resting ECG **(Category 1 only)**

Normal ☐ Abnormal ☐

Notes ▼

5. Psychological Health

5.1 K10 Questionnaire Score *(From Q8 of the Health Questionnaire)* ☐

- ☐ Zone I (10-18) — ☐ Fit for Duty
- ☐ Zone II (19-24) — ☐ Fit for Duty
- ☐ Zone III (25-29) - Refer to GP and/or counselling — ☐ Fit subject to review; ☐ Temporarily unfit
- ☐ Zone IV (35-50) - Refer for assessment — ☐ Temporarily unfit

5.2 Is attitude, speech and behaviour appropriate? Yes ☐ No ☐

Notes ▼

6. Sleep

6.1 Body Mass Index (BMI)

Weight ☐ *kg* Height ☐ *m*

BMI ☐ *BMI = Weight (kg) / Height (m)²*

☐ If BMI ≥40 or ≥35 with diabetes or high blood pressure (see text) refer for investigation

Epworth Sleepiness Scale

6.2 ESS Score *(From Q6 of the Health Questionnaire)* ☐

- ☐ Score 0-10
  - ☐ No other symptoms / risk factors / incidents — ☐ Fit for Duty
  - ☐ Plus other symptoms / risk factors / incidents — ☐ Fit subject to review; ☐ Temporarily unfit
- ☐ Score 11-15
  - ☐ No other symptoms / risk factors / incidents — ☐ Fit for Duty
  - ☐ Plus other symptoms / risk factors / incidents — ☐ Fit subject to review; ☐ Temporarily unfit
- ☐ Score ≥ 16 — ☐ Temporarily unfit

7. Substance misuse

7.1 Alcohol - AUDIT Score *(From Q7 of the Health Questionnaire)* ☐

- ☐ Zone I (0-7) — ☐ Fit for Duty
- ☐ Zone II (8-15) — ☐ Fit for Duty
- ☐ Zone III (16-19) - Brief counselling — ☐ Fit subject to review; ☐ Temporarily unfit
- ☐ Zone IV (35-50) - Diagnostic evaluation and treatment — ☐ Temporarily unfit

7.2 Drug screen

Not to be routinely conducted for periodic assessments. May be conducted as per relevant Australian standard for change of risk category, all new applicants and for triggered assessments if specifically ordered.

PART E. Relevant clinical findings and action (Category 1, 2 & 3)

Note comments on any relevant findings detected in the questionnaire or examination, making reference to the requirements of the standard.

8. Significant findings

Please describe

9. Further investigations / referral required

10. Fitness for duty classification

- ☐ Fit for Duty Unconditional *(go to 10a)*
- ☐ Fit for Duty Conditional *(go to 10b)*
- ☐ Temporarily Unfit for Duty *(go to 10c)*
- ☐ Fit for Duty Subject to Review *(go to 10d)*
- ☐ Fit for Duty Subject to Job Modification *(go to 10e)*
- ☐ Permanently Unfit for Duty *(go to 10f)*

10a. If classified **Fit for Duty Conditional**, describe aids to be worn (e.g. glasses, hearing aids)

10b. If classified **Temporarily Unfit**, contact the rail organisation immediately

Date of contact

10c. Describe reasons for **Temporarily Unfit**, proposed investigations and timeframes

10d. If classified **Fit Subject to Review**, describe the reasons and nominate date for review

Date for review:

10e. If classified **Fit for Duty Subject to Job Modification**, describe suggested alternative duties. Identify timeframes for application of modifications.

10f. If classified **Permanently Unfit for Duty**, describe the reasons

11. Consent

Was the worker's GP contacted (with their consent)?

Yes ☐ No ☐

Provide brief notes regarding discussion with the GP

12. Other clinical notes

Name of doctor

Date

Signature

Record for Health Professional (Page 4 of 4)

25 Case studies

These case studies illustrate the application of the *National Standard for Health Assessment of Rail Safety Workers* and the decision-making processes for assessing rail safety worker fitness for duty. They begin with a typical scenario, and then consider the issues arising for the workers, the health professionals and the rail transport operator.

The cases include a description of the tasks of the worker and the health requirements for these tasks. The descriptions are typical of the rail safety tasks in question but are not representative of all rail operators. The rail transport operator should provide a task description for each rail safety worker presenting for a health assessment.

25.1 Case study 1: Train driver on commercial network presenting for periodic health assessment

25.1.1 Presentation

Lou is a 53-year-old train driver who attends for his periodic high-level Safety Critical Worker (Category 1) health assessment. His last assessment 2 years ago reported him Fit for Duty. He considers himself fit and well, and does not regularly attend the family doctor. He takes no medication.

25.1.2 Task description and health requirements

Driver in cab—right hand on power/deadman's handle

Driver climbing steep ladder to locomotive

A train driver's tasks include performing tasks outside the cabin in all types of weather, ground conditions and times of day and night

Drivers may be required to undertake a wide range of tasks depending on the locomotive and the network.

Disclaimer:The person(s) depicted in these photographs are for illustration only. The case studies, including names given, are entirely fictional.

Activities and working conditions	Health attributes
The train driver's job involves a variety of tasks that include: • continuous skilled driving to meet a timetable, which involves - sitting for long periods while reading instruments - communicating by radio or signal telephone to a signaller or train controller in a noisy environment - operating handles to brake and accelerate the train - constant vigilance to detect and respond to colour signals in a variety of changing conditions - scanning the track ahead for unexpected events and responding accordingly • working a rotating shiftwork roster • performing tasks outside the cab in all types of weather, ground conditions and times of day or night including - climbing in and out of the crew cab - checking the integrity of the train - coupling carriages in a confined space - fixing faults, which involves kneeling bending and reaching - using the signal telephone - changing points • emergency response, including - exiting the cab to the ground in unpredictable conditions, such as after an accident - walking distances to provide protection of the site.	**Health requirements relating to the safety of the rail network include:** • good physical and psychological health to maintain vigilance when driving • normal colour perception to read signals and flags • the ability to focus readily at changing distances and lighting levels (such as entering a tunnel) to see signals or other signs • psychological ability to memorise and retain route and signal placement • good hearing and speech to communicate on a radio and other communication devices, and the ability to discern communications in a noisy environment (there is also a need to understand written information—this is not a medical issue, but should be addressed at pre-placement through other means) • sufficient musculoskeletal strength and flexibility to be able to: walk externally along the length of the train on uneven ground (ballast); and correctly un/couple carriages including heavy coupling devices such as air hoses, electrical jumpers and emergency couplers in awkward spaces. If there is an incident, the driver must be able to get out of the cab and walk distances on uncertain terrain in unpredictable weather and light, and take emergency measures to protect safety of the rail network. **Health requirements relating to the worker's personal safety:** Covered above.

25.1.3 Documentation

- *Safety Critical Worker Health Questionnaire* (completed by Lou).
- *Safety Critical Worker Health Assessment Request and Report Form* (completed by Lou's employer).
- *Report of Previous Health Assessment* (provided by employer).
- *Safety Critical Worker Health Assessment Record* (provided by employer for completion by the Authorised Health Professional).
- Audiometry result forwarded to Authorised Health Professional by provider.
- Cholesterol (total [TC] and high-density lipoprotein [HDL]), blood glucose and electrocardiograph (ECG) results forwarded to the Authorised Health Professional by the pathology provider.

25.1.4 Assessment

At the health assessment, the Authorised Health Professional notes that Lou smokes 30 cigarettes per day, has a family history of heart disease (his father died at 56 from a heart attack) and is obese. He gives no history of chest pain or shortness of breath. He admits he does not exercise regularly anymore, and that he has gained quite a bit of weight in the past year since he and his wife separated. Upon examination, it is noted that he has a resting blood pressure of 160/105 mmHg, his TC = 7.0 and HDL = 0.91, his resting ECG is normal and he has no diabetes. Based on the Coronary Heart Disease Risk Factor Prediction Chart (Figure 30), he is calculated to have a risk of 24%, which is in the lower end of the high risk range. See <http://www.cvdcheck.org.au>.

Cardiac risk data

	Data
Age/sex	Male, 53
Smoker: Y/N	Y
Blood pressure (mmHg)	160/105
Fasting cholesterol TOTAL HDL Total cholesterol:HDL ratio	 7.0 0.91 7.6
Fasting plasma glucose (diabetes risk)	5.3
Risk level according to <http://www.cvdcheck.org.au>	**24%**

Figure 30 Coronary Heart Disease Risk Factor Prediction Chart

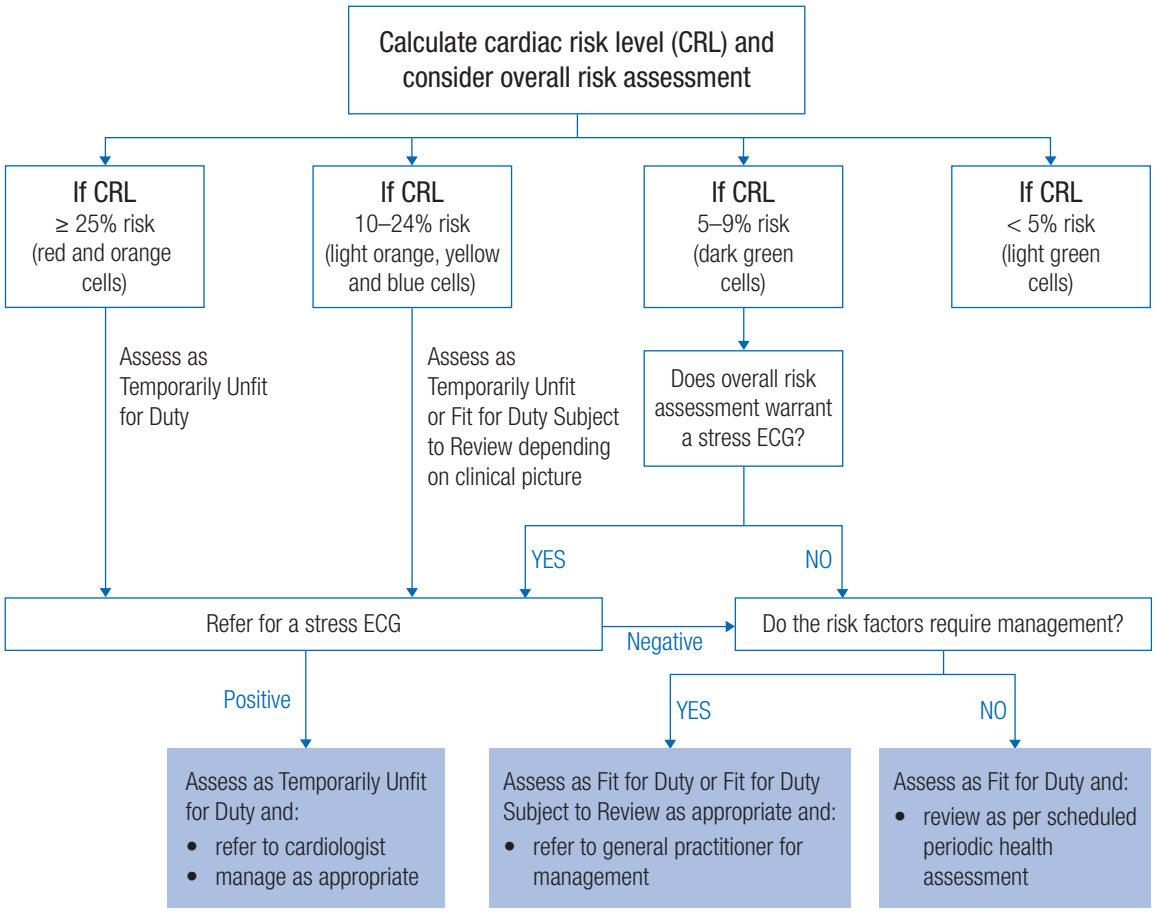
* In accordance with Australian guidelines, patients with systolic blood pressure ≥ 180 mm Hg. or a total cholesterol of > 7.5 mmol/L, should be considered at increased absolute risk of CVD.

Risk level for 5-year cardiovascular (CVD) risk

High risk	Moderate risk	Low risk
≥ 30%	10–15%	5–9%
25–29%		< 5%
20–24%		
16–19%		

Source: Reproduced with permission from the *Absolute cardiovascular disease risk assessment*. Quick reference guide for health professionals. An initiative of the National Vascular Disease Prevention Alliance. © 2009 National Heart Foundation of Australia <http://www.heartfoundation.org.au/SiteCollectionDocuments/aust-cardiovascular-risk-charts.pdf>

Figure 31 **Management of Cardiac Risk Level (Category 1 workers)**



CRL = cardiac risk level; ECG = electrocardiograph; GP = general practitioner

25.1.5 Action

Authorised Health Professional

The Authorised Health Professional diagnoses a raised Cardiac Risk Score that requires referral to a cardiologist for a stress ECG. Since Lou has a raised score, as well as family history of cardiac disease, obesity, inactivity and marital discord, he should be classed as Temporarily Unfit for Duty. The Authorised Health Professional advises Lou's general practitioner of his findings and alerts him to the need for risk-factor modification.

The Authorised Health Professional discusses the findings with Lou, explaining the possible concern about his heart, and the need for prompt referral for more tests and attention to his lifestyle. Lou is told that the Authorised Health Professional will recommend he is Temporarily Unfit for Duty and will advise the company immediately (by phone or fax) that he cannot be rostered.

The Authorised Health Professional completes the report to the rail operator, indicating Temporarily Unfit for Duty and noting that referral to a specialist has been made. The health professional indicates that Lou should be seen at the practice within the next week. Lou asks the health professional who is going to pay for these tests because he does not have health insurance. The health professional advises Lou to discuss this with his employer, but that it is likely that his employer will pay for the diagnostic tests required to ascertain his fitness to drive (stress test, thallium scan, ECG and cardiologist appointments), but will not pay for tests or procedures that are regarded as treatment for his condition (e.g. coronary angiogram, percutaneous coronary intervention and heart surgery).

Employer

After receiving the report, the employer enters Lou's details into the rail operator's recall system and flags him for review in a week and does not roster him for driving duties.

25.1.6 Action: one week later

Authorised Health Professional

The cardiologist advises that Lou has a positive exercise test and that a thallium scan has revealed significant reversible myocardial ischaemia. Lou has been advised by the cardiologist that he will require an angiogram and cardiac surgery (either a stent or coronary artery bypass grafting).

The Authorised Health Professional tells Lou he will be unfit to drive trains for 1 to 3 months, depending on the cardiac procedure, and it is possible he may not be able to return to driving duties in the long term, depending on the outcome of the intervention. He emphasises the need to address lifestyle issues with support from his general practitioner.

The Authorised Health Professional advises the employer that Lou is Temporarily Unfit for Duty as a train driver. Lou is, however, fit for alternate duties.

Employer

After receiving the final report, the employer discusses employment options with Lou. There is a vacancy due to maternity leave at the local station. As he remains well, Lou is happy to fill this position in preference to staying home on sick leave.

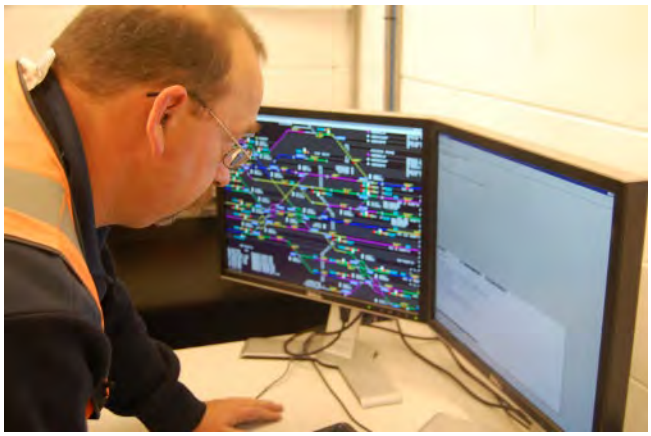
25.2 Case study 2: Train controller presenting for triggered health assessment

25.2.1 Presentation

Serge is a 44-year-old train controller (Category 2 Safety Critical Worker) who attends the rail operator's Authorised Health Professional for a triggered health assessment, because of concerns regarding recurrent sick leave. Serge's last assessment was 4 years ago, at which time the doctor reported him as Fit for Duty. Serge used to smoke 30 cigarettes per day, but more recently is smoking 40 cigarettes per day and is overweight. He is due to work as a train controller that evening.

25.2.2 Task description and health requirements

Controller of metropolitan network using a bank of screens with multi-colours



Operators in network control rooms need to make safe-working decisions regarding the operation of the network

Disclaimer:The person(s) depicted in these photographs are for illustration only. The case studies, including names given, are entirely fictional.

Activities and working conditions	Health attributes
Operators in a network control room set and monitor the progress of suburban trains, including: • receiving information about problems arising from passengers, the track or the train, and making any necessary routing decisions • making safe-working decisions regarding operation of the network (an incorrect decision could lead to a serious incident on the rail network) • communicating by voice with drivers and others. • monitoring the progress of trains on banks of screens (colours may be used on the computer screens to identify tasks or activities that require particular attention by the controller) • operating in an open-plan area and having shift rosters that include night shifts • the work may be routine but it can be stressful (e.g. if a storm causes signal faults or trees across lines). • In emergency situations experienced supervisors support workers and help coordinate the response. In an emergency, normal safety controls may be overridden, which could lead to errors affecting the safety of the rail network.	**Health requirements relating to the safety of the rail network include:** • good physical and psychological health to be alert, particularly in emergencies when decisions may be made that could jeopardise the safety of the rail network • the ability to distinguish colours on multicoloured screens as well as adequate vision for screen-based equipment work • hearing and speech (the same as an office worker) to communicate on radio devices. **Health requirements relating to the worker's personal safety:** None.

25.2.3 Documentation

- *Safety Critical Worker Health Questionnaire* (completed by Serge)
- *Safety Critical Worker Health Assessment Request and Report Form* (completed by Serge's employer) including work performance and attendance record summary as part of his triggered referral (the sick leave record shows that Serge has taken 20 sick days in the past 6 months—all of 1 to 2 days' duration. Some were accompanied by a doctor's certificate for a medical condition)
- *Report of Previous Health Assessment* (provided by employer)
- *Safety Critical Worker Health Assessment Record* (provided by the employer for completion by the Authorised Health Professional).

25.2.4 Assessment

After reviewing Serge's health questionnaire, the Authorised Health Professional finds that Serge scored 35 on the K10 Questionnaire. On further questioning, Serge reports having problems at home. His wife has a gambling problem, which is making their financial situation poor. Also, their 15-year-old son has been in trouble with the police.

K10 Questionnaire

Question		Score
6.1	In the past 4 weeks, about how often did you feel tired out for no good reason?	5
6.2	In the past 4 weeks, about how often did you feel nervous?	4
6.3	In the past 4 weeks, about how often did you feel so nervous that nothing could calm you down?	4
6.4	In the past 4 weeks, about how often did you feel hopeless?	3
6.5	In the past 4 weeks, about how often did you feel restless or fidgety?	4
6.6	In the past 4 weeks, about how often did you feel so restless you could not sit still?	3
6.7	In the past 4 weeks, about how often did you feel depressed?	4
6.8	In the past 4 weeks, about how often did you feel that everything was an effort?	2
6.9	In the past 4 weeks, about how often did you feel so sad that nothing could cheer you up?	3
6.10	In the past 4 weeks, about how often did you feel worthless?	3
Total score		**35/50**

His Epworth Sleepiness Scale (ESS) (in the *Safety Critical Worker Health Questionnaire*) score is 16/24. On questioning, he says his wife is worried that he appears to stop breathing at night. He is constantly tired, has no energy and admits that, on a couple of recent occasions, he has 'nodded off' while at the control panel. His body mass index (BMI) is 33.

Epworth Sleepiness Scale

Question		Score
4.1	Have you ever had, or been told by a doctor that you had a sleep disorder, sleep apnoea or narcolepsy?	NO
4.2	Has anyone noticed that your breathing stops or is disrupted by episodes of choking during your sleep?	YES
4.3	How likely are you to doze off or fall asleep in the following situations?	
	4.3.1 Sitting and reading	3
	4.3.2 Watching TV	2
	4.3.3 Sitting, inactive in a public place (e.g. a theatre or meeting)	3
	4.3.4 As a passenger in a car for an hour without a break	2
	4.3.5 Lying down to rest in the afternoon when circumstances permit	2
	4.3.6 Sitting and talking to someone	1
	4.3.7 Sitting quietly after a lunch without alcohol	2
	4.3.8 In a car, while stopped for a few minutes in the traffic	1
Total score		**16/24**

25.2.5 Action

Authorised Health Professional

The Authorised Health Professional diagnoses significant anxiety, mild depression (history and raised K10 ≥ 19) and probable sleep apnoea (i.e. a history of likely apnoeas in bed, and an ESS score ≥ 16). These conditions, undiagnosed and untreated, are incompatible with undertaking train-controlling tasks safely. Serge should be referred for a sleep study, and his general practitioner is contacted to arrange management of his anxiety and depression.

The Authorised Health Professional tells Serge that he has an anxiety state that requires referral to his general practitioner and a probable sleep disorder that requires urgent investigation. The health professional counsels Serge that he is Temporarily Unfit for Duty as a train controller because he probably has 2 conditions that are likely to impair his cognition and his ESS is ≥ 16. He is to be reviewed again in one month after the results are to hand and the anxiety state is treated. He advises Serge that his employer provides a free employee assistance program to workers and their families, and that this might help him with his family difficulties, and that his employer will facilitate obtaining the sleep study.

The Authorised Health Professional contacts Serge's manager immediately by phone because Serge was scheduled to work that evening. He advises that Serge is temporarily unfit for rail safety work (as a train controller), but indicates Serge may be fit for clerical work. He does not provide details of Serge's medical condition, but indicates that Serge will be referred to a specialist and to his general practitioner. The Authorised Health Professional completes the report and wants to review Serge in a month's time. The Authorised Health Professional requests that he be provided with copies of Serge's work performance reports at their next meeting.

Employer

The manager makes immediate changes to the roster and arranges to see Serge to discuss alternative duties. He enters Serge's details into the rail operator's recall system and flags him for review in a month's time.

25.2.6 Action: one month later

Authorised Health Professional

After a month, the sleep specialist report advises that Serge has confirmed sleep apnoea and has had a good response to treatment.

A letter from Serge's general practitioner indicates that Serge has been diagnosed with significant depression. He has been referred to a psychologist and has been commenced on paroxetine, the dose of which has recently been increased to 20 mg. His wife has been referred to Gambler's Anonymous. At this stage, Serge is considered at risk of being impaired by the new dose of anti-depressant while the dose is being stabilised and his response to it being gauged, so he is not yet considered fit to return to Safety Critical Work.

The Authorised Health Professional advises Serge's manager that Serge is not yet ready to return to work as a train controller but is fit for alternate duties. Further review is planned in one month.

25.2.7 Action: one month later—second review

Authorised Health Professional

Serge's treating doctor has advised that Serge is progressing well. The situation at home is improving. His mood has improved and he is stable on 20 mg of paroxetine; he feels more alert and refreshed after sleeping, and has not reported any drowsiness. Serge's work performance reports indicate satisfactory attendance and job performance.

As a result, the Authorised Health Professional is of the opinion that Serge is fit to return to work as a train controller, but intends to monitor his progress by reviewing him in 3 months.

Employer

The employer notes the report results and flags Serge for a triggered assessment in 3 months. He arranges for Serge to return to work as a train controller.

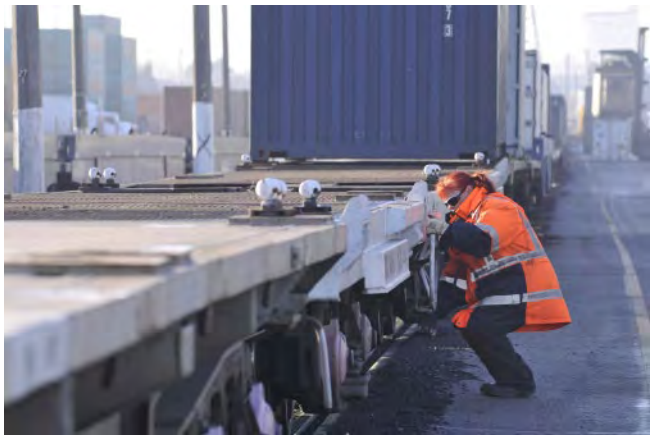
25.3 Case Study 3: Shunter presenting for periodic health assessment

25.3.1 Presentation

Jack is a 48-year old shunter who attends for his Periodic Safety Critical Worker (Category 2) Health Assessment. He works a 24-hour, 7-day a week shift roster. His last assessment 5 years ago reported him fit for duty.

25.3.2 Shunting task description and health requirements

Shunters are the eyes of the driver who may be hundreds of metres away; communication may be by radio



Shunters open and close coupling mechanisms

Disclaimer:The person(s) depicted in these photographs are for illustration only. The case studies, including names given, are entirely fictional.

Activities and working conditions	Health attributes
Shunting work occurs in freight rail yards, and involves marshalling the trucks or carriages that make up a train. A rake of trucks may be hundreds of metres long, and may contain dangerous goods. The shunter works as a team with the driver of the engine and sometimes a signalman, using radio communication. The shunter acts as the eyes of the driver and controls precise shunting. The work involves: • boarding/alighting from trucks and carriages, and walking extensively over uneven ballast • opening and closing coupling mechanisms • applying or releasing brakes to carriages and trucks • reading colour signals and flags, but at lower speeds than train drivers • using spoken and hand signals to communicate during shunting movements • coupling air compression lines.	**Health attributes relating to the safety of the rail network:** • good physical and psychological health to maintain vigilance when performing shunting activities • musculoskeletal strength and agility to walk/run on uneven surfaces; apply or release brakes to carriages and trucks; board/alight from carriages; and couple air compression lines (which requires bending in restricted spaces) • the ability to communicate via signal phones, radios and at a distance to a work group • the ability to determine colour signals, and use coloured flags and lanterns; time is flexible because movements are at low speed. **Health attributes relating to the safety of the worker:** • the ability to integrate visual, sound and vibration cues to detect an oncoming train, and the physical mobility to move quickly out of the road of an approaching train • good visual fields to see out of the corners of the eyes, as well as far-distance (rather than reading-distance) sight to see train movement • the ability to work at all times of day and night in all types of weather and ground conditions—especially walking distances on ballast.

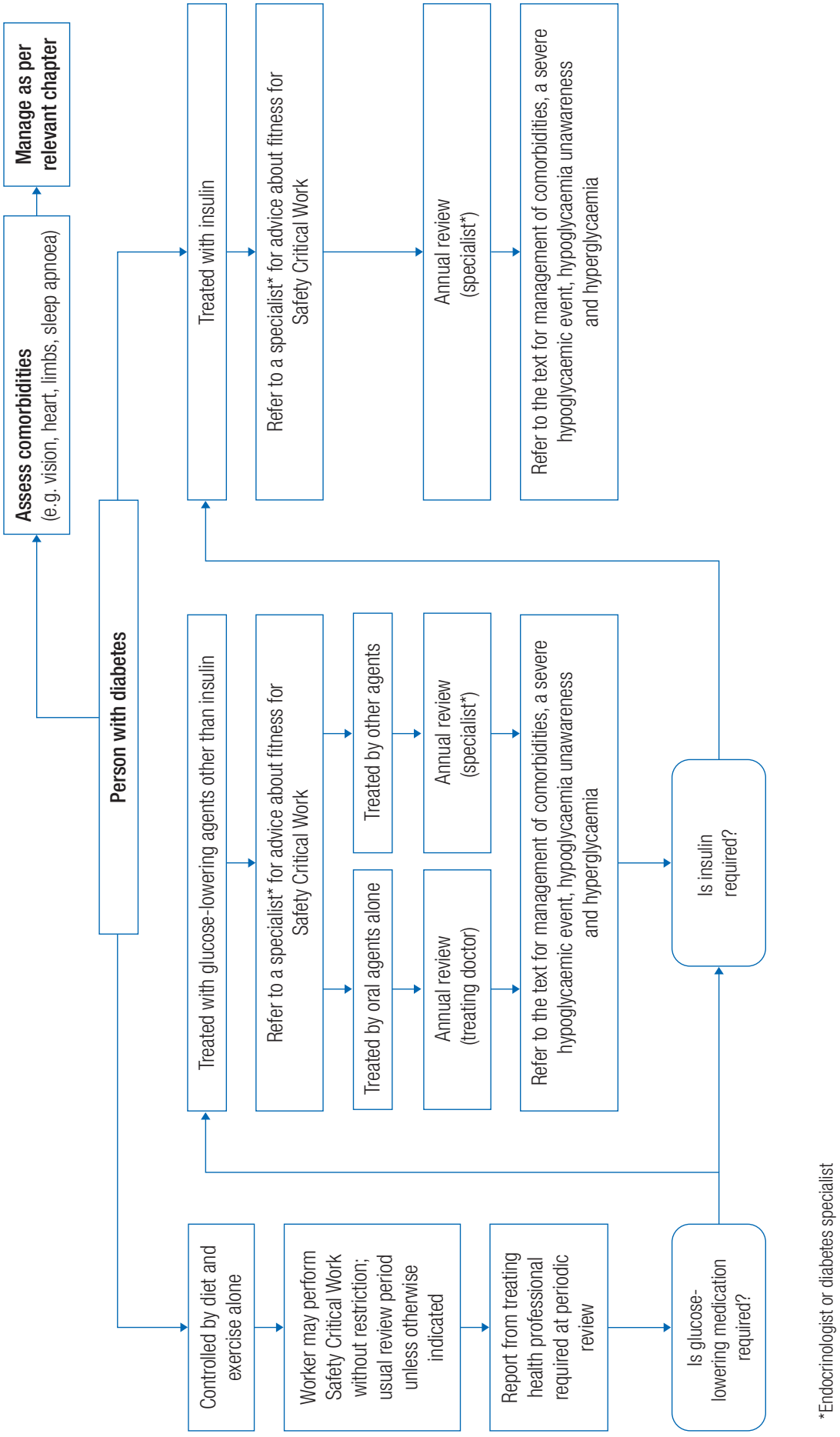
25.3.3 Documentation

- *Safety Critical Worker Health Questionnaire* (completed by Jack)
- *Safety Critical Worker Health Assessment Request and Report Form* (completed by Jack's employer)
- *Report of Previous Health Assessment* ('Fit all duties' provided by employer)
- *Safety Critical Worker Health Assessment Record* (provided by employer for completion by the Authorised Health Professional)
- Audiometry Results forwarded by provider.

25.3.4 Assessment

At the health assessment, the Authorised Health Professional notes that Jack states he was recently diagnosed with 'mild diabetes' (type 2) by his general practitioner and is being treated with diet, exercise and weight loss. On examination, he has no evidence of comorbidities related to diabetes that will affect Category 2 work (e.g. his vision, health of his feet, his Epworth Sleepiness Score is 14, and his BMI is 32). His cardiac risk does not need to be assessed because he is a Category 2 Safety Critical Worker.

Figure 32 **Management of diabetes and Safety Critical Work**



*Endocrinologist or diabetes specialist

25.3.5 Action

Authorised Health Professional

The Authorised Health Professional diagnoses that Jack has Type 2 diabetes mellitus without complications at present.

With Jack's agreement, the Authorised Health Professional contacts Jack's general practitioner. He learns that Jack was diagnosed on the basis of a random blood glucose of 12.8 and a fasting one of 8.4 mmol/L, and a glycated haemoglobin (HbA1c) of 7.4%. Initially, the general practitioner has decided to treat Jack with diet, exercise (walking the dog) and weight loss. He has referred him to a diabetes educator and a dietician, and Jack has purchased a glucose meter. The Authorised Health Professional explains to the general practitioner that Jack is a shunter (Category 2 Safety Critical Worker) and the effects that poor glucose control could have on his job performance. He requests that he be advised if Jack begins diabetes medication because of concerns about being hypoglycaemic. He also alerts the general practitioner to the fact that Jack works shifts and this should be considered when discussing his diet.

The Authorised Health Professional advises Jack that he is 'Fit for Duty Subject to Review' and he will be reviewed at the usual periodic review time. He completes the report form advising the employer of this and that review is scheduled at the usual periodic review time (age 50).

Employer

The employer records the details of the recommendations and schedules review at the usual periodic review time (age 50).

25.3.6 Action: 12 months later

Authorised Health Professional

Jack presents to the Authorised Health Professional at the instigation of his general practitioner, who recalled the request to be advised of the introduction of diabetes medication (i.e. a triggered referral). Jack has had poor control of his blood glucose over the last 12 months with levels ranging from 10—18 mmol/L and his last HbA1c was 9.8%. Jack has gained 8 kg is feeling tired and lacking energy, and admits that he has not stuck to his diet or walking program. A month ago Jack started metformin (1 g) twice daily, and was encouraged to see the dietician and diabetes educator again.

The Authorised Health Professional arranges for Jack to see a diabetes specialist but, in the absence of appreciable risk of being hypoglycaemic from metformin or comorbidities, classifies him as Fit for Duty Subject to Review and advises his management accordingly. The specialist sees Jack 1 month later and reports that his blood glucose is now well controlled with no symptoms of hypoglycaemia, his HbA1c has reduced to 8.8%, and he has no signs of comorbidities (vision, heart, feet and sleep apnoea). The specialist is agreeable to future reviews being conducted by the Authorised Health Professional and general practitioner. Because there are no side effects from the medication, the Authorised Health Professional is satisfied that Jack may continue Safety Critical Work but also advises him of the symptoms of hypoglycaemia (despite the low risk with metformin alone), the need to carry sugar and to report any deterioration of his condition, and emphasises the importance of regularly attending his general practitioner and review of his HbA1c.

Review is recommended every 12 months. The general practitioner will review Jack every 3 months, and provide information regarding Jack's diabetic control at his 12-month review with the Authorised Health Professional. This annual review will concentrate on the control of his blood glucose and any comorbidities relevant to his work as a shunter. Jack will be required to produce a record of his blood glucose levels and will need to have an HbA1c test before the review appointment. Jack is advised of this. The recommendation Fit for Duty Subject to Review is completed and sent to the employer.

Employer

The employer records the details of the recommendations and arranges a review assessment with the Authorised Health Professional in 12 months, and for all relevant tests to be done one week before the review.

25.3.7 Action: 24 months later

Authorised Health Professional

Jack has had poor diabetic control during the last year. The general practitioner advises that sulphonylurea and other oral agents were prescribed, but Jack's blood glucose levels have been in the range of 8—14 mmol/L and his HbA1c has usually exceeded 8%. The general practitioner advises that they intend to start Jack on insulin at bedtime. He is referred to a diabetes specialist. He is classed as Temporarily Unfit for Duty while he is being stabilised on insulin; this is explained to Jack and his management is notified.

Jack sees the diabetes specialist who starts him on 10 units of Insulin Glargine (Lantis) before bed. He also sees the diabetes educator. After the diabetes specialist is satisfied that Jack's glucose control has improved, Jack is permitted to resume work. (A continuous glucose monitoring [CGM] device may be considered to help assess stability of control.) The specialist has titrated the Lantus to 28 units at bedtime. Jack, the Authorised Health Professional and the general practitioner have been advised by the specialist that Jack's target blood glucose ranges are 6–8 mmol/L fasting and before meals, and 6–10 mmol/L 2 hours after meals, and he is aiming for an HbA1c of 7 to 8%. The specialist notes that these targets are clinically appropriate to balance Jack's diabetes-related complication risk with the safety demanded in his occupation. With good self-management, this minimises the risk of hypoglycaemia. Initially, the Authorised Health Professional recommends to management that Jack work only day shifts (fit subject to job modification), so he can become confident in managing his diabetes before working all shifts.

Jack is advised to take appropriate precautionary steps to help avoid a severe hypoglycaemic event both at work, and driving to and from work by:

- checking his blood glucose before driving and at work, and not driving or working if his blood glucose is < 5 mmol/L
- not working for more than two hours without considering having a snack
- not delaying or missing a main meal
- self-monitoring blood glucose levels before working and every 2 hours as reasonably practical
- carrying adequate glucose (e.g. jelly beans) for self-treatment
- treating mild hypoglycaemia if symptoms occur while working, including
  - ceasing work as practical
  - self-treating the low blood glucose
  - checking the blood glucose levels 15 minutes or more after the hypoglycaemia has been treated and ensuring it is > 5 mmol/L
  - not recommencing working until feeling well and at least 30 minutes after the blood glucose is > 5 mmol/L.

Jack is told to request a triggered assessment if his condition deteriorates or his treatment changes.

During the next few weeks, Jack shows he has satisfactory glucose control and he is permitted to resume his usual shift roster. The diabetes educator advises Jack on how to manage his insulin and diet with his roster times. The Authorised Health Professional classifies Jack as Fit for Duty Subject to Review in 6 months to see how he is coping (Jack will see the specialist in diabetes annually). He advises Jack, his management and the general practitioner of this. Jack will be required to produce a record of his blood glucose levels and will need to have an HbA1c test before the review appointment. Jack is also advised of this.

Employer

The employer records the details of the recommendations and arranges a review assessment with the Authorised Health Professional in six months.

25.4 Case study 4: Flagman presenting for triggered health assessment

25.4.1 Presentation

Alex is a 35-year-old flagman who has been referred for a triggered health assessment due to a 'funny turn' at work. Alex had his last periodic Safety Critical Worker (Category 1) health assessment 3 years ago, at which he was reported as Fit for Duty. This is a triggered referral from management.

25.4.2 Task description and health requirements

An outer flagman places detonators on a track

Disclaimer:The person(s) depicted in these photographs are for illustration only. The case studies, including names given, are entirely fictional.

Activities and working conditions	Health attributes
Outer flagman An outer flagman positioned at 2000 metres from the obstruction (construction site) in country areas (1200 metres in metropolitan areas) places 3 audible track warning devices (ATWs, or detonators) 10 metres apart on the track and, while positioned at least 40 metres from the ATWs, displays a 'caution' signal to train drivers. (On hearing these ATWs, the driver of an approaching train is required to bring the train under control and be prepared to stop at the next hand signal location.) After passage of a train, the outer flagman quickly replaces the ATWs and resumes display of the 'caution' signal in preparation for the next train. During periods of heavy traffic, particularly in metropolitan areas, trains could be only a few minutes apart. The outer flagman is also required to remove the ATWs from the track when directed by the site safe-working coordinator to allow passage of a train from the other direction or at the end of the required protection period. An outer flagman may be required to operate alone in isolated locations for extended periods. **Inner flagman** An inner flagman, positioned at 200 metres from the obstruction, displays a 'stop' signal unless directed otherwise by the site safe-working coordinator. The inner flagman must be positioned so that he can be seen clearly by the driver of an approaching train (who should be travelling at reduced speed expecting to stop) and be clearly visible from the worksite. Where both conditions cannot be achieved, additional intermediate flagmen may be positioned to ensure the required visibility in both directions. The site safe-working coordinator normally has radio or mobile phone contact with all the outlying members of the protection party, but other means of communication, such as visual or audible signals, may also be used. Protection-party duties may often be rotated through other suitably qualified members of the site work group to help ensure high levels of vigilance are maintained throughout the protection period.	**Health requirements relating to the safety of the rail system include:** • good physical and psychological health to maintain vigilance to detect and respond appropriately to train movements • adequate visual acuity to be able to see distances to detect train movement • normal colour vision to distinguish red and green signals, and operate flags (but time is flexible) • adequate hearing and speech to be able to communicate via signal phones and radios, and at a distance to a workgroup. **Health requirements relating to the safety of the rail worker include:** • the ability to integrate visual, sound and vibration cues to detect an oncoming train • physical mobility to move quickly out of the way of an approaching train and move quickly to reset ATW • adequate visual fields to see out of the corners of the eyes, as well as far-distance (rather than reading-distance) sight to see train movement • the ability to work at all times of day and night in all types of weather and ground conditions—especially walking distances on ballast (uneven ground). They are also required to stand for long periods of time.

25.4.3 Documentation

- *Safety Critical Worker Health Questionnaire* (completed by Alex)
- *Safety Critical Worker Health Assessment Request and Report Form* (completed by Alex's employer and indicating a triggered health assessment)
- *Report of Previous Health Assessment* (provided by employer)
- *Safety Critical Worker Health Assessment Record* (provided by employer for completion by health professional).

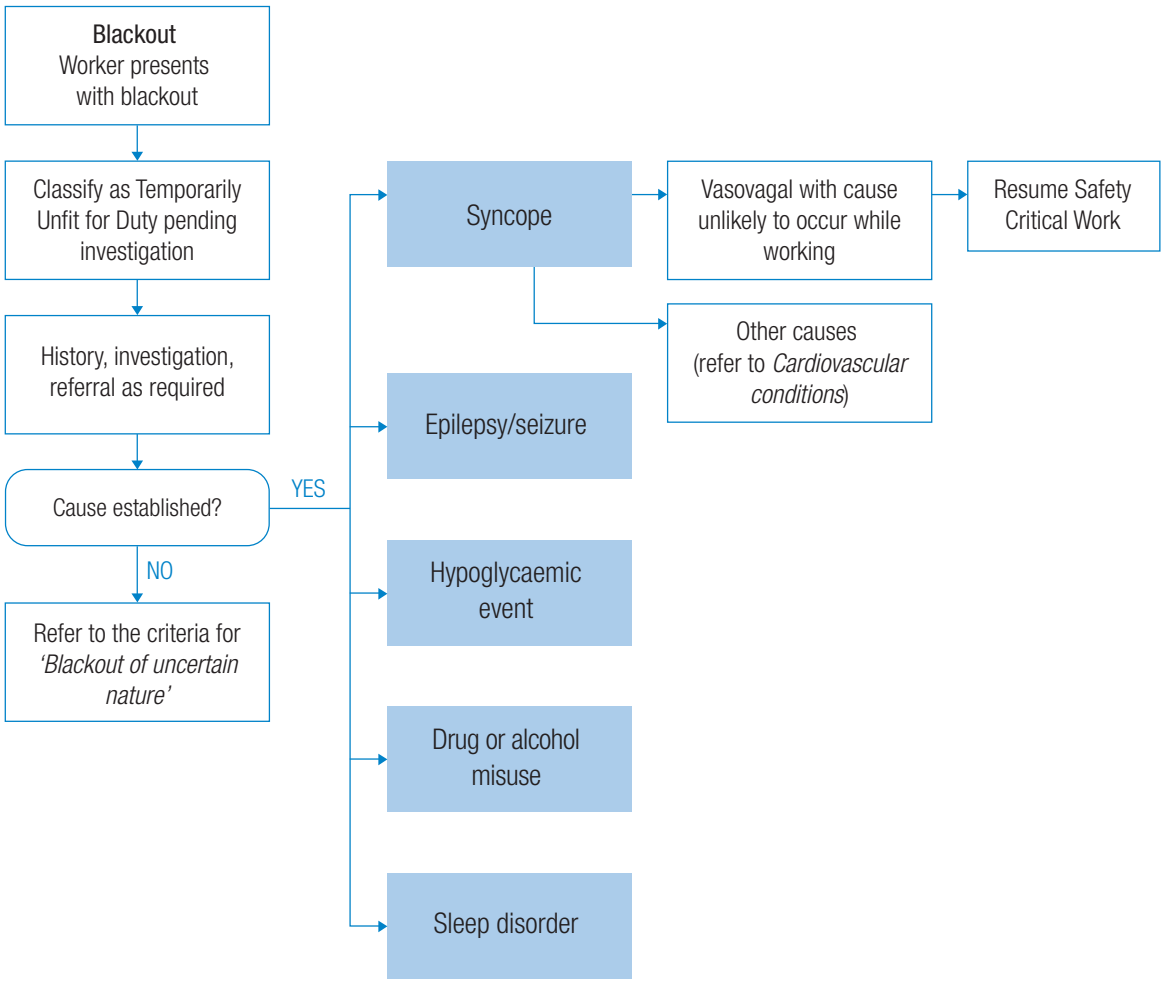
25.4.4 Assessment

Alex advises the Authorised Health Professional that he has had 3 'funny turns' during the past 2 years, including a recent one at work after which he woke up on the ground. He has not been investigated or treated for these episodes. He states he gets no warning and cannot recall what happens. He thinks he is 'out of it' for a few minutes. Alex cannot recall any injury or symptom, such as bitten tongue or incontinence, and he is just a 'bit sore' in general when he recovers. He had a head injury 5 years ago (a fractured skull) from a motorbike incident. He has no neurological or cardiac symptoms. At his previous periodic health assessment, his cardiac risk assessment was acceptable, the ECG normal and the AUDIT score was low.

Clinical examination is essentially normal.

The flow chart for managing blackouts is applied (refer to Section 18.1 Blackouts).

Figure 33 **Management of blackouts and Safety Critical Work**



25.4.5 Action

Authorised Health Professional

Alex has blackouts due to an unknown cause; this is not compatible with Safety Critical Work. The Authorised Health Professional considers a wide range of disorders that may cause blackouts. If drug abuse is suspected, the health professional may contact the employer, who may request Alex to take a urine test for drugs. Otherwise, Alex would be referred to his general practitioner for investigation, or the matter discussed with the general practitioner and investigations started by mutual agreement. The safety-critical nature of his job would be emphasised to the general practitioner and to any specialist subsequently involved.

The Authorised Health Professional considers a medical cause is likely, and discusses his concerns with Alex and the need to see his general practitioner. He advises Alex that he is assessed as Temporarily Unfit for Duty and will see him once results of investigations have arrived. The health professional may also ask the employer if any of Alex's workmates saw his turns and whether they can give any more information (the last was not witnessed because he was the outer flagman).

The Authorised Health Professional phones Alex's supervisor to indicate that he is Temporarily Unfit for Duty pending further investigation. The specifics of Alex's condition are not discussed, but the health professional indicates that Alex has been referred to his general practitioner and may require specialist referral. He completes the report form and forwards it to the employer, advising that Alex is Temporarily Unfit for Duty, but may perform Non-Safety Critical Work (where he can be seen by others if he becomes unwell). The report indicates that Alex will be reviewed in one month.

Employer

The manager records the requirement for review in one month, as well as Alex's work restrictions. He is able to provide Alex with temporary non–safety critical alternative employment working in a controlled environment with a buddy around the track on infrastructure work.

General practitioner and specialist

Alex sees his general practitioner and undergoes initial blood tests and a resting ECG. Because of his past head injury, a possible neurological cause of the condition needs to be excluded. He is referred to a neurologist. Results from the neurologist's assessment indicate that Alex has epilepsy. Medication is prescribed by the specialist and a report forwarded to the Authorised Health Professional.

25.4.6 Action: one month later

Authorised Health Professional

It is important that the worker's specific epilepsy syndrome and seizure types are identified so that an adequate evaluation of his safety can be undertaken (including the risk of further seizures) and the appropriate therapy instituted. A full report will be required from the treating neurologist to assist in determining Alex's long-term employment options. He should be managed as per the default standard for epilepsy because he has had 3 seizures (funny turns).

On review of the specialist report, the Authorised Health Professional advises Alex that he is unfit to resume his high-level Safety Critical Work as a flagman. His employer is advised that this is a long-term restriction. Alex could work in maintenance work or other duties provided it is in a controlled environment, or if he is accompanied by others while working around the track.

Employer

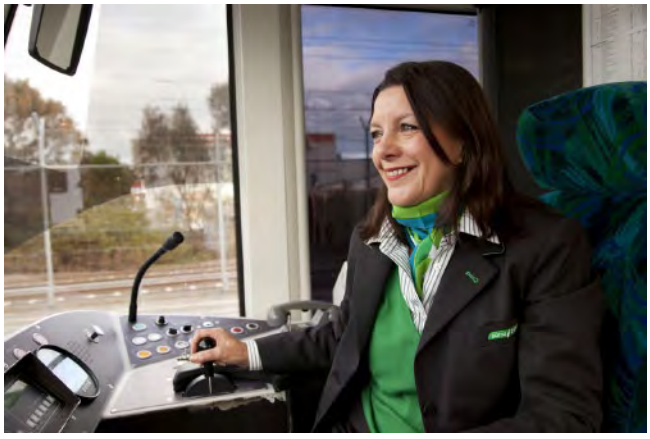
Alex's manager records this information and ensures Alex is not placed in Safety Critical Work. Alex is no longer a Safety Critical Worker or an Around the Track Personnel (ATTP) who works in an uncontrolled environment. As a result he is not scheduled for any regular health assessments in future. If Alex's epilepsy becomes stabilised during the next few years, his job restrictions may be reviewed in conjunction with a specialist report, particularly if he wishes to work as an ATTP in an uncontrolled environment. However, he will be able to return to high-level Safety Critical Work only if he has no seizures for at least 10 years.

25.5 Case study 5: Tram driver presenting for a triggered health assessment

25.5.1 Presentation

Lee is a 35-year-old tram driver who has been referred for a triggered health assessment due to increasingly unusual behaviour at work. It is known to the company medical officer that Lee has a history of bipolar disorder, but has been stable for some considerable time on medication (valproate).

25.5.2 Description and health requirements



Tram drivers usually control the tram by using a console of buttons and switches, plus hand levers and foot pedals

Trams travel on busy roadways

Disclaimer:The person(s) depicted in these photographs are for illustration only. The case studies, including names given, are entirely fictional.

Activities and working conditions	Health attributes
A tram driver is required only to drive the tram. Conductors dispense tickets on this particular network. Drivers may be required to operate several types of trams that differ (e.g. types of controls and vigilance systems). The driver usually controls the tram by using a console of buttons and switches, plus hand levers and foot pedals. There may also be side mirrors and video to aid internal and external views. The driver is required to undertake continuous skilled driving to meet a timetable. The main stress on the driver is the need to drive defensively in road traffic because a tram can only brake; it is not possible to take avoidance. In the case of an emergency or other incident, the driver is required to get out of the tram and act to protect the safety of the network. The road is usually predictable and well lit.	**Health requirements relating to the safety of the rail system include:** • good physical and psychological health to maintain vigilance when driving to protect the safety of the rail network • adequate level of fitness and dexterity to be able to get out onto the road in the case of an emergency • good visual acuity and visual fields to ensure safe operation of the tram. Normal colour perception is not regarded as essential for tram drivers. They are similar to commercial vehicle drivers who do not require red vision because red traffic lights give positional cues. Also, trams are usually on a well-lit road, which enables detection of emergency signs. **Health requirements relating to the safety of the rail worker:** Covered above.

25.5.3 Documentation

- *Safety Critical Worker Health Assessment Request and Report Form* (completed by Lee's employer and indicating a triggered health assessment)
- *Report of Previous Health Assessment* (provided by employer)
- *Safety Critical Worker Health Assessment Record* (provided by employer for completion by the Authorised Health Professional).

25.5.4 Assessment

A discussion with Lee reveals obvious paranoid ideation and mood elevation. This is similar to previous episodes that have occurred in the past. Lee denies substance misuse (and a drug screen is negative). The Authorised Health Professional assesses that Lee is bordering on psychosis associated with his bipolar disorder.

25.5.5 Action

Authorised Health Professional

Lee is temporarily unfit for rail safety work pending review by his general practitioner and a psychiatrist. After explanation to Lee and with his consent, the health professional contacts Lee's general practitioner by phone to arrange an urgent appointment. He also faxes a referral letter to the general practitioner requesting feedback on Lee's progress.

The Authorised Health Professional also phones Lee's supervisor to inform him of the situation with respect to Lee's fitness for duty, but does not discuss specific clinical details. He also informs the supervisor that Lee will not be fit to drive trams for a significant period of time, although he may be fit for alternative duties and that further review before return to work is indicated. The health professional completes the health assessment report and forwards it to the supervisor. The health professional indicates that he will review Lee in 8 weeks.

Employer

The employer notes the recommendations and flags Lee for review in 8 weeks.

25.5.6 Action: eight weeks later

Lee's treating specialist forwards a report to the Authorised Health Professional recommending that Lee could be fit to return to work in some capacity. He reports that Lee has responded well to treatment, is compliant with medication and has no side effects from his new treatment regime (lithium).

Authorised Health Professional

At review, the Authorised Health Professional advises Lee that, due to the nature of his condition, it will be a significant period of time before he will be able to resume his driving duties, but he would be able to return to work as a conductor (the tram operation in question has conductors). Arrangements are made for further review at 6 and 9 months with further feedback from the treating specialist. It is explained to Lee that he may be able to return to driving duties thereafter if he remains stable.

The Authorised Health Professional advises the employer that Lee remains unfit to drive trams but that he could return to conductor duties, and that further review is planned at 6 and 9 months with a view to possibly returning to driving duties thereafter. The Authorised Health Professional requests he be provided with copies of Lee's work performance reports at the next meeting.

Employer

The employer notes the recommendations and confirms that conductor duties can be arranged.

25.5.7 Action: six months later

The treating specialist has indicated that Lee continues to be well and remains compliant with treatment. Lee's work performance reports indicate satisfactory attendance and job performance.

The Authorised Health Professional advises the employer that Lee is stable but will need to remain stable for a further 3 months before resuming driving duties, but that he may continue alternative duties as a conductor.

25.5.8 Action: nine months later

The treating specialist again advises that Lee remains psychologically well, compliant and free from any medication side effects. His work performance reports are also satisfactory.

Authorised Health Professional

The Authorised Health Professional advises Lee and his employer that he is fit to resume his full duties, including tram driving, but that he will be required to have medical review every 3 months for at least a year. The health professional recommends a practical driving assessment with an experienced driver before clearance to drive.

Employer

The employer records that Lee is to have triggered reviews every 3 months and arranges a practical driving assessment before recommencing him on normal driving duties.

26 Transition arrangements

26.1 Purpose of this section

This section sets out how it is intended that this Standard is to take effect.

26.2 Definitions

In this section, the *commencement date* is 20 January 2013 [This is the date this Standard takes effect – see section 1.2].

In this section, the *former Standard* is the *National Standard for Health Assessment of Rail Safety Workers*, June 2004.

26.3 Assessments generally

All health assessments conducted after the commencement date should be conducted in line with the health assessment procedures and medical criteria contained in this Standard.

26.4 Periodic health assessments

All periodic health assessments should be scheduled in line with the frequency provisions of this Standard. (It is noted that none of the 2012 changes have altered the frequency of periodic health assessments—they have merely provided greater clarity for the situation where workers approach the age of 50 or 60, and the frequency of assessments increases.)

For the purposes of this Standard, a periodic health assessment conducted before the commencement date remains valid—it is not necessary to redo any such assessment merely because of the introduction of this Standard.

With respect to section 18.6 (Sleep disorders), a worker should only be assessed in accordance with that section as part of the worker's next scheduled health assessment, unless the worker has a history of self-reported sleepiness, is observed to be sleepy at work, or is involved in an incident that could be plausibly explained by sleepiness or lack of alertness. It is not intended that a health assessment of a worker be triggered before that scheduled health assessment simply because the worker has a raised BMI, or BMI-related, risk factor referred to in that section.

26.5 Requirements for meeting the new hearing standard

Existing employees with hearing impairment who were assessed under the former Standard, and who passed a practical test and have been working safely, may continue performing their duties unless their hearing deteriorates further. In such a situation they must be assessed against this Standard (refer to Section 19.1, Hearing).

26.6 Requirements for meeting the new colour vision standard

Workers who were previously assessed by a rail transport operator under the former Standard using a practical test, and who have been working safely, may continue to perform their duties. However, if such a worker applies for a position with different colour vision demands or if the colour vision demands of the role change, they should be assessed against this Standard (refer to Section 19.2, Vision and eye disorders).

26.7 References to the National Rail Safety Law

Before the National Rail Safety Law takes effect in any particular instance, a reference to that Law in this Standard is to be read as a reference to the relevant rail safety law that applies to the relevant circumstances.

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www.ntc.gov.au

National Transport Commission
Level 15/628 Bourke Street
MELBOURNE VIC 3000
Ph: +61 3 9236 5000
Fax: +61 3 9642 8922
enquiries@ntc.gov.au
www.ntc.gov.au

NTC AUSTRALIA