

CS Health

NSW Coal Industry Cardiovascular Health Standard



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Foreword

The New South Wales (NSW) health surveillance scheme for coal mine workers plays a crucial role in safeguarding the health and safety of individuals working in the industry. It identifies occupational, environmental and other health issues that may impact a coal mine worker's ability to perform their duties safely and effectively.

The NSW Coal Industry Cardiovascular Health Standard (this Standard) is the second in a series of health standards developed specifically for the NSW coal industry. These health standards are designed to ensure coal mine workers with identified health conditions receive the necessary monitoring and support to maintain their health. Additionally, the health standards outline the roles and responsibilities of coal mine workers, employers and clinicians in maintaining a system for protecting occupational and environmental health.

Drawing on best practice, the NSW Coal Industry Cardiovascular Health Standard provides guidance to approved medical practitioners, helping them make consistent, evidence-based clinical decisions related to cardiovascular health. This Standard specifies the investigations and follow-up actions required when assessing a coal mine worker's cardiovascular health and risk of cardiovascular disease.

We extend our gratitude to the Coal Services Standing Health Committee and Associate Professor James Otton for their efforts in developing this Standard, in collaboration with industry stakeholders and relevant medical specialists.



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Contents

Foreword	iii
Abbreviations and acronyms	vii
Glossary	viii
Introduction	1
Coal Services	1
Role of Coal Services	1
Health surveillance scheme for NSW coal mine workers	2
Scope	2
Background	3
NSW Coal Industry Health Standards	3
What are NSW Coal Industry Health Standards?	3
Benefits of NSW Coal Industry Health Standards	3
Evidence base	4
Risk category guidelines	4
Risk categories	4
Table 1: Coal mine worker risk categories	5
Cardiovascular Health Standard	6
Purpose of the Cardiovascular Health Standard	6
Cardiovascular disease	6
Obesity	6
Hypertension	7
Hypercholesterolemia	7
Smoking	8
Cardiovascular conditions	8
Environmental conditions	8
Duties and accountabilities	9
Duties and accountabilities associated with implementing the requirements of this Standard	9
Approved medical practitioner	9
Cardiologist	9
Coal mine worker	9
Coal Services	9
General practitioner or treating doctor	9
Person conducting business or undertaking	10

NSW Coal Industry Health Standard review and feedback process	10
Health assessment components	11
Cardiovascular assessments and investigations	11
Routine cardiovascular investigations	11
Secondary investigations	11
Incidentally detected coronary artery calcification	12
Calculating and reporting coronary artery calcification	12
Clinical implications	12
Guidelines for medical management	13
Medical management tables	13
Table 2: Medical management—Cardiovascular risk	15
Cardiovascular disease (CVD) risk score	15
Table 3: Medical management—Cardiovascular conditions	18
Ischaemic heart disease	18
Acute myocardial infarction (AMI)	19
Angina and myocardial ischaemia	20
Coronary artery bypass grafting (CABG)	21
Percutaneous coronary intervention (PCI) e.g. angioplasty/stent	22
Disorders of rate, rhythm and conduction	23
Atrial fibrillation	24
Paroxysmal arrhythmias	25
Cardiac arrest	26
Cardiac pacemaker	27
Implantable cardioverter defibrillator (ICD)	28
ECG changes	29
Vascular disease	30
Aneurysms – aortic, abdominal and thoracic	31
Deep vein thrombosis (DVT)	31
Pulmonary embolism (PE)	31
Valvular heart disease	32
Other cardiovascular diseases	33
Long-term anticoagulant therapy	34
Congenital disorders	35
Myocardial diseases	36
Dilated cardiomyopathy	36
Hypertrophic cardiomyopathy	37
Heart failure	38
Heart transplant	39
Ventricular assist devices	40

Hypertension	41
Syncope	44
Table 4: Medical management—Other conditions	45
Obesity	45
Clinical Pathways	47
Figure 1: Cardiovascular disease (CVD) risk score pathway	47
Figure 2: Hypertension management pathway	48
Figure 3: Body mass index (BMI) and weight management pathway	49
Considerations for certifying fitness for work	50
Transitional arrangements	51
Appendices	52
Appendix A: Cardiovascular risk management guidelines for the NSW Coal Industry (2019)	52
References	54

Abbreviations and acronyms

AMI	Acute myocardial infarction
AMP	Approved medical practitioner
BMI	Body mass index
CABG	Coronary artery bypass grafting
CAC	Coronary artery calcification
CPAP	Continuous positive airway pressure
CS Health	Coal Services Health
CT	Computed tomography
CTCA	Computerised tomography coronary angiogram
CVD	Cardiovascular disease
DVT	Deep vein thrombosis
ECG	Electrocardiogram
ECHO	Echocardiogram
GP	General practitioner
ICD	Implantable cardioverter defibrillator
PCBU	Person conducting a business or undertaking
PCI	Percutaneous coronary intervention
PE	Pulmonary embolism
VAD	Ventricular assist device

Glossary

Term	Definition
Acute myocardial infarction (AMI)	Commonly known as heart attack, occurs when one or more of the arteries supplying blood to the heart become blocked, limiting oxygen supply and causing death or injury to the heart muscle.
Angina	A temporary chest pain or discomfort which occurs when the heart doesn't get enough blood and oxygen. It is typically a symptom of an underlying heart problem, usually due to narrowed or blocked coronary arteries.
Approved medical practitioner (AMP)	A medical practitioner who is registered by the AHPRA to practise medicine in Australia, complies with the Clinical and Service Standard, and is approved by Coal Services to undertake Order 43 health assessments.
Arrhythmia	A heart condition where the heart beats abnormally, either too quickly, too slowly or irregularly. It usually happens because of a problem with the electrical signals that control how your heart beats.
Australian Health Practitioner Regulation Agency (AHPRA)	Australia's national regulator of registered health professionals. AHPRA works in partnership with the National Boards to ensure that Australia's registered health practitioners are suitably trained, qualified and safe to practise.
Body mass index (BMI)	An internationally recognised standard to classify the body weight of adults. It is used as a general indicator of whether someone is underweight, normal weight, overweight, or obese. It is calculated by dividing weight in kilograms by height in metres squared.
Cardiac arrest	Where the heart stops beating, stopping blood flow to the brain and body. It is usually caused by an electrical problem with the heart, whereas an acute myocardial infarction (heart attack) is caused by a blockage in the blood vessels that supply the heart.
Cardiologist	A person who AHPRA registers as a specialist medical practitioner in the field of cardiology.
Cardiomyopathy	A condition in which the heart muscle becomes inflamed and enlarged, causing it to stretch and weaken which impairs its ability to pump blood effectively to the rest of the body.
Cardiovascular risk score	The score is calculated using the Australian Guideline and calculator for assessing and managing cardiovascular disease risk. The score estimates the probability of a cardiovascular event occurring within the next 5-year period. It also assists in identifying workers at risk of sudden incapacity.
Category A: Safety critical	A coal mine worker or prospective coal mine worker whose immediate action or inaction from an unavoidable and/or sudden medical incapacity may lead directly to a serious incident affecting others in the workplace.
Category B: Safety sensitive	A coal mine worker or prospective coal mine worker whose immediate action or inaction from an unavoidable and/or sudden medical incapacity may lead directly to a serious incident affecting themselves and is not likely to affect others in the workplace.
Category C: Non-safety sensitive	A coal mine worker or prospective coal mine worker whose immediate action or inaction from an unavoidable and/or sudden medical incapacity will not lead to a serious incident affecting others in the workplace and their work environment will not contribute adversely to the outcome.
Chest pain	Chest pain includes, but is not limited to, heaviness, pain, ache, discomfort or any other sensation relating to the chest that is not usual to the coal mine worker.

Term	Definition
Clinical and Services Standard	The Clinical and Service Standard developed and approved by Coal Services, as amended from time to time or replaced. The Clinical and Service Standard outlines the training and requirements for approved health professionals and AMPs to conduct health assessments, health assessment reviews, and retirement health assessments.
Continuous positive airway pressure (CPAP)	A device that provides continuous positive airway pressure during sleep or at rest, to aid in airway patency. It is used to treat obstructive sleep apnoea.
Coal mine worker	A person who carries out work at a coal mine or a coal handling preparation plant for a PCBU. It does not include a person who works in an environment in which they are not exposed to airborne contaminants, hazardous chemicals, and/or occupational noise unless the person has previously worked in an area of a coal mine or coal handling preparation plant in which they were exposed to airborne contaminants, hazardous chemicals, and/or occupational noise.
Computed tomography (CT) scan	A medical imaging technique that uses x-rays and computer technology to create detailed internal images which assist in the diagnosis of disease or injury.
Coronary artery bypass grafting (CABG)	A surgical procedure performed to bypass blocked or narrowed coronary arteries using healthy blood vessels from elsewhere in the body to improve blood flow to the heart.
Echocardiogram (ECHO)	An ultrasound of the heart which uses sound waves to create medical images to assist in diagnosing heart conditions.
Electrocardiogram (ECG)	A simple, non-invasive test that records the electrical activity of the heart.
Exercise testing	An exercise test assesses how the heart responds to physical exertion by monitoring heart rate, rhythm, blood pressure and overall response to increasing exercise intensity.
Fitness for work	The term 'fitness' in the specialty of occupational medicine refers to a health risk assessment under NSW's Work Health and Safety framework. A fitness for work assessment means the assessment of a coal mine worker's medical capacity to work, as integrated with the foreseeable risk to health and/or safety at work from that worker's use of said capacity. A risk to health means a risk of harming the coal mine worker and/or other person/s relevant to said worker's work. An individual is fit to work when that individual's clinical state (both physically and psychologically) permits that individual to perform tasks that a PCBU assigns to them in a way that is competent, effective, consistent, and operationally sustainable, and in a manner that does not compromise the safety and health of themselves or others.
General practitioner (GP)	A medical doctor who holds specialist registration with AHPRA as a general practitioner and provides primary healthcare services, diagnosing and treating a wide range of conditions. GPs offer preventive care, manage chronic illnesses, and refer patients to other specialists when needed. They are often the first point of contact for medical concerns and play a key role in patient care.

Term	Definition
Health assessment	The term ‘health assessment’ replaces the term ‘medical assessment’ as defined in Order 43. It refers to the health examinations of a coal mine worker or prospective coal mine worker that meets certain criteria. The assessment must have been: > completed within the previous three (3) years > assessed against the position and risk category > completed by an AMP > in the form approved by and provided to Coal Services > approved by Coal Services. The reference to three (3) years means by 31 December of that current calendar year.
Health assessment certificate	A certificate issued by an AMP after the completion of a health assessment, health assessment review, or retirement health assessment. The certificate is provided to the PCBU at a coal mine who requested the health assessment, health assessment review, or retirement health assessment.
Health assessment review	A review of health condition(s) identified in a health assessment or a health assessment review of a coal mine worker as a one off or at defined intervals, or a health examination(s), including a deferred health examination(s) that meets certain criteria. The review must have been: > assessed against the position and risk category > completed by an AMP > in the form approved by and provided to Coal Services.
Health certification	A health determination with limited medical information to support the PCBU to create a safe system of work. This is documented on a health assessment certificate by an AMP following the completion of health examinations, and any health assessment reviews which assess the ability of a coal mine worker or prospective coal mine worker to perform the position and risk category.
Myocardial ischaemia	Occurs when the heart muscle (myocardium) doesn’t receive enough oxygen due to a reduced blood supply. If the reduced blood supply is severe or prolonged it can damage the heart muscle, potentially leading to a myocardial infarction (heart attack).
Implantable cardioverter defibrillator (ICD)	A small, battery-powered device implanted under the skin near the heart to detect and correct life-threatening, abnormal heart rhythms (arrhythmias) by delivering electrical shocks when needed.
National Heart Foundation	Refers to the National Heart Foundation of Australia.
Obesity	Is defined as having a BMI equal to or greater than 30 kg/m ² .
Order 43	Refers to the Coal Services Health Monitoring Requirements for Coal Mine Workers Order No. 43 under the <i>Coal Industry Act 2001</i> (NSW).
Percutaneous coronary intervention (PCI)	A minimally invasive procedure used to treat narrowing of the coronary arteries of the heart found in coronary artery disease. The procedure is used to place and deploy coronary stents, a permanent wire-meshed tube, to open narrowed coronary arteries.
Person conducting a business or undertaking (PCBU)	A person who employs, contracts or otherwise engages a coal mine worker to carry out work for the business or undertaking at a coal mine. In this definition, ‘person’ refers not just to a natural person (an individual human) but also to an organisation that is a legal entity (such as, but not just, a company).
Prospective coal mine worker	A person who is seeking to commence work for the first time at a NSW coal mine or coal handling preparation plant for a PCBU. It does not include a person who will work in an environment in which they are not exposed to airborne contaminants, hazardous chemicals, and/or occupational noise.

Term	Definition
Remote work	Has the same meaning as defined in NSW Work Health and Safety Regulation 2017 s 48 i.e. in relation to a worker, it means a worker that is isolated from the assistance of other persons because of location, time or the nature of the work.
Risk category	Means the category of risk determined by the PCBU of a coal mine worker's or prospective coal mine worker's position as one of the following: > Category A: Safety critical > Category B: Safety sensitive > Category C: Non-safety sensitive.
Routine review	Refers to the Order 43 Periodic Health Surveillance interval, which is three (3) yearly.
Serious incident	An incident resulting in the death or permanently incapacitating illness and/or injury of a person.
This Standard	Refers to The NSW Coal Industry Cardiovascular Health Standard.
Ventricular assist device (VAD)	A mechanical pump surgically implanted to assist with pumping blood throughout the body. It is used for individuals with a significantly weakened heart or heart failure where the heart is unable to pump blood effectively.

NSW Coal Industry

Cardiovascular Health Standard

Introduction

Coal Services

Coal Services is a Specialised Health and Safety Scheme proudly protecting the NSW coal industry and its workers for over 100 years.

We offer a comprehensive range of critical services designed to minimise workplace injuries and illnesses.

In collaboration with our industry stakeholders, we are committed to safeguarding the health, safety and wellbeing of workers within the sector by focusing on prevention, early detection, enforcement, and educational initiatives.

Our purpose, vision and values are aligned to focus on the continued safety and health of our industry and its workers.

Our purpose: To protect.

Our vision: To be a valued industry partner promoting a healthy workforce and safe workplaces.

Our values: We care. We work together. We make a difference.

Role of Coal Services

Coal Services' preventative and responsive services in the areas of workplace health and safety, workers' compensation, emergency response and training, help to deliver on our purpose, 'to protect'.

Coal Services operates as a company under the provisions set out in the *Coal Industry Act 2001* (NSW) (the Act) s 9 regarding approved companies. We exercise these functions in accordance with s 10(1) of the Act.

Our statutory responsibilities are defined in the Act, and we are responsible for ensuring these and the various Orders pertaining to it are maintained.

Coal Services' unique collaborative model is like no other in the world. With our purpose, 'to protect' at its centre and enabled by collaboration with all industry stakeholders, the model demonstrates our role in supporting industry to comply with the legislative and regulatory framework that exists in NSW, as well as keeping coal mine workers' health, safety and wellbeing at the forefront of decision making.

The collaborative model and the services provided by our Specialised Health and Safety Scheme have delivered proven results in safeguarding against injury and occupational disease.

Health surveillance scheme for NSW coal mine workers

Under the Act, CS Health is responsible for executing health Orders to monitor the health of NSW coal mine workers for any health effects due to occupational exposures to dust, noise, chemicals, and other workplace hazards.

The health assessments detailed in the Order can also identify other health and lifestyle-related conditions that may impact a coal mine worker's ability to work safely and effectively. An estimation of absolute cardiovascular risk in people without known cardiovascular disease (CVD) is one of the screening tests used for this purpose.

Regular screening provides an opportunity to identify occupational and non-occupational diseases early, often before symptoms manifest. This provides greater scope for effective treatments and preventative measures to keep coal mine workers safe.

The health surveillance scheme also helps NSW coal industry employers fulfil their health and safety obligations to protect the health and wellbeing of their workforce.

CS Health provides dedicated support to industry and approved medical practitioners for Order compliance through various channels.

Scope

This Standard applies to all approved medical practitioners (AMPs) who complete Order 43 health assessments on NSW coal mine workers or prospective coal mine workers. The AMP must comply with all guidelines, policies, and standards issued or endorsed by Coal Services. This Standard is designed to provide guidance to AMPs on the health certification for cardiovascular risk and identified cardiac conditions.

This Standard can also be used as a resource for coal mine workers and any person conducting a business or undertaking (PCBU) to understand the management of these conditions in the NSW coal industry.

This Standard does not cover cardiovascular risk or other identified cardiovascular conditions outside the coal mining environment.

Background

NSW Coal Industry Health Standards

The NSW Coal Industry Health Standards stipulate the framework that Coal Services requires AMPs to operationalise to ensure consistent and uniform delivery of quality Order 43 health assessments.

Approved medical practitioners are required to assess a coal mine worker's fitness for work.

Coal mine workers work across diverse environmental conditions, with potentially unpredictable workloads, and are exposed to many occupational hazards that are unique to the coal mining industry. Depending on their position and/or the work environment(s), if a coal mine worker suddenly loses capacity, they may potentially harm not only themselves, but also others. The consequences of this could vary from a minor impact to multiple fatalities, and/or major asset damage.

Order 43 health assessments and the criteria used for assessing fitness for work at a coal mine must consider both the coal mine worker's position and the hazards to which they may be exposed.

What are NSW Coal Industry Health Standards?

The NSW Coal Industry Health Standards:

- > are practical, risk-based assessment tools designed to facilitate an AMP's evaluation of a coal mine worker's fitness for work for a specific position and risk category
- > define Coal Services' enterprise tolerance to operational health-related risks, such as the level of medical fitness required for specific positions, by considering a position's physical and psychological demands, as well as the foreseeable risks to health and/or safety that correlate with a coal mine worker's position, tasks and work environment
- > help to identify health issues that can foreseeably limit capacity, impair job performance and/or pose a foreseeable risk to health and/or safety in the workplace, leading to accidents, injuries or illness
- > cover the aspects of health that are clinically relevant to safety-critical work, including physical and psychological fitness and specific functions such as vision, hearing and cardiovascular health
- > include health assessment review requirements and medical management plans that are based on internationally-recognised medical best practices.

Benefits of NSW Coal Industry Health Standards

NSW Coal Industry Health Standards:

- > assist AMPs to identify job accommodations or adjustments required to ensure coal mine workers can carry out their work safely and effectively
- > provide a practical approach via a process of risk stratification. This ensures that positions with similar tasks and perceived risks are grouped so that coal mine workers in similar risk categories undergo consistent and appropriate medical evaluations
- > reduce ambiguity
- > reduce the need for escalation of routine matters
- > provide clear health certification criteria
- > maximise consistency, transparency, and fairness in Order 43 health certification.

Evidence base

The medical guidance and health certification criteria outlined in this Standard are based on published evidence and best practice standards regarding the impact of cardiovascular conditions on fitness for work.

Where direct evidence specific to the coal mining environment is limited, this Standard incorporates relevant research from other safety-critical industries, including the Australian Road and Australian Rail industries.

This Standard references the National Standard for the Health Assessment of Rail Safety Workers (2024). Key elements of the National Rail Standard—including recommended non-working periods following cardiac events or procedures, follow-up requirements, and fitness for work determinations—have been adapted, where applicable, to suit the specific demands of the coal industry.

The Australian National Driver Medical Standards Assessing Fitness to Drive (2022) guides the management of private and commercial drivers with health conditions and can be applied more broadly towards assessing fitness for work. Where relevant, they have been incorporated into this Standard.

Evidence from relevant health bodies and professional organisations was also considered to inform the development of this Standard. Where published evidence was lacking, guidance was taken from subject matter experts, including cardiologists and occupational physicians.

Risk category guidelines

Risk categories

In the coal industry, coal mine workers are assigned positions that include a variety of tasks with different levels of risk. These tasks can range from office-based administrative duties to operating equipment in open cut, underground, and industrial environments, often in dynamic workplace conditions.

Coal mine workers must have the physical and psychological capability to safely perform the tasks associated with their position and be able to effectively respond to workplace risks and changes through sound perception and judgment.

Various medical conditions, disabilities, or treatments may impact a coal mine worker's ability to safely undertake their work tasks. A coal mine worker's actions or inactions resulting from such a condition could potentially lead to a serious incident, impacting themselves and/or others in the workplace.

Under the *Work Health and Safety Act 2011* (NSW), a PCBU has a primary duty of care to ensure, so far as reasonably practicable, the health and safety of workers and other persons at the workplace are not put at risk from work carried out as part of the conduct of the business or undertaking. Further, a PCBU must, as far as is reasonably practicable, ensure that a workers' health is monitored to prevent illness or injury arising from the work environment.

In addition, all workers have a duty to take reasonable care to ensure that their actions or omissions do not negatively impact the health and safety of others in the workplace.

These risks are assessed by the PCBU based on their knowledge of the coal mine worker's position, tasks, and available controls. This information permits AMPs to assess medical conditions to an appropriate level and recommend suitable follow-up review(s).

Coal Services has developed Risk Category Guidelines to assist PCBUs in assessing the risk category of coal

mine workers. These guidelines outline a structured approach for determining the risk category based on the coal mine worker's tasks and the potential risk to themselves and/or others in the event of an unavoidable and/or sudden incapacity.

Risk category

A risk category means the category of risk determined by the PCBU of a coal mine worker's or prospective coal mine worker's position as one of the following:

- > Category A: Safety critical
- > Category B: Safety sensitive
- > Category C: Non-safety sensitive.

Table 1: Coal mine worker risk categories

Risk category	Definition
Category A: Safety critical	A coal mine worker or prospective coal mine worker whose immediate action or inaction from an unavoidable and/or sudden medical incapacity may lead directly to a serious incident affecting others in the workplace.
Category B: Safety sensitive	A coal mine worker or prospective coal mine worker whose immediate action or inaction from an unavoidable and/or sudden medical incapacity may lead directly to a serious incident affecting themselves and is not likely to affect others in the workplace.
Category C: Non-safety sensitive	A coal mine worker or prospective coal mine worker whose immediate action or inaction from an unavoidable and/or sudden medical incapacity will not lead to a serious incident affecting others in the workplace and their work environment will not contribute adversely to the outcome.

Cardiovascular Health Standard

Purpose of the Cardiovascular Health Standard

The NSW Coal Industry Cardiovascular Health Standard has several purposes:

- > to identify and assess whether a coal mine worker has adequate cardiovascular health to undertake their position and risk category within a NSW coal mine
- > to ensure that coal mine workers with known cardiovascular disease are appropriately identified, monitored and managed to minimise any potential health and safety risks to themselves and/or others whilst working at a NSW coal mine
- > to proactively identify coal mine workers who are at increased risk of future cardiovascular events, such as an AMI (heart attack) or cardiac arrest
- > to enable a process for coal mine workers who experience acute cardiac events or are subject to cardiac interventions during their employment, to safely return to work and receive appropriate monitoring and management.

Cardiovascular disease

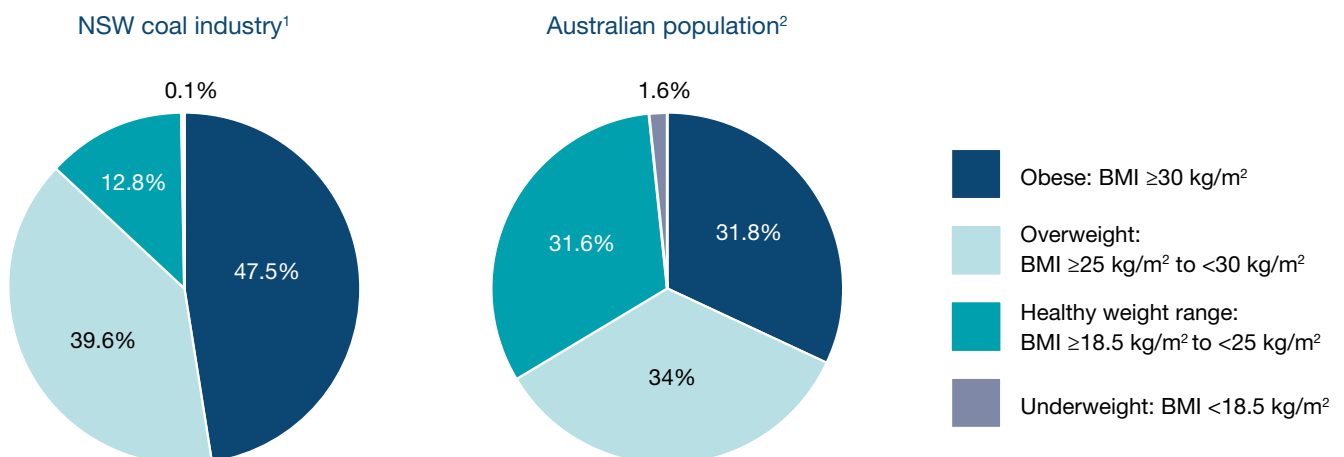
Order 43 health assessments monitor cardiovascular health and screen for the presence of any cardiovascular disease (CVD). This includes assessing modifiable CVD risk factors such as obesity, hypertension, high cholesterol, and smoking and/or vaping. Non-modifiable factors such as age, sex and ethnicity are also considered in the assessment of CVD risk.

The risk of developing CVD is generally higher in men than women. Currently, 92% of the NSW coal industry workforce are men (CS Health Order 43 periodic health data 1 January 2022 to 31 December 2024). The risk of developing CVD increases significantly with age, particularly over the age of 50. CS Health Order 43 periodic data shows 41.5% of the workforce are aged 45 years and over.

Obesity

Obesity is strongly linked to an increased risk of CVD.

CS Health Order 43 periodic health data shows that 87.1% of NSW coal mine workers are overweight (39.6%) or obese (47.5%), significantly exceeding the Australian average of 65.8%. Obesity rates are higher among open cut coal mine workers (49.8%) compared to underground coal mine workers (38.3%).



Data source:

¹ CS Health Order 43 periodic health data 1 January 2022 to 31 December 2024.

² Australian Bureau of Statistics 2022.

Higher rates of obesity in the NSW coal industry population are influenced by:

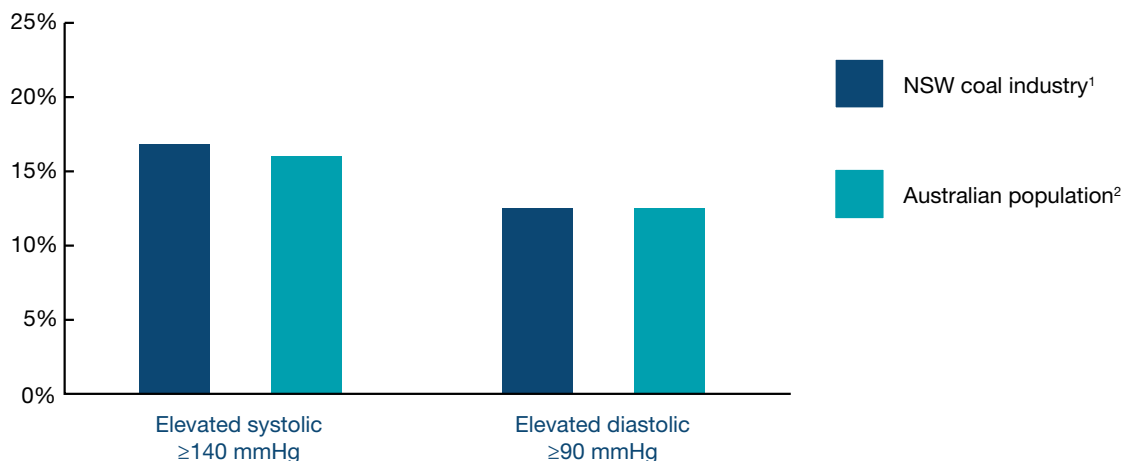
- > shift work (long shifts and rotating rosters), which can contribute to disrupted eating, exercise, and sleep routines
- > sedentary positions and limited or irregular physical activity outside of the work environment
- > unhealthy dietary intake, including excessive consumption of high-fat, high-sugar, and high-calorie food and drinks.

Hypertension

High blood pressure, known as hypertension, is a major risk factor for CVD such as stroke, coronary heart disease, and heart failure. Factors that increase the risk of developing high blood pressure include an unhealthy diet (particularly a high salt intake), obesity, excessive alcohol consumption, and insufficient physical activity.

CS Health Order 43 periodic health data shows that 16.5% of the NSW coal industry workforce have elevated systolic blood pressure (≥ 140 mmHg), while 13.5% have elevated diastolic blood pressure (≥ 90 mmHg).

By comparison, 16.1% of Australians have elevated systolic blood pressure and elevated diastolic blood pressure. The prevalence of hypertension increases significantly with age, rising from 4.5% in people aged 18 to 24 years to 42.9% among those 75 years and over.



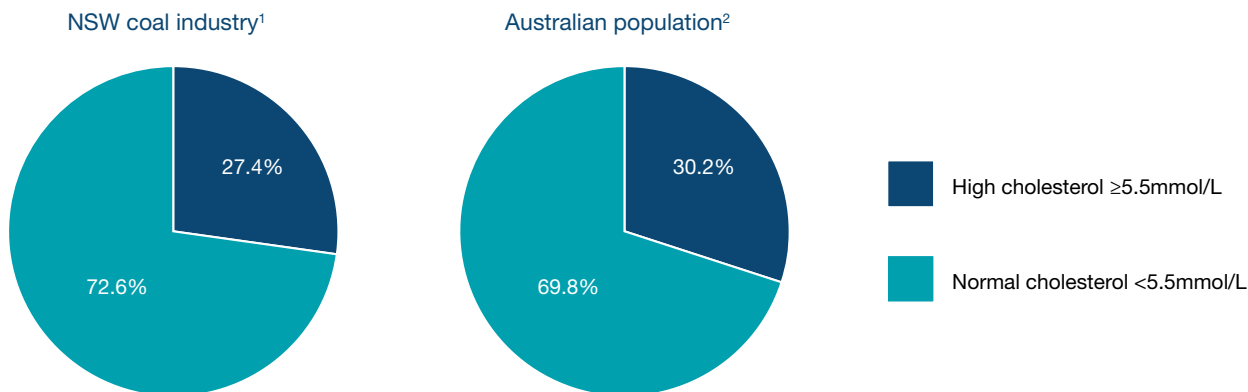
Data source:

¹ CS Health Order 43 periodic health data 1 January 2022 to 31 December 2024.

² Australian Bureau of Statistics 2022.

Hypercholesterolemia

High cholesterol, also known as hypercholesterolemia, increases the risk of developing atherosclerosis, which can lead to angina, a heart attack or stroke. CS Health Order 43 periodic health data shows that 27.4% of NSW coal mine workers have elevated cholesterol levels (≥ 5.5 mmol/L). This compares with 30.2% of Australian adults who had high cholesterol (≥ 5.5 mmol/L) in 2022–2024.



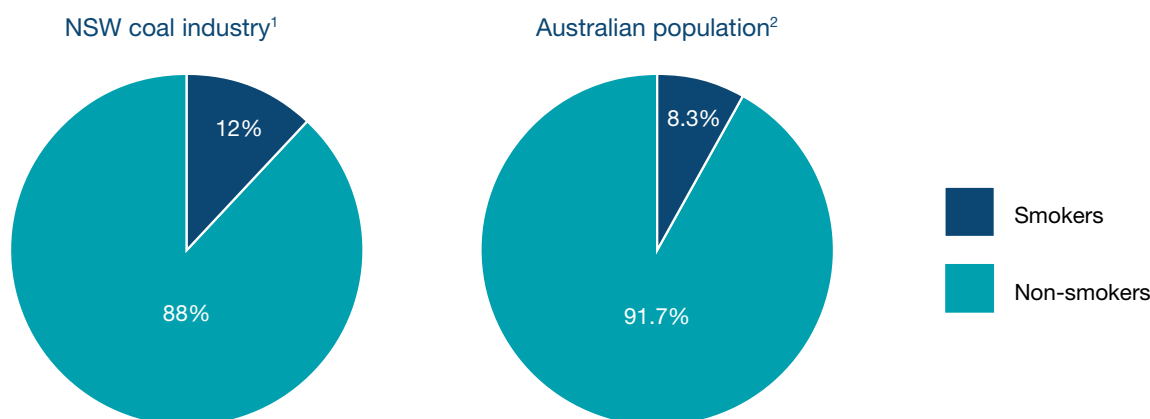
Data source:

¹ CS Health Order 43 periodic health data 1 January 2022 to 31 December 2024.

² Australian Bureau of Statistics 2022–2024.

Smoking

Smoking is a major risk factor for CVD, including coronary heart disease, stroke and peripheral vascular disease.



Data source:

¹ CS Health Order 43 periodic health data 1 January 2022 to 31 December 2024.

² 2022–23 National Drug Strategy Household Survey.

Cardiovascular conditions

Cardiovascular conditions can affect a coal mine worker's ability to work by:

- > causing sudden incapacitation, due to cardiovascular events such as a stroke, heart attack, cardiac arrest, or arrhythmia
- > impacting concentration and cognitive function due to reduced blood flow and oxygen delivery to the brain
- > decreasing capacity to operate machinery and perform required tasks due to onset of symptoms such as chest pain, tachycardia, palpitations, or shortness of breath.

Coal mine workers may also be asymptomatic prior to the onset of a cardiovascular event. It is therefore essential that overall cardiac risk is assessed and investigated, and any known cardiovascular conditions are appropriately monitored and managed.

Environmental conditions

There are many tasks and situations in coal mining that may increase the cardiac load, potentially causing underlying conditions to decompensate. Many tasks are physically strenuous, particularly in underground environments. Temperature and humidity may vary dramatically in open cut and underground environments, with temperatures ranging from below 0° to over 50° Celsius, with varying low and high humidity. Underground coal mine workers may be exposed to higher levels of carbon dioxide and diesel exhaust emissions and may also need to use self-rescuers or breathing apparatus. Obesity can add to the cardiovascular load by impeding heat loss. For further information on the management of obesity, refer to the obesity section at the end of this Standard.

Some coal mine workers work in remote areas where there is limited access to emergency medical care. This is particularly relevant for underground coal mine workers who may work in areas that are up to an hour or more from the surface. Health conditions that can suddenly deteriorate may place the coal mine worker at risk of serious harm or death due to delayed treatments and/or interventions. The time required to extricate a coal mine worker from the furthest reaches of the mine in which they will be working, and transport them to hospital, must be considered.

Duties and accountabilities

Duties and accountabilities associated with implementing the requirements of this Standard

A clear understanding of duties and accountabilities, along with effective communication, assists in maximising the effectiveness of the health protection that this Standard offers, and the health and safety of the NSW coal industry workforce.

Approved medical practitioner

- > The AMP must ensure their assessment and health certification of the coal mine worker is in accordance with this Standard.
- > The AMP is accountable for assessing fitness for work using their clinical judgement and providing a health certification that is in accordance with this Standard. Where anyone other than the AMP completes any part of any Order 43 health assessment, the AMP retains non-delegable, full accountability for the accuracy and quality of all assessments.
- > The AMP is not responsible for the management of any identified cardiovascular conditions.

Cardiologist

- > The cardiologist is responsible for advising on the diagnosis and clinical management of any identified cardiovascular abnormalities.
- > The cardiologist is responsible for advising on the probability of sudden cardiac death when requested.
- > The cardiologist is not responsible for determining the coal mine worker's fitness for work. This remains the responsibility of the AMP.

Coal mine worker

- > The coal mine worker should attend, and fully participate in, each required Order 43 health assessment and/or health assessment reviews and any further cardiovascular investigation.
- > The coal mine worker should declare any medical condition at their Order 43 health assessment that may affect their capacity to perform their position without undue risk to themselves and/or others. Coal mine workers who are not sure, should consult with the AMP and/or their treating doctor about whether a condition may affect their fitness for work.
- > The coal mine worker should declare to the PCBU any medical condition that may affect their capacity to perform their position without undue risk to themselves and/or others.
- > The coal mine worker should provide accurate, complete answers to questions within any health assessment.

Coal Services

- > Coal Services is responsible for the timely, effective communication of this Standard to the NSW coal industry and to key stakeholders.
- > Coal Services is responsible for providing the NSW coal industry with supporting guidelines to assist stakeholder understanding and interpretation of this Standard.
- > Coal Services, through the internal and external AMP network, is responsible for providing Order 43 health assessments.

General practitioner or treating doctor

- > The coal mine worker's general practitioner (GP) or treating doctor is responsible for the management of any identified cardiovascular conditions.

Person conducting business or undertaking

- > The PCBU is responsible for determining the coal mine worker's risk category based on the position they will be undertaking.
- > The PCBU is responsible for ensuring that the coal mine worker has a health assessment and/or has attended any health assessment reviews required under Order 43 and other relevant legislation.
- > The PCBU must notify the AMP assessing the coal mine worker if any health monitoring requirements in NSW Work Health and Safety Regulation 2017 Sch 14 are required in addition to the standard monitoring under Order 43.
- > The PCBU must notify the AMP assessing the coal mine worker if any remote work is undertaken by the coal mine worker.
- > The PCBU is responsible for ensuring adherence to any recommended workplace remedial measures identified in the health certification provided by the AMP.

NSW Coal Industry Health Standard review and feedback process

A comprehensive review process is essential to ensure information detailed in this Standard remains current and maintains best practice standards.

This Standard will be reviewed 12 months after its initial publication and then every 5 years thereafter, or sooner, as required. It will be reviewed by the Coal Services Standing Health Committee, subject matter experts and the Coal Services Clinical Governance Committee.

Any feedback received, including identified changes or required updates to this Standard, will be incorporated into the review process and considered accordingly.

Feedback on this Standard can be provided by email to shc@coalservices.com.au.

Health assessment components

Cardiovascular assessments and investigations

AMPs must use the following assessments and investigations when determining a coal mine worker's cardiovascular health and any other conditions or factors that may affect a coal mine worker's ability, health and/or safety in performing their designated position.

Routine cardiovascular investigations

All coal mine workers undergo the following cardiovascular health examinations as part of the Order 43 health assessment, regardless of their risk category or position they will be undertaking at a coal mine:

- > Medical history of CVD
- > Cardiovascular assessment: heart sounds, peripheral pulses, rhythm, character
- > Blood pressure
- > Total cholesterol, high-density lipoprotein (HDL), total cholesterol/HDL
- > Cardiovascular risk score, which:
 - estimates the probability of a cardiovascular event occurring within the next 5-year period, including: myocardial infarction, angina, other coronary heart disease, stroke, transient ischaemic attack, peripheral vascular disease, congestive heart failure or other ischaemic cardiovascular disease-related conditions
 - assists in identifying workers at risk of sudden incapacity
 - is calculated using the [Australian cardiovascular disease risk calculator](#) (without using the postcode field).
Note:
 - To use the calculator, AMPs should familiarise themselves with the [Australian Guideline for assessing and managing cardiovascular disease risk](#)
 - All coal mine workers should be assessed with the calculator to meet the requirements of the current health order. Coal mine workers under the age of 30 years should be entered as 30 years old. Coal mine workers with known CVD will still have their risk estimated; however, this must be managed in accordance with the relevant section of this Standard for their condition.

Secondary investigations

If any of the above standard cardiovascular investigations highlight a history of CVD or abnormal results, the AMP should refer the coal mine worker for a cardiology assessment and secondary investigations in accordance with the recommendations in this Standard.

Incidentally detected coronary artery calcification

Investigations of coronary artery calcification (CAC) are not a component of standard Order 43 health assessments. Coronary artery calcification is, however, a significant indicator of cardiovascular risk and may be discovered as an incidental finding if a coal mine worker requires a chest computed tomography (CT) scan or other thoracic imaging studies. The clinical significance of CAC depends on multiple factors, including:

- > its extent
- > the individual's age
- > cardiovascular risk factors
- > current medical management.

Calculating and reporting coronary artery calcification

Standard chest CT scans are not electrocardiogram (ECG)-gated, which prevents precise calculation of coronary calcium scores using conventional methods. However, studies have shown that simple visual categorisation of CAC correlates well with formal scoring, as follows:

- > Absent: Corresponding to score 0
- > Mild: Corresponding to score 1–99
- > Moderate: Corresponding to score 100–400
- > Severe: Corresponding to score >400.

Radiologists are recommended to report incidental coronary calcium using either these categories or the Coronary Artery Calcium Data and Reporting System. When moderate or greater calcification is discovered in an individual not already identified and treated as having moderate cardiovascular risk, formal risk assessment and coronary calcium scoring should be considered.

Clinical implications

The extent of CAC strongly correlates with cardiovascular risk.

If the degree of calcification is quantified, the effect of this on the most recently available cardiovascular risk estimate should be assessed and the need for intervention determined.

Moderate or greater calcification (equivalent to a formal calcium score >100) places an individual in a high-risk category. This should trigger a more comprehensive cardiovascular risk factor assessment.

The Australian CVD risk calculator allows for the reclassification of risk where a CAC score of zero occurs. There is evidence to support intermediate-risk CVD risk scores being reclassified to low risk with a CAC score of zero. For high-risk CVD scores, a coal mine worker should be referred to their GP or cardiologist for treatment irrespective of their CAC score (in accordance with the medical management table in this Standard); however, the AMP may certify the coal mine worker as fit for work.

Age significantly impacts the interpretation of coronary calcium findings. Any CAC in younger individuals (males <45 years or females <55 years) indicates a coronary calcium score above the 75th percentile for their age group, suggesting an elevated lifetime cardiovascular risk if left untreated.

When incidental coronary artery findings occur, the AMP should refer the coal mine worker to their GP for further investigation and management.

Guidelines for medical management

Order 43 health assessments monitor cardiovascular health and screen for the presence of any CVD.

In addition to the cardiovascular investigations completed as part of the Order 43 health assessment, AMPs must also consider the foreseeable health and/or safety risks to the coal mine worker and/or others arising from both a coal mine worker's capacity to perform the inherent requirements of their position and the workplace environments when assessing and/or issuing a health assessment certificate.

The PCBU is responsible for nominating the coal mine worker's risk category based on the position they will be undertaking. The AMP's health certification should be made against the coal mine worker's risk category detailed in the medical management guidelines within this Standard.

Medical management tables

The medical management tables within this Standard (pages 15–46) provide guidance to AMPs according to a coal mine worker's:

- > cardiovascular disease risk score
- > blood pressure
- > cardiovascular history
- > body mass index (BMI)
- > identified risk category, i.e.:
 - Category A: Safety critical
 - Category B: Safety sensitive
 - Category C: Non-safety sensitive*.

***NOTE: Refer to the Transitional Arrangements on page 51 for guidance on the use of risk categories.**

For each of the above criteria, the guidelines within the medical management tables advise AMPs on any required actions, including:

- > further medical investigations required
- > follow-up requirements and frequency of health assessment reviews
- > health certifications:
 - AMPs should use the medical management tables in this Standard to guide their overall assessment as to whether a coal mine worker can safely perform their designated position
 - this includes whether the coal mine worker should be made temporarily unfit or fit for work whilst any required further investigations occur
 - where the AMP considers the coal mine worker unfit for the designated position, they should contact the coal mine worker and the PCBU to advise them of the health certification. The AMP should discuss limited detail with the PCBU regarding the restriction to maintain privacy and confidentiality
 - where the AMP considers the coal mine worker unfit for the designated position, they should also consider, in discussion with the PCBU, if the coal mine worker would be suitable for other duties. This should occur with the coal mine worker's consent and before the health certification is finalised
- > when information about an identified cardiovascular condition is not readily available, it must be sought from the appropriate treating doctor before health certification is made for a new position. When conducting a

periodic assessment, this information should be sought within 3 to 6 months

- > when an early review is required due to a medical abnormality, the health assessment review should focus solely on the identified issue, rather than completing a full health assessment
- > a health assessment review may require the coal mine worker to attend an appointment with an AMP in person for repeat testing or examination and/or it may require the AMP to review and assess medical information provided by a treating doctor (without coal mine worker attendance)
- > even if the coal mine worker has been recommended for routine review, they may still be required to provide updated medical information from their treating doctor at future Order 43 health assessments. Any change or deterioration in the condition should trigger an earlier review.

Medical management tables

Table 2: Medical management—Cardiovascular risk

Cardiovascular risk	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Cardiovascular disease (CVD) risk score	The coal mine worker's CVD risk score is calculated using the Australian Cardiovascular Disease Risk Calculator. Note: Postcode should not be used to calculate the CVD risk score. This is an optional field which should be left blank. The CVD risk calculator allows reclassification of the CVD risk score to take into account individual risk factors that may not be adequately reflected in the standard CVD risk calculation. The CVD risk calculator recommends considering reclassification to a higher CVD risk category if any of the following risk factors are present: > a family history of premature CVD > chronic kidney disease > severe mental illness or > First Nations (Aboriginal or Torres Strait Islander), Māori, Pacific Islander or South Asian ethnicity. Coal mine workers with a CAC score of >99, or ≥75th percentile for age and sex, could be reclassified to a higher CVD risk score and be managed accordingly. Approved medical practitioners must complete this step before making a final determination of the coal mine worker's CVD risk score. Coal mine workers with a CAC score of zero may also have their CVD risk reclassified. Workers with an intermediate CVD risk and CAC score of zero may be reclassified to low risk. Coal mine workers with a high CVD risk ≥15% may be reclassified to a CVD risk of 10% to 15% to allow them to continue to work; however, they must be referred to their GP or cardiologist for management as outlined within the table below. If a coal mine worker has known ischaemic heart disease or a past history of stroke, the CVD risk calculation can be completed to consider risk factor control; however, the worker should be considered as high CVD risk and managed in accordance with the relevant section in this Standard. Note: Refer to Figure 1: CVD risk score management pathway on page 47 which summarises management according to the coal mine worker's CVD risk score and identified risk category.		
Low CVD risk: <5%	Management Certify as fit for work. Refer to GP for management of any abnormal risk factors. Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Routine review.	Management Certify as fit for work. Refer to GP for management of any abnormal risk factors. Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Routine review.	Management Certify as fit for work. Refer to GP for management of any abnormal risk factors. Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Routine review.
Intermediate CVD risk: ≥5% to <10%	Management Certify as fit for work. Refer to GP for assessment and management of identified risk factors (as a duty care). Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Routine review.	Management Certify as fit for work. Refer to GP for assessment and management of identified risk factors (as a duty care). Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Routine review.	Management Certify as fit for work. Refer to GP for assessment and management of identified risk factors (as a duty care). Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Routine review.

Cardiovascular risk	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
High CVD risk: $\geq 10\%$	Within this Standard, high CVD risk scores are separated into the following two categories: > CVD risk score $\geq 10\%$ to $< 15\%$ > CVD risk score $\geq 15\%$ Splitting the high-risk category allows the identification of a small cohort who are likely to have multiple poorly managed conditions contributing to their overall risk.		
CVD risk score: $\geq 10\%$ to $< 15\%$	Management Certify as fit for work. Refer to GP for cardiologist referral.* <i>*Note: If GP repeats CVD Risk Score and coal mine worker is no longer classified high risk, medical information from the GP relating to cardiac risk should be provided to the AMP for review.</i> AMP to review medical information provided by the cardiologist and/or GP within 6 months. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Once control of risk factors is demonstrated, return to routine review. If risk factors are not adequately controlled, review within 12 months. This may be a review of medical information or a face-to-face appointment.	Management Certify as fit for work. Refer to GP to manage cardiovascular risk factors. AMP to review medical information provided by GP within 6 months. If no information is provided to the AMP, then the coal mine worker's health certificate will expire. Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Once control of risk factors is demonstrated, return to routine review. If risk factors are not adequately controlled, review within 12 months. This may be a review of medical information or a face-to-face appointment.	Management Certify as fit for work. Refer to GP to manage any CVD risk factors. Follow-up Routine review.

Cardiovascular risk	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
CVD risk score: $\geq 15\%$	Management Certify as temporarily unfit for work and advise the coal mine worker of the health certification. AMP to contact PCBU to advise of the coal mine worker's health certification. Refer to GP for cardiologist referral.* <i>*Note: If GP repeats CVD Risk Score and coal mine worker is no longer classified high risk, medical information from the GP relating to cardiac risk should be provided to the AMP for review.</i> The coal mine worker should remain temporarily unfit for work until seen by cardiologist and/or GP and confirmation is received that the coal mine worker's CVD risk is being managed. Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Once control of risk factors is demonstrated, return to routine review. If risk factors are not adequately controlled, review within 12 months. This may be a review of medical information or a face-to-face appointment.	Management Certify as temporarily unfit for work and advise the coal mine worker of the health certification. AMP to contact PCBU to advise of the coal mine worker's health certification. Refer to GP to manage CVD risk factors. The coal mine worker should remain temporarily unfit for work until seen by the GP and confirmation is received that the coal mine worker's CVD risk is being managed. Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Once control of risk factors is demonstrated, return to routine review. If risk factors are not adequately controlled, review within 12 months. This may be a review of medical information or a face-to-face appointment.	Management Certify fit for work. Refer to GP to manage any CVD risk factors. Manage confirmed CVD and comorbidities in accordance with the guidance in this Standard. Follow-up Routine review.

Table 3: Medical management—Cardiovascular conditions

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Ischaemic heart disease	For coal mine workers with ischaemic heart disease, the severity of disease should be the primary consideration when assessing fitness for work. The AMP should consider: > any symptoms that may be severe enough to be a risk to attentiveness while working > the risk of sudden collapse > the coal mine worker's cardiac history. Those who have had a previous acute myocardial infarction (AMI) or similar event are at greater risk of recurrence. Health certification Following an AMI, cardiac surgery i.e. coronary artery bypass grafting (CABG) or percutaneous coronary interventions (PCI), a coal mine worker should be made temporarily unfit for work for the minimum non-working periods outlined in this medical management table, according to their identified risk category. If the coal mine worker has angina or suspected angina i.e. they report chest pains or unexplained shortness of breath, particularly if at increased cardiac risk, the coal mine worker should be made temporarily unfit for work until further investigations have been completed and any necessary management has occurred. The coal mine worker should then only be made fit for work once the AMP receives information from the treating cardiologist or GP confirming: > there is satisfactory response to treatment with minimal ongoing symptoms i.e. chest pain, palpitations, breathlessness > there is adequate adherence to any recommended management plan > the coal mine worker meets all other criteria outlined within this medical management table, according to their identified risk category. All coal mine workers who have had cardiac surgery should receive advice from their cardiologist on any potential physical limitations, for example, limitation of chest and shoulder movements after sternotomy. Follow up requirements Follow up requirements vary according to the coal mine worker's identified risk category, as outlined in the medical management table below.		

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Acute myocardial infarction (AMI)	Management The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks following an AMI. The coal mine worker can return to work after at least 4 weeks based on information from the treating specialist that the following criteria are met: > there is adequate adherence and compliance with recommended medical management; and > there is an ejection fraction of $\geq 40\%$; and > the coal mine worker is in a management program designed to achieve National Heart Foundation targets for secondary prevention relevant to the condition; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing. Follow up The above information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks following an AMI. The coal mine worker can return to work after at least 4 weeks based on information from the treating specialist that the following criteria are met: > there is adequate adherence and compliance with recommended medical management; and > there is an ejection fraction of $\geq 40\%$; and > the coal mine worker is in a management program designed to achieve National Heart Foundation targets for secondary prevention relevant to the condition; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing. Follow up The above information is required at 12 months by the treating specialist or GP to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once control of risk factors is demonstrated, return to routine review.	Management The coal mine worker should be certified as temporarily unfit for at least 2 weeks following an AMI. The coal mine worker can return to work after 2 weeks following an uncomplicated AMI based on information from their treating doctor/GP that the following criteria are met: > there is adequate adherence and compliance with recommended medical management; and > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). Follow up Once it is established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Angina and myocardial ischaemia	Management The coal mine worker should be certified as temporarily unfit for work if they are subject to angina pectoris or has confirmed myocardial infarction, until further investigations and management have occurred. The coal mine worker may return to work following investigation and management of the angina and information from the treating specialist that the following criteria are met: > there is adequate adherence and compliance with recommended medical management; and > the coal mine worker is in a management program designed to achieve National Heart Foundation targets for secondary prevention relevant to the condition; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing. Where surgery or percutaneous coronary intervention (PCI) is undertaken, the requirements listed for surgery or PCI apply (see PCI section below). Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work if they are subject to angina pectoris or has confirmed myocardial infarction, until further investigations and management have occurred. The coal mine worker may return to work following investigation and management of the angina and information from the treating specialist that the following criteria are met: > there is adequate adherence and compliance with recommended medical management; and > the coal mine worker is in a management program designed to achieve National Heart Foundation targets for secondary prevention relevant to the condition; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing. Where surgery or percutaneous coronary intervention (PCI) is undertaken, the requirements listed for surgery or PCI apply (see PCI section below). Follow up Information is required annually by the treating GP or specialist until it is confirmed that the condition is being satisfactorily managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once satisfactory management of the condition is confirmed, the coal mine worker can return to routine review.	Management A coal mine worker with angina which is usually absent on mild exertion, and is being managed by their GP, may be certified fit for work with routine review. If the coal mine worker has symptoms/unstable angina, then they should be made temporarily unfit and referred to their GP. Follow up Once it established that they are being managed by their treating doctor and their angina is now usually absent on mild exertion, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Coronary artery bypass grafting (CABG)	Management The coal mine worker should be certified as temporarily unfit for work for at least 3 months following CABG. The coal mine worker can return to work after at least 3 months AND if information is provided by the treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > the coal mine worker is in a management program designed to achieve National Heart Foundation targets for secondary prevention relevant to the condition; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing; and > there is minimal residual musculoskeletal pain after the chest surgery. Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work for at least 3 months following CABG. The coal mine worker can return to work after at least 3 months AND if information is provided by the treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > the coal mine worker is in a management program designed to achieve National Heart Foundation targets for secondary prevention relevant to the condition; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing; and > there is minimal residual musculoskeletal pain after the chest surgery. Follow up This information is required annually by the treating GP or specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once control of risk factors is demonstrated, return to routine review.	Management The coal mine worker is not fit for work for at least 4 weeks after CABG. The coal mine worker can return to work if they are at least 4 weeks after CABG AND information is provided by the treating doctor that the following criteria are met: > there is satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > there is minimal residual musculoskeletal pain after the chest surgery. Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Percutaneous coronary intervention (PCI) e.g. angioplasty/stent	Management The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks after the PCI. The coal mine worker can return to work after at least 4 weeks AND if information is provided by the treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > the coal mine worker is in a management program designed to achieve National Heart Foundation targets for secondary prevention relevant to the condition; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing. Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks after the PCI. The coal mine worker can return to work after at least 4 weeks AND if information is provided by the treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > the coal mine worker is in a management program designed to achieve National Heart Foundation targets for secondary prevention relevant to the condition; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing. Follow up This information is required at 12 months by the treating GP or specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once control of risk factors is demonstrated, return to routine review.	Management The coal mine worker is not fit for work for at least 2 days after the PCI. The coal mine worker can return to work if they are at least 2 days after the PCI AND information is provided by the treating doctor that the following criteria are met: > there was no AMI immediately before or after the PCI; and > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). Follow up Once it is established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Disorders of rate, rhythm and conduction	A resting electrocardiogram (ECG) is not routinely conducted as part of Order 43 health assessments but may be indicated by the clinical findings. ECG changes can be associated with conditions which result in reduced alertness, and in rare cases, there is a risk of collapse. Each case should be individually evaluated to determine the potential impacts on work safety. Conditions that may be identified through ECG screening include: > hypertrophic cardiomyopathy > Long QT syndrome > Brugada syndrome > coronary ischemia > pre-excitation or Wolff-Parkinson-White syndrome. Initial classification will depend on the nature of the ECG changes and their possible effects. Coal mine workers with recurring arrhythmias that cause syncope or presyncope are generally deemed unfit for work until further investigation has occurred. Significant ECG abnormalities, such as left bundle branch block, pre-excitation syndrome, a prolonged QT interval (greater than 500 ms), or changes indicative of myocardial ischemia or a prior heart attack, should result in a classification of temporarily unfit for work until evaluated by a cardiologist. Those with suspected left ventricular hypertrophy or right bundle branch block may be categorised as fit for work with an early review during ongoing evaluation. Following appropriate treatment and a rest period, a classification of fit for work with early review may be considered. For Category A: Safety critical workers, an implantable cardioverter defibrillator (ICD) is only acceptable if it is inserted for primary prevention and under strict conditions in accordance with the table below. If an ICD is inserted for secondary prevention, the coal mine worker will not be fit to work in Category A: Safety critical roles.		
	Electromagnetic interference Pacemakers, defibrillators, and other electronic medical devices may be affected by electromagnetic fields, particularly for coal mine workers in proximity to high-voltage transmission lines or generation equipment. The management approach should be determined according to the coal mine worker's risk category and based on information from the device manufacturer and treating cardiologist according to the fitness for work criteria outlined in the tables below. Advice should be given to avoid electromagnetic fields in accordance with the device manufacturer's instructions.		

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Atrial fibrillation	Management Fitness for work will depend on the method of treatment — see below. If there is a history of recurrent or persistent arrhythmia which may result in syncope or incapacitating symptoms, the coal mine worker should be certified as temporarily unfit until review by a treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness); and > appropriate follow-up has been arranged. The coal mine worker should not work for: > at least 4 weeks following PCI > at least 4 weeks following initiation of successful medical treatment > at least 3 months following open chest surgery. If the coal mine worker is taking anticoagulants refer to 'long-term anticoagulant therapy' section. Follow up This information is required annually by the treating specialist.* If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. <i>* Note: Where the condition is considered stable, the requirement for annual review may be reduced or waived based on the advice of the treating specialist.</i>	Management Fitness for work will depend on the method of treatment — see below. If there is a history of recurrent or persistent arrhythmia which may result in syncope or incapacitating symptoms, the coal mine worker should be certified as temporarily unfit until review by a treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness); and > appropriate follow-up has been arranged. The coal mine worker should not work for: > at least 4 weeks following PCI > at least 4 weeks following initiation of successful medical treatment > at least 3 months following open chest surgery. If the coal mine worker is taking anticoagulants refer to 'long-term anticoagulant therapy' section. Follow up This information is required at 12 months by the treating GP or specialist to confirm the condition is being managed.* If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. <i>* Note: Where the condition is considered stable, the requirement for an annual review may not be required.</i>	Management Fitness for work will depend on the method of treatment — see below. If there is a history of recurrent or persistent arrhythmia which may result in syncope or incapacitating symptoms, the coal mine worker should be certified as temporarily unfit until review by a treating doctor that the following criteria are met: > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > appropriate follow-up has been arranged. The coal mine worker should not work for: > at least 1 week following PCI > at least 1 week following initiation of successful medical treatment > an appropriate time following open chest surgery. If the coal mine worker is taking anticoagulants refer to 'long-term anticoagulant therapy' section. Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Paroxysmal arrhythmias e.g. supraventricular tachycardia, atrial flutter, idiopathic ventricular tachycardia	Management The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks if there was near or definite collapse. The coal mine worker can return to work after at least 4 weeks AND if information is provided by the treating specialist that 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 (i.e. chest pain, syncope, palpitations, breathlessness). The coal mine worker should not work for: > at least 4 weeks following PCI > at least 4 weeks following initiation of successful medical treatment. Follow up This information is required annually by the treating specialist.* If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. If the person is taking anticoagulants refer to 'long-term anticoagulant therapy' section. <i>* Note: Where the condition is considered to be cured, this requirement may be waived on advice of the treating specialist.</i>	Management The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks if there was near or definite collapse. The coal mine worker can return to work after at least 4 weeks AND if information is provided by the treating specialist that 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 (i.e. chest pain, syncope, palpitations, breathlessness). The coal mine worker should not work for: > at least 4 weeks following PCI > at least 4 weeks following initiation of successful medical treatment. Follow up This information is required annually by the treating GP or specialist to confirm the condition is being managed.* If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. If the person is taking anticoagulants refer to 'long-term anticoagulant therapy' section. <i>* Note: Where the condition is considered stable, this requirement may be reduced or waived based on the advice of the treating specialist.</i>	Management The coal mine worker should be certified as temporarily unfit if there was near or definite collapse. The coal mine worker can return to work when information from the treating doctor confirms that 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 (i.e. chest pain, palpitations, breathlessness). Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Cardiac arrest	Management The coal mine worker should be certified as temporarily unfit for work for at least 6 months following a cardiac arrest. The coal mine worker can return to work if it is at least 6 months after the arrest AND information is provided by the treating specialist that the following criteria are met: > a reversible cause is identified, and recurrence is unlikely; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness). Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work for at least 6 months following a cardiac arrest. The coal mine worker can return to work if it is at least 6 months after the arrest AND information is provided by the treating specialist that the following criteria are met: > a reversible cause is identified, and recurrence is unlikely; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness). Follow up This information is required annually by the treating GP or specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once control of risk factors is demonstrated and the condition is considered stable, return to routine review.	Management The coal mine worker should be certified as temporarily unfit for work for at least 3 months following a cardiac arrest.* The coal mine worker can return to work if it is at least 3 months after the arrest* AND if information is provided by the treating doctor that the following criteria are met: > the cause of the cardiac arrest and response to treatment has been considered; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). <i>* Note: A shorter period may be considered subject to specialist assessment if the cardiac arrest has occurred within 48 hours of an acute myocardial infarction, or if the arrhythmia causing the cardiac arrest has been addressed by radio frequency ablation surgery or by pacemaker implantation.</i> Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Cardiac pacemaker	Management The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks after a pacemaker is inserted. The coal mine worker can return to work if it is at least 4 weeks after pacemaker insertion AND information is provided by the treating specialist that the following criteria are met: > 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 (i.e. chest pain, syncope, palpitations, breathlessness). Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks after a pacemaker is inserted. The coal mine worker can return to work if it is at least 4 weeks after pacemaker insertion AND information is provided by the treating specialist that the following criteria are met: > 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 (i.e. chest pain, syncope, palpitations, breathlessness). Follow up This information is required annually by the treating GP or specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work for at least 2 weeks after a pacemaker is inserted. The coal mine worker can return to work it is at least 2 weeks after pacemaker insertion AND information is provided by the treating doctor that the following criteria are met: > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.
Note: Pacemakers may be affected by electromagnetic fields, particularly for coal mine workers in proximity to high-voltage transmission lines or generation equipment. The management approach should be determined according to the coal mine worker's risk category and based on information from the device manufacturer, and treating cardiologist according to fitness for work criteria. Advice should be given to avoid electromagnetic fields in accordance with the device manufacturer's instructions.			

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Implantable cardioverter defibrillator (ICD)	Management The coal mine worker is permanently unfit for work if the ICD was implanted for secondary prevention to manage ventricular arrhythmias. The coal mine worker should be certified as temporarily unfit for work for at least 6 months after the ICD is implanted for primary prevention. The coal mine worker can return to work if it is at least 6 months after ICD implantation AND information is provided by the treating specialist that the following criteria are met: > the ICD was implanted for primary prevention; and > the coal mine worker participates in routine surveillance of the device (6 monthly) which shows: – there are no episodes of sustained arrhythmia – there are no discharges from the defibrillator – there is no evidence of anti-tachycardic pacing; and > there is an ejection fraction $\geq 40\%$; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing. A coal mine worker should not work for 2 weeks after a generator change of an ICD. Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work for at least 6 months after the ICD is implanted for primary prevention. The coal mine worker can return to work if it is at least 6 months after ICD implantation AND information is provided by the treating specialist that the following criteria are met: > the ICD was implanted for primary prevention; and > the coal mine worker participates in routine surveillance of the device (6-monthly), which shows: – there are no episodes of sustained arrhythmia – there are no discharges from the defibrillator – there is no evidence of anti-tachycardic pacing; and > there is an ejection fraction $\geq 40\%$; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness); and > where clinically recommended there is adequate performance with exercise testing. A coal mine worker should not work for 2 weeks after a generator change of an ICD. Where the ICD is implanted for secondary prevention, the coal mine worker can return to work if it is at least 6 months after ICD implantation AND information is provided by the treating specialist that the conditions for primary prevention are met AND the coal mine worker has been specifically assessed for the role by an occupational physician. Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The fitness for work period will depend on the reason for ICD implantation. The coal mine worker should be certified as temporarily unfit until information is provided by the treating specialist that the following criteria are met: > the ICD has been implanted for an episode of cardiac arrest and the person has been asymptomatic for 3 months; or > the ICD has been prophylactically implanted for at least 2 weeks; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness). A coal mine worker should not work: > for 2 weeks after a generator change of an ICD; > for at least 4 weeks after appropriate ICD therapy associated with symptoms of haemodynamic compromise (if syncopal, refer to 'syncope' section below). Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
	Note: ICDs may be affected by electromagnetic fields, particularly for coal mine workers in proximity to high-voltage transmission lines or generation equipment. The management approach should be determined according to the coal mine worker's risk category and based on information from the device manufacturer, and treating cardiologist according to fitness for work criteria. Advice should be given to avoid electromagnetic fields in accordance with the device manufacturer's instructions		
ECG changes Strain patterns, bundle branch blocks, heart block, etc. (Refer also to 'cardiac pacemaker' section)	Management The coal mine worker should be certified as temporarily unfit for work if: > they have an ECG abnormality, such as: – left bundle branch block – preexcitation syndrome – prolonged QT interval – Brugada syndrome – left ventricular hypertrophy; or > changes suggestive of myocardial ischaemia or previous myocardial infarction. The coal mine worker can return to work after information is provided by the treating specialist that the following criteria are met: > the condition has been treated medically or follow-up investigation has excluded underlying cardiac disease; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness). Follow up This information is required annually by the treating specialist.* If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. <i>* Note: Where the condition is stable or the ECG abnormality is assessed as not significant, the requirement for review may be reduced or waived based on the advice of the treating specialist.</i>	Management The coal mine worker should be certified as temporarily unfit for work if: > they have an ECG abnormality, such as: – left bundle branch block – preexcitation syndrome – prolonged QT interval – Brugada syndrome – left ventricular hypertrophy; or > changes suggestive of myocardial ischaemia or previous myocardial infarction. The coal mine worker can return to work after information is provided by the treating specialist that the following criteria are met: > the condition has been treated medically or follow-up investigation has excluded underlying cardiac disease; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness). Follow up Information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once the condition is assessed as stable, the coal mine worker can return to routine review.	Management The coal mine worker should be certified as temporarily unfit for work if: > they have an ECG abnormality; and > they have symptoms (i.e. chest pain, syncope, palpitations, breathlessness) that may impair performance of the task. The coal mine worker can return to work after information is provided by the treating doctor that the following criteria are met: > the condition has been treated procedurally or medically; and > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Vascular disease	Aneurysms Thoracic aortic aneurysms are largely asymptomatic until a sudden, catastrophic event occurs, such as a rupture or dissection, which are often fatal. The risk level depends on the type and size of the aneurysm, with standards differing for atherosclerotic aneurysms and those linked to tri-leaflet versus bicuspid aortic valves. If the aneurysm is associated with untreated or uncontrolled hypertension (consistently or frequently greater than 150/90 mmHg), the coal mine worker should be categorised temporarily unfit for work while treatment is established, and adequate control is demonstrated. Certain inherited aortopathies may not be compatible with Category A or B work, e.g. Marfan syndrome with risk factors or familial aortic aneurysm or dissection (including non-syndromic). A cardiologist assessment should be obtained. Deep vein thrombosis and pulmonary embolism While deep vein thrombosis (DVT) may lead to an acute pulmonary embolus (PE), there is limited evidence that a DVT will directly impact safety. There are no other best practice standards to guide the management of returning to work following a DVT or PE; however, non-working periods (temporarily unfit for work) are advised. If long-term anticoagulation treatment is prescribed, the guidelines for anticoagulant therapy outlined in this table should be applied. Valvular disease Valvular disease can present with diverse symptoms including exertional shortness of breath, palpitations, angina, syncope, cardiac arrest or heart failure. The symptoms, if severe, may cause distraction from work and as such are relevant to both Category A and Category B coal mine workers. The risk of collapse is also particularly relevant to Categories A and B coal mine workers. It may also be asymptomatic and found on examination. Generally, those with mild valvular disease who are asymptomatic may continue working and more frequent review may not be required. Those with moderate disease will require annual review to monitor development of symptoms, progression and function. Those with severe disease will require surgical or percutaneous intervention. Fitness for work will be determined by the AMP (minimum 3-months), based on information provided from the cardiologist and the coal mine worker's risk category. Ongoing follow up will be annually, including information provided by the treating specialist or GP. Specific criteria are set for the complications of cardiac arrest, heart failure and implanted devices.		

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Aneurysms – aortic, abdominal and thoracic	Management The coal mine worker is not fit for work if they have an unrepaired aortic, thoracic or abdominal aneurysm ≥ 55 mm for atherosclerotic or associated with a bicuspid aortic valve, or ≥ 50 mm for other types. The coal mine worker may be cleared for work with unrepaired aneurysms below this limit if the blood pressure is consistently below 150/90 mmHg. The coal mine worker should be certified as temporarily unfit for work for at least 3 months after repair of the aneurysm. The coal mine worker can return to work if it is at least 3 months after an aneurysm repair AND information is provided by the treating specialist that the response to treatment is satisfactory, according to the treating specialist. Follow up Information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker is not fit for work if they have an unrepaired aortic, thoracic or abdominal aneurysm ≥ 55 mm for atherosclerotic or associated with a bicuspid aortic valve, or ≥ 50 mm for other types. The coal mine worker may be cleared for work with unrepaired aneurysms below this limit if the blood pressure is consistently below 150/90 mmHg. The coal mine worker should be certified as temporarily unfit for work for at least 3 months after repair of the aneurysm. The coal mine worker can return to work if it is at least 3 months after an aneurysm repair AND information is provided by the treating specialist that the response to treatment is satisfactory, according to the treating specialist. Follow up Information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire Once the condition is assessed as stable, return to routine review.	Management The coal mine worker is not fit for work if they have an unrepaired aortic, thoracic or abdominal aneurysm ≥ 55 mm for atherosclerotic or associated with a bicuspid aortic valve, or ≥ 50 mm for other types. The coal mine worker may be cleared for work with unrepaired aneurysms below this limit if the blood pressure is consistently below 150/90 mmHg. The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks after repair of the aneurysm. The coal mine worker can return to work if it is at least 4 weeks after an aneurysm repair AND information is provided by the treating specialist that the response to treatment is satisfactory, according to the treating specialist. Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.
Deep vein thrombosis (DVT)	Management The coal mine worker should be certified as temporarily unfit for work for at least 2 weeks after a DVT. For long-term anticoagulation management and follow up requirements, refer to 'long-term anticoagulant therapy' section of this Standard.	Management The coal mine worker should be certified as temporarily unfit for work for at least 2 weeks after a DVT. For long-term anticoagulation management and follow up requirements, refer to 'long-term anticoagulant therapy' section of this Standard.	Management The coal mine worker should be certified as temporarily unfit for work for at least 2 weeks after a DVT. For long-term anticoagulation management and follow up requirements, refer to 'long-term anticoagulant therapy' section of this Standard.
Pulmonary embolism (PE)	Management The coal mine worker should be certified as temporarily unfit for work for at least 6 weeks after a PE. For long-term anticoagulation management, refer to 'long-term anticoagulant therapy' section of this Standard.	Management The coal mine worker should be certified as temporarily unfit for work for at least 6 weeks after a PE. For long-term anticoagulation management, refer to 'long-term anticoagulant therapy' section of this Standard.	Management The coal mine worker should be certified as unfit for work for at least 6 weeks following a PE. For long-term anticoagulation management, refer to 'long-term anticoagulant therapy' section of this Standard.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Valvular heart disease Including treatment with Mitra Clips, and transcatheter aortic valve replacement	Management The coal mine worker should be certified as temporarily unfit for work for at least 3 months following a valve repair. The coal mine worker should be certified temporarily unfit for work for 3 months 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 the coal mine worker is taking long-term anticoagulants. The coal mine worker can return to work if information is provided by the treating specialist that the following criteria are met: > the cardiological assessment shows valvular disease of no haemodynamic significance; or > it is at least 3 months after valve repair; and > there is no evidence of valvular dysfunction; and > the person participates in an appropriate cardiac surveillance program; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > there is minimal residual musculoskeletal pain after chest surgery. Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work for at least 3 months following a valve repair. The coal mine worker should be certified temporarily unfit for work for 3 months 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 the coal mine worker is taking long-term anticoagulants. The coal mine worker can return to work if information is provided by the treating specialist that the following criteria are met: > the cardiological assessment shows valvular disease of no haemodynamic significance; or > it is at least 3 months after valve repair; and > there is no evidence of valvular dysfunction; and > the person participates in an appropriate cardiac surveillance program; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > there is minimal residual musculoskeletal pain after chest surgery. Follow up Information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once the condition is assessed as stable, return to routine review.	Management The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks following a valve repair. The coal mine worker can return to work after at least 4 weeks AND information is provided by the treating doctor that the following criteria are met: > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > there is minimal residual musculoskeletal pain after chest surgery, if required. Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Other cardiovascular diseases	Long-term anticoagulant therapy Long-term anticoagulant therapy (i.e. >3 to 6 months duration) may be used to lessen the risk of embolism in disorders of cardiac rhythm, following valve replacement, or for DVT. If not adequately controlled, there is a risk of bleeding that may acutely affect Categories A and B coal mine workers, such as an intracranial bleed, particularly for those taking the anticoagulant medication, warfarin. Before fitness for work is determined, the AMP requires information from the coal mine worker's treating specialist or doctor that anticoagulation is maintained at the appropriate degree for the underlying condition; and for those on warfarin, that there is a low risk of haemorrhage. Ongoing review requirements should then be determined by the coal mine worker's risk category requirements. Congenital disorders The impact of congenital heart disorders relates to the effects of the congenital lesion on ventricular function, associated valve lesions, shunting, cyanosis, development of pulmonary vascular disease and complicating arrhythmias. Some congenital conditions are likely to be incompatible with fitness for work, e.g.: > congenital heart disorders (repaired or unrepaired) associated with severe pulmonary vascular disease (including Eisenmenger syndrome or pulmonary vascular resistance over 8 wood units) > cyanotic congenital heart disorder (unoperated or untreated) with resting oxygen saturation below 80% > Fontan circulation > univentricular heart (including double inlet left/right ventricle, tricuspid/mitral atresia, hypoplastic left heart syndrome, and any other anatomic abnormality with a functionally single ventricle) > severe stenotic valve disease if unrepaired (see also below). For other congenital heart disorders, fitness for work will depend on the haemodynamic impacts and relevant symptoms as outlined in table below based on advice by the treating specialist. The relevant sections on atrial fibrillation, paroxysmal arrhythmias, implantable cardioverter defibrillators, cardiac pacemaker and heart failure may also apply to coal mine workers with congenital heart disease.		

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Long-term anticoagulant therapy (>3 to 6 months)	Management If on warfarin, the coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating specialist that the following criteria are met: > anticoagulation is maintained at the appropriate degree for the underlying condition; and > there is low risk of haemorrhage. Those on non-Vitamin K antagonist oral anticoagulants should be certified as fit for work. Follow up For those on warfarin, the above information is required annually by the treating specialist OR treating GP where the coal mine worker has been discharged to the GP's care. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Those on non-Vitamin K antagonist oral anticoagulants should be reviewed as required for their underlying condition.	Management If on warfarin, the coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating specialist that the following criteria are met: > anticoagulation is maintained at the appropriate degree for the underlying condition; and > there is low risk of haemorrhage. Those on non-Vitamin K antagonist oral anticoagulants should be certified as fit for work. Follow up For those on warfarin, the above information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once the condition is assessed as stable, return to routine review. Those on non-Vitamin K antagonist oral anticoagulants should be reviewed as required for their underlying condition.	Management The coal mine worker should be managed according to the underlying condition. Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Congenital disorders	Management The coal mine worker should be certified as temporarily unfit for work for: > at least 3 months following surgical treatment for congenital heart disease > at least 4 weeks following a percutaneous intervention for congenital heart disease. The coal mine worker can return to work after these time periods if information is provided by the treating specialist that the following criteria are met: > there is a minor congenital disorder of no haemodynamic significance; or > there has been surgical/percutaneous correction of the disorder; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness). Follow up This information is required annually by the treating specialist.* If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. <i>* Note: If the disorder is considered stable and there are minimal symptoms likely to affect performance, a reduced frequency of review may be determined based on the advice of the treating specialist.</i>	Management The coal mine worker should be certified as temporarily unfit for work for: > at least 3 months following surgical treatment for congenital heart disease > at least 4 weeks following a percutaneous intervention for congenital heart disease. The coal mine worker can return to work after these time periods if information is provided by the treating specialist that the following criteria are met: > there is a minor congenital disorder of no haemodynamic significance; or > there has been surgical/percutaneous correction of the disorder; and > there are minimal symptoms (i.e. chest pain, syncope, palpitations, breathlessness). Follow up Information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once the condition is assessed as stable, return to routine review.	Management The coal mine worker should be certified as temporarily unfit for work for: > at least 4 weeks following surgical treatment for congenital heart disease > at least 2 weeks following a percutaneous intervention for congenital heart disease. The coal mine worker can return to work after these time periods if information is provided by the treating specialist that there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Myocardial diseases	The dilated and hypertrophic cardiomyopathies may present with diverse symptoms, including exertional dyspnoea, palpitations, angina, syncope, cardiac arrest or heart failure. The symptoms, if severe, may cause distraction from work and as such are relevant to both Category A and Category B coal mine workers. The risk of collapse is particularly relevant to Categories A and B coal mine workers. Specific criteria are set for the complications of cardiac arrest, heart failure and implanted devices. They may also be asymptomatic and found on examination.		
Dilated cardiomyopathy (Refer also to 'heart failure' section)	Management The coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating specialist that the following criteria are met: > there is an ejection fraction $\geq 40\%$; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > the person is not subject to haemodynamically significant arrhythmias. Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating specialist that the following criteria are met: > there is an ejection fraction $\geq 40\%$; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > the person is not subject to haemodynamically significant arrhythmias. Follow up Information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once the condition is assessed as stable, return to routine review.	Management The coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating doctor that the following criteria are met: > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > the person is not subject to haemodynamically significant arrhythmias. Cardiologist assessment is recommended for complex presentations. Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Hypertrophic cardiomyopathy	Management The coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating specialist that the following criteria are met: > the left ventricular ejection fraction $\geq 40\%$; and > there is absence of all of the following: – a history of syncope – severe left ventricle hypertrophy – significant LV outflow tract gradient – ventricular arrhythmia on Holter testing – a family history of sudden death; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing. Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating specialist that the following criteria are met: > the left ventricular ejection fraction $\geq 40\%$; and > there is absence of all of the following: – a history of syncope – severe left ventricle hypertrophy – significant LV outflow tract gradient – ventricular arrhythmia on Holter testing – a family history of sudden death; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended, there is adequate performance with exercise testing. Follow up Information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once the condition is assessed as stable, return to routine review.	Management The coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating specialist that the following criteria are met: > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > the person is not subject to arrhythmias or syncope. Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Heart failure	Management The coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > there is an ejection fraction $\geq 40\%$; and > the underlying cause of the heart failure is considered; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended there is adequate performance with exercise testing. Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating specialist as to whether the following criteria are met: > there is a satisfactory response to treatment; and > there is an ejection fraction $\geq 40\%$; and > the underlying cause of the heart failure is considered; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness); and > where clinically recommended there is adequate performance with exercise testing. Follow up Information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once the condition is assessed as stable, return to routine review.	Management The coal mine worker should be certified as temporarily unfit for work until information is obtained from the treating doctor as to whether the following criteria are met: > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Heart transplant	Management The coal mine worker should be certified as temporarily unfit for work for at least 3 months post-transplant. The coal mine worker can return to work after at least 3 months post-transplant AND information is provided by the treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > there is an exercise tolerance $\geq 90\%$ of the age/sex predicted exercise capacity according to the Bruce protocol or equivalent functional 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 EchoCG, or absence of a large defect on a stress perfusion scan); and > there is an ejection fraction of $> 40\%$; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). Follow up This information is required annually by the treating specialist. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker should be certified as temporarily unfit for work for at least 3 months post-transplant. The coal mine worker can return to work after at least 3 months post-transplant AND information is provided by the treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > there is an exercise tolerance $\geq 90\%$ of the age/sex predicted exercise capacity according to the Bruce protocol or equivalent functional 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 EchoCG, or absence of a large defect on a stress perfusion scan); and > there is an ejection fraction of $> 40\%$; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). Follow up Information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once the condition is assessed as stable, return to routine review.	Management The coal mine worker should be certified as temporarily unfit for work for at least 6 weeks post-transplant. The coal mine worker can return to work after at least 6 weeks post-transplant AND information is provided by the treating specialist that the following criteria are met: > there is a satisfactory response to treatment; and > there are minimal symptoms (i.e. chest pain, palpitations, breathlessness). Follow up Once it established that they are being adequately managed by their treating doctor, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Ventricular assist devices (LVAD, BiVAD)	Management The coal mine worker should be certified as permanently unfit for work if they require a VAD of any type or an artificial heart.	Management The coal mine worker should be certified as permanently unfit for work if they require a VAD of any type or an artificial heart.	Management The coal mine worker should be certified as temporarily unfit for work for at least 3 months following insertion of a VAD. The coal mine worker can return to work after at least 3 months post insertion AND information is provided by the treating specialist that the following criteria are met: > the device has been in situ for at least 3 months and there have been no equipment problems during the preceding 2 weeks; and > anticoagulation is stable in accordance with this Standard; and > the medical condition is stable and satisfactorily controlled, and there are minimal symptoms relevant to driving (i.e. chest pain, palpitations, breathlessness); and > the person is confident in relation to all LVAD or BiVAD equipment. Follow up This information is required 6 monthly by the treating specialist OR treating GP where the coal mine worker has been discharged to the GP's care. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Hypertension	Concerns about hypertension (high blood pressure) relate to: > exceedingly high levels (≥ 200 mmHg systolic or ≥ 110 mmHg diastolic) where acute incapacity due to events such as stroke are a concern, and the blood pressure is managed as a risk factor > moderately raised blood pressure (≥ 170 mmHg to < 200 mmHg systolic or ≥ 100 mmHg to < 110 mmHg diastolic) where blood pressure is managed, along with other risk factors, as a contributor to cardiovascular events. Management will depend on the: > level of blood pressure > response to treatment > cardiac risk level > effects of medication and > presence of end organ damage Note: Refer to Figure 2: Hypertension management pathway on page 48 of this Standard which summarises management according to the coal mine worker's blood pressure reading and identified risk category.		
Blood pressure: ≥ 140 mmHg to < 170 mmHg systolic or ≥ 90 mmHg to < 100 mmHg diastolic	Management The coal mine worker should be certified as fit for work. If hypertension is already treated, no further action is required (for routine review). If hypertension is untreated, refer to GP for medical management. Follow up Routine review.	Management The coal mine worker should be certified as fit for work. If hypertension is already treated, no further action is required (for routine review). If hypertension is untreated, refer to GP for medical management. Follow up Routine review.	Management The coal mine worker should be certified as fit for work. If hypertension is already treated, no further action is required (for routine review). If hypertension is untreated, refer to GP for medical management. Follow up Routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Blood pressure: ≥170 mmHg to <200 mmHg systolic or ≥100 mmHg to <110 mmHg diastolic	Management The coal mine worker should be certified as fit for work and referred to their GP for medical management. The AMP should review medical information provided from the GP within 3 months. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. If the coal mine worker's blood pressure is <170 mmHg systolic or <100 mmHg diastolic after treatment, they should have their CVD risk score calculated based on the new level of blood pressure and they should be managed and certified accordingly, including whether they meet the following criteria: > the blood pressure is well controlled; and > there are no side effects from the medication that will impair their work; and > there is no evidence of damage to target organs relevant to performing their position. If the coal mine worker's blood pressure remains ≥170 mmHg systolic or ≥100 mmHg diastolic after treatment, they should be certified as temporarily unfit for work and referred to an appropriate specialist for investigation and treatment. Certification will subsequently depend on response to treatment, the CVD risk score and meeting of other criteria as above. If blood pressure remains ≥170 mmHg systolic or ≥100 mmHg diastolic, despite treatment following specialist review, the coal mine worker should be certified as unfit for work. Follow up Medical information is required annually by the treating specialist OR treating GP where the coal mine worker has been discharged to the GP's care.	Management The coal mine worker should be certified as fit for work and referred to their GP for medical management. The AMP should review medical information provided from the GP within 3 months. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. If the coal mine worker's blood pressure is <170 mmHg systolic or <100 mmHg diastolic after treatment, they should have their CVD risk score calculated based on the new level of blood pressure and they should be managed and certified accordingly, including whether they meet the following criteria: > the blood pressure is well controlled; and > there are no side effects from the medication that will impair their work; and > there is no evidence of damage to target organs relevant to performing their position. If the coal mine worker's blood pressure remains ≥170 mmHg systolic or ≥100 mmHg diastolic after treatment, they should be certified as temporarily unfit for work and referred to an appropriate specialist for investigation and treatment. Certification will subsequently depend on response to treatment, the CVD risk score and meeting of other criteria as above. If blood pressure remains ≥170 mmHg systolic or ≥100 mmHg diastolic, despite treatment following specialist review, the coal mine worker should be certified as unfit for work. Follow up Once there is evidence that the blood pressure is consistently <170 mmHg systolic or <100 mmHg diastolic, the coal mine worker can return to routine review.	Management The coal mine worker should be certified as fit for work and referred to their GP for medical management. The AMP should review medical information provided from the GP within 3 months. The AMP should calculate the coal mine workers CVD risk score based on the new level of blood pressure provided by the GP and they should be managed accordingly. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Follow up Once information is received from the GP that the blood pressure is being managed, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Blood pressure: ≥200 mmHg systolic or ≥110 mmHg diastolic	Management Certify as temporarily unfit for work and advise the coal mine worker of the health certification. Refer the coal mine worker for urgent medical review. AMP to contact PCBU to advise of the coal mine worker's health certification. The coal mine worker can return to work if information is provided by the treating doctor that the following criteria are met: > blood pressure is <170 mmHg systolic and <100 mmHg diastolic after 4 weeks of treatment. They should then have their CVD risk score calculated based on the new level of blood pressure and they should be managed and categorised accordingly; and > 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 coal mine worker's blood pressure remains ≥170 mmHg systolic or ≥100 mmHg diastolic despite treatment, they should be certified as unfit for work. Once there is evidence that the blood pressure is consistently <170 mmHg or <100 mmHg diastolic the coal mine worker may be certified as fit for work. Follow up Annual information is required from their treating specialist or treating GP where the coal mine worker has been discharged to the GP's care. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management Certify as temporarily unfit for work and advise the coal mine worker of the health certification. Refer the coal mine worker for urgent medical review. AMP to contact PCBU to advise of the coal mine worker's health certification. The coal mine worker can return to work if information is provided by the treating doctor that the following criteria are met: > blood pressure is <170 mmHg systolic and <100 mmHg diastolic after 4 weeks of treatment. They should then have their CVD risk score calculated based on the new level of blood pressure and they should be managed and categorised accordingly; and > there are no side effects from the medication that will impair work practices; and > there is no evidence of damage to target organs relevant to work practices. If the coal mine worker's blood pressure remains ≥170 mmHg systolic or ≥100 mmHg diastolic despite treatment, they should be certified as unfit for work. Once there is evidence that the blood pressure is consistently <170 mmHg or <100 mmHg diastolic the coal mine worker may be certified as fit for work. Follow up Once information is received that the blood pressure is being managed and well controlled, the coal mine worker can return to routine review.	Management Certify as temporarily unfit for work and advise the coal mine worker of the health certification. Refer the coal mine worker for urgent medical review. AMP to contact PCBU to advise of the coal mine worker's health certification. The coal mine worker can return to work if information is obtained from the treating doctor that the following criteria are met: > blood pressure is <200 mmHg systolic and <110 mmHg diastolic; and > the treating doctor confirms the blood pressure is being managed. The AMP should calculate the coal mine workers CVD risk score based on the new level of blood pressure provided by the GP and they should be managed accordingly. Follow up Once the above information is received, the coal mine worker can return to routine review.

Cardiovascular conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Syncope	Management The coal mine worker could resume 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. The coal mine worker should be certified as temporarily unfit for work for at least 3 months after syncope due to other cardiovascular causes. The coal mine worker can return to work if it is at least 3 months after the episode of syncope AND information is provided by the treating specialist that the following criteria are met: > the underlying cause has been identified; and > satisfactory treatment has been instituted; and > the person has been symptom-free throughout the non-working period. Follow up The above information is required annually by the treating specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire.	Management The coal mine worker could resume 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. The coal mine worker should be certified as temporarily unfit for work for at least 3 months after syncope due to other cardiovascular causes. The coal mine worker can return to work if it is at least 3 months after the episode of syncope AND information is provided by the treating specialist that the following criteria are met: > the underlying cause has been identified; and > satisfactory treatment has been instituted; and > the person has been symptom-free throughout the non-working period. Follow up The above information is required at 12 months by the treating GP or specialist to confirm the condition is being managed. If no medical information is provided to the AMP, then the coal mine worker's health certificate will expire. Once the condition is assessed as stable, return to routine review.	Management The coal mine worker could resume 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. The coal mine worker should be certified as temporarily unfit for work for at least 4 weeks after syncope due to other cardiovascular causes. The coal mine worker can return to work if it is at least 4 weeks after the episode of syncope AND information is provided by the treating doctor that the following criteria are met: > the underlying cause has been identified; and > satisfactory treatment has been instituted; and > the person has been symptom-free throughout the non-working period. Follow up Once it established that they are being managed by their treating doctor, the coal mine worker can return to routine review.

Table 4: Medical management—Other conditions

Other conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
Obesity	Obesity, i.e. a body mass index (BMI) of 30 kg/m² or more, is associated with an increased risk of CVD. Regardless of BMI, a coal mine worker's weight is crucial to determine adequate weight-rated equipment, especially in rescue situations. New South Wales Health has a Management of Patients with Bariatric Needs guideline for individuals over 120 kg or where the dimensions of the patient exceed the standard equipment dimensions. Similarly, there is mining equipment in both underground and surface operations that may not be suitable for coal mine workers weighing 120 kg or more. For this reason, the AMP must record the coal mine worker's weight on the health assessment certificate when it is ≥120 kg. AMPs should also refer to the Transitional Arrangements (page 51) for guidance on sleep study investigations which are not included within the obesity section of this Standard. Refer to Figure 3: Body Mass Index and weight management pathway on page 49 of this Standard which summarises management according to the coal mine worker's weight, BMI and identified risk category.		
Weight: ≥120 kg	Management Coal mine workers with a weight of ≥120 kg should be certified for use of appropriately weight-rated equipment. The AMP should record the coal mine worker's weight on their health certificate. The coal mine worker should then be managed as per their BMI, outlined within the tables below.	Management Coal mine workers with a weight of ≥120 kg should be certified for use of appropriately weight-rated equipment. The AMP should record the coal mine worker's weight on their health certificate. The coal mine worker should then be managed as per their BMI, outlined within the tables below.	Management Coal mine workers with a weight of ≥120 kg should be certified for use of appropriately weight-rated equipment. The AMP should record the coal mine worker's weight on their health certificate. The coal mine worker should then be managed as per their BMI, outlined within the tables below.
BMI: ≥30 kg/m ² to <50 kg/m ²	Management Certify as fit for work. Consider referral to GP for weight management, including dietary and exercise advice. Manage any confirmed CVD and comorbidities in accordance with the guidance in this Standard. If no confirmed CVD, manage as per calculated CVD risk score profile.	Management Certify as fit for work. Consider referral to GP for weight management, including dietary and exercise advice. Manage any confirmed CVD and comorbidities in accordance with the guidance in this Standard. If no confirmed CVD, manage as per calculated CVD risk score profile.	Management Certify as fit for work. Consider referral to GP for weight management, including dietary and exercise advice. Manage any confirmed CVD and comorbidities in accordance with the guidance in this Standard. If no confirmed CVD, manage as per calculated CVD risk score profile.

Other conditions	Coal mine worker Category A: Safety critical	Coal mine worker Category B: Safety sensitive	Coal mine worker Category C: Non-safety sensitive
BMI: ≥50 kg/m ²	Management Certify as temporarily unfit for work and advise the coal mine worker of the health certification. AMP to contact PCBU to advise of the coal mine worker's health certification. Assess whether the coal mine worker is suitable for other tasks in consultation with the PCBU. Refer to GP for weight management and referral to cardiologist to assess cardiac risk. The coal mine worker should remain temporarily unfit for work until seen by the cardiologist and confirmation is received that their CVD risk is being managed. The AMP is to review medical information provided by the cardiologist within 6 months. Manage any confirmed CVD and comorbidities in accordance with the guidance in this Standard. If no confirmed CVD, manage as per calculated CVD risk score profile.	Management Certify as temporarily unfit for work and advise the coal mine worker of the health certification. AMP to contact PCBU to advise of the coal mine worker's health certification. Assess whether the coal mine worker is suitable for other tasks in consultation with the PCBU. Refer to GP for weight management and to assess cardiac risk. The coal mine worker should remain temporarily unfit for work until seen by their GP and confirmation is received that their CVD risk is being managed. The AMP should review medical information provided by the GP within 6 months. Manage any confirmed CVD and comorbidities in accordance with the guidance in this Standard. If no confirmed CVD, manage as per calculated CVD risk score profile.	Management Certify as fit for work. AMP to refer the coal mine worker to their GP for weight management, including dietary and exercise advice. Manage any confirmed CVD and comorbidities in accordance with the guidance in this Standard. If no confirmed CVD, manage coal mine worker as per calculated CVD risk score.

Clinical Pathways

Figure 1: Cardiovascular disease (CVD) risk score pathway

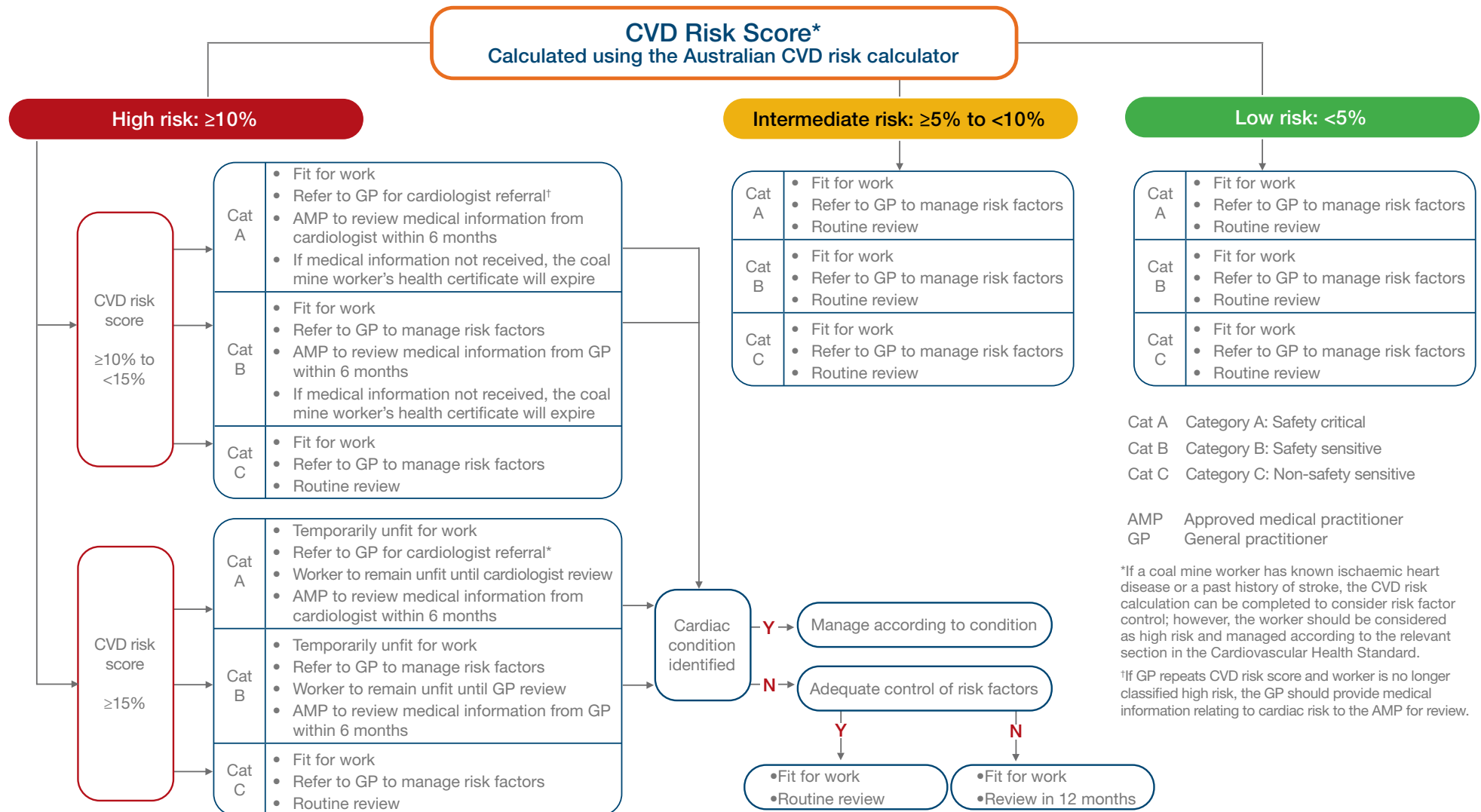


Figure 2: Hypertension management pathway

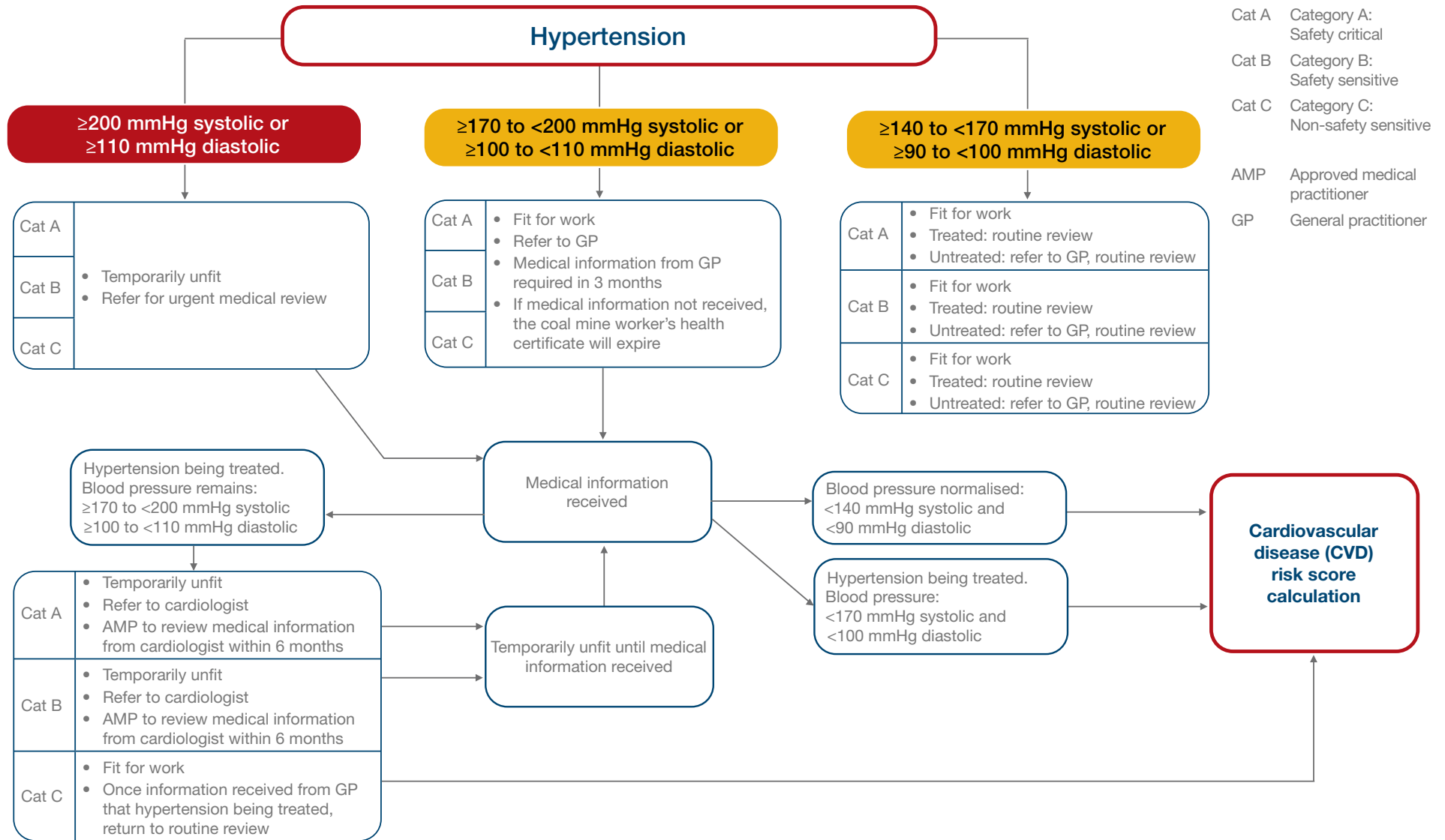
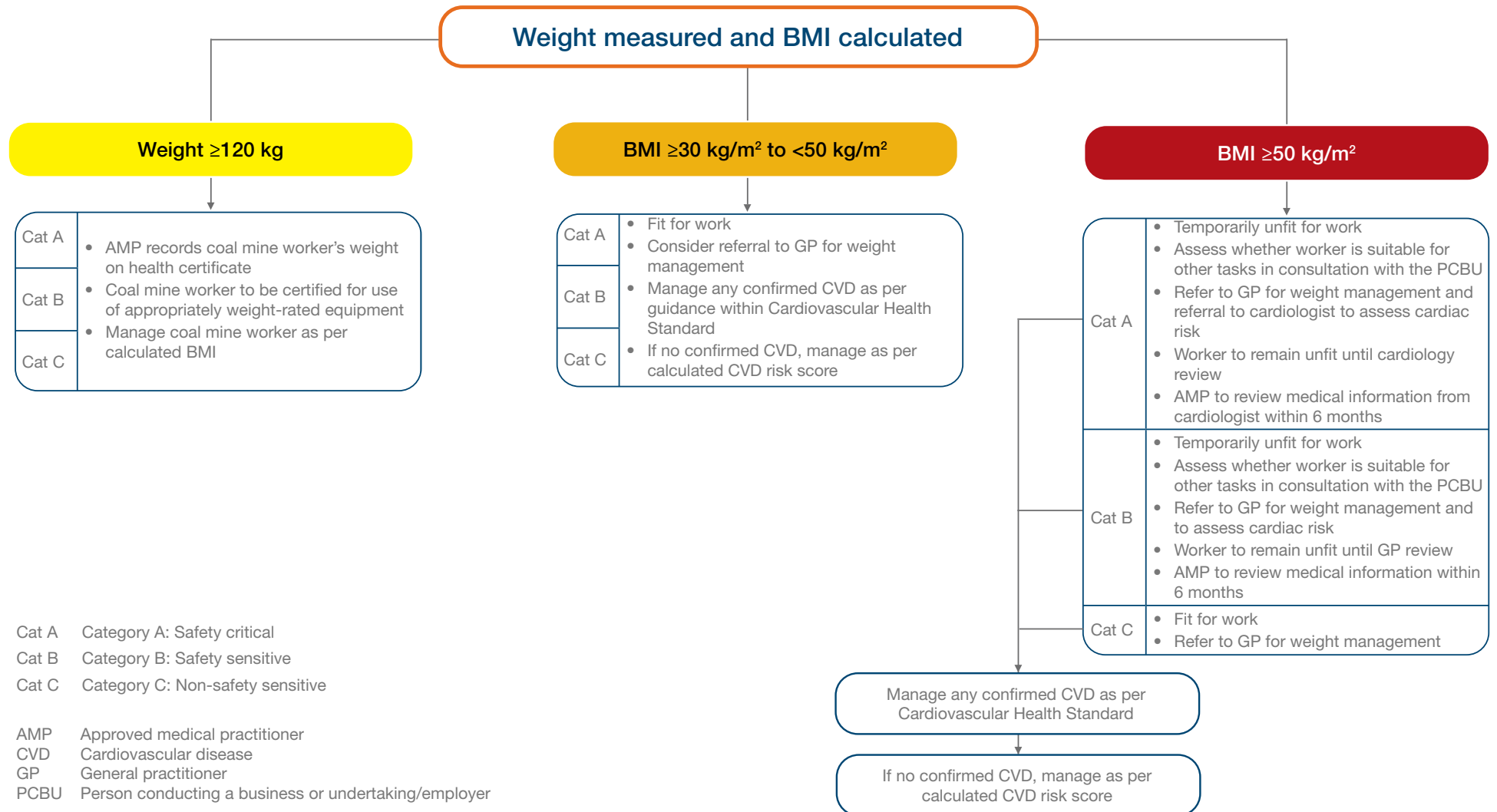


Figure 3: Body mass index (BMI) and weight management pathway



Considerations for certifying fitness for work

When assessing coal mine workers with identified cardiovascular abnormalities, a health assessment of their fitness for work must consider whether they have the capacity to start or continue in their position with or without restrictions, and whether there are any foreseeable health and safety risks to the coal mine worker and/or others. This must happen even if the outcomes of further investigations are still pending.

This Standard provides guidance on the features to look for to determine whether a condition is likely to be sufficiently stable. Evidence showing that a condition has been previously identified and monitored, with good control of any relevant risk factors, may allow a coal mine worker to be certified fit for work with early review.

The AMP should record the reasons for the coal mine worker's health certification. Those reasons should be based on the clinical evidence that supports the application of this Standard to the coal mine worker, including but not limited to the clinical information from the cardiologist.

When assessing a coal mine worker's fitness for work, the AMP must consider the following factors:

- > The coal mine worker's position and the potential for harm if an identified cardiovascular condition was to lead to unavoidable incapacity.
- > The overall severity of the changes, if any, in the coal mine worker's health, i.e. in most cases the presence of severe abnormalities would require that the coal mine worker be certified as temporarily unfit or fit with restrictions.
- > The duration and stability of the condition:
 - Is this the first abnormal result?
 - Has it been present for some time and is it stable or declining?
 - Has there been good control of identified risk factors?
 - Does the worker have a demonstrated history of regular review and good compliance with treatment?
- > The likelihood that the result of a test will be confirmed as abnormal.
- > The psychosocial state and psychosocial work environment of the coal mine worker.
- > Is it a new position, i.e. the condition may need to be fully investigated to determine whether the coal mine worker is actually fit for the position.
- > If a new cardiovascular condition is identified at an Order 43 health assessment, the coal mine worker may be certified as temporarily unfit for work or fit for work, subject to a health assessment review, depending on the identified condition and clinical findings. Consideration should be given to whether the condition is well managed and is compatible with the risk category classification of the position.
- > In cases where the AMP assesses the coal mine worker as unfit for their designated position, the AMP must advise the coal mine worker of the health certification.
- > In cases where the AMP considers the coal mine worker unfit for the designated position, they must contact the PCBU to advise of the health certification. They should also consider, in discussion with the PCBU, if the coal mine worker would be suitable for other duties. This should occur with the coal mine worker's consent and before the health certification is finalised.

Transitional arrangements

Proposed replacement of Order 43

This Standard has been developed to align with the proposed replacement of the Coal Services Health Monitoring Requirements for Coal Mine Workers Order No. 43.

The replacement Order is expected to become operational in 2026 and will be assigned a new Order number. Until the replacement Order is gazetted, this Standard refers to Order 43, after which time it will refer to the replacement Order.

Risk category guidelines

This Standard is drafted to reflect the risk categorisation of coal mine workers by PCBU as defined in the proposed replacement for Order 43.

Until the replacement Order comes into effect, where a PCBU has not nominated a risk category for a coal mine worker having a health assessment under Order 43, the AMP should manage workers with office-based duties as Category C: Non-safety sensitive and all others as Category A: Safety critical.

Obesity and sleep studies

This Standard does not include recommendations for sleep studies related to obesity and the risk of sleep apnoea.

Until the NSW Coal Industry Sleep Health Standard is developed, AMPs are to continue to use recommendations for sleep studies contained within the CS Health Cardiovascular Risk Management Guidelines for the NSW Coal Industry (see Appendix A).

Within these guidelines, a BMI of ≥ 40 kg/m² triggers the need to request a sleep study for all coal mine workers, except Category C: Non-safety sensitive (office-based workers), who should be referred to their GP for management.

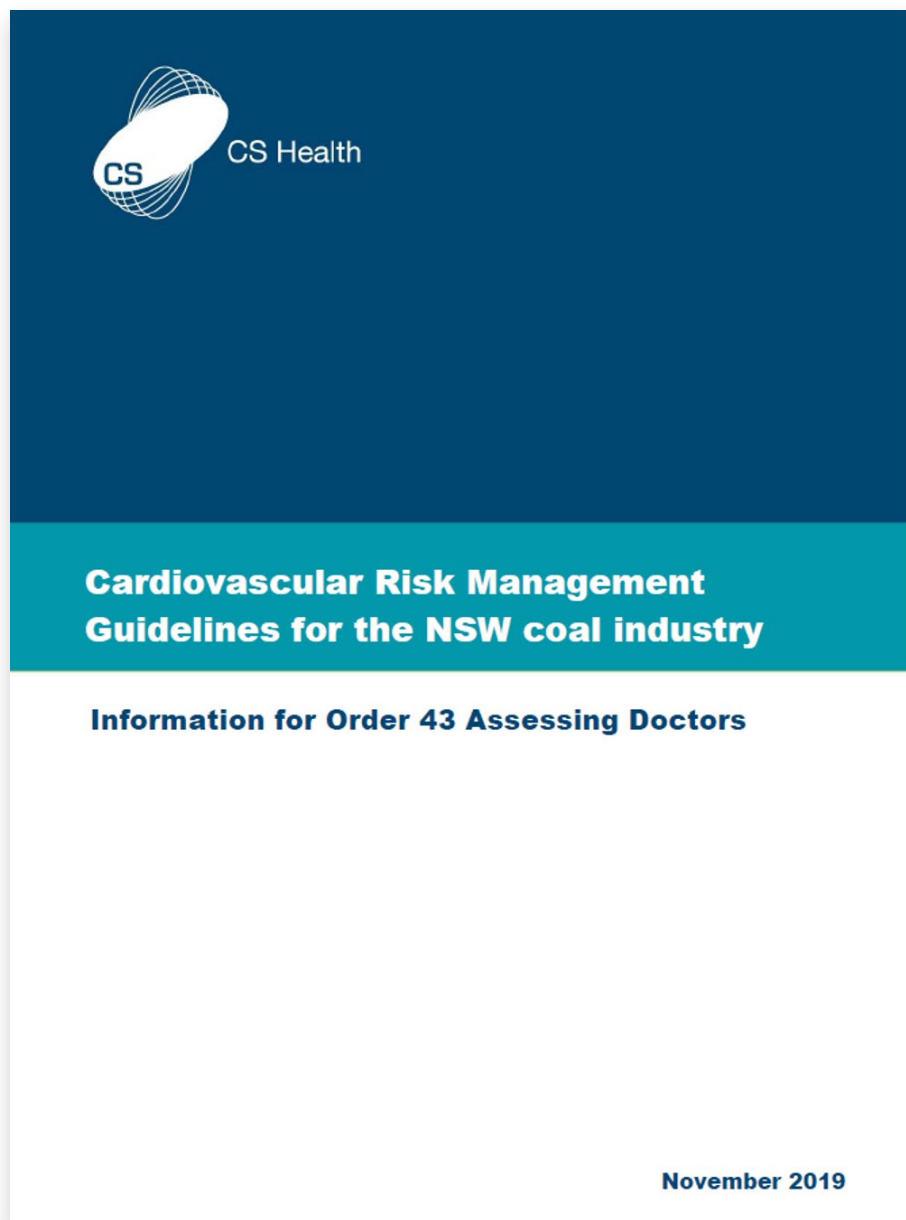
Note: AMPs should only follow weight recommendations contained within this NSW Coal Industry Cardiovascular Health Standard. They should not follow guidelines for weight contained within the CS Health Cardiovascular Risk Management Guidelines (Appendix A).

If a sleep study is indicated, the AMP should check whether a sleep study has been performed and seek a copy of the report.

Note: If weight-gain of 10% or more has occurred since the last sleep study, another sleep study may be needed (depending on the outcome of the previous sleep study). This would usually apply where only a minor abnormality was detected in the first study and Continuous Positive Airway Pressure (CPAP) treatment was not initiated. Coal mine workers who have previously commenced on CPAP treatment will only need to provide a copy of their current compliance printout.

Appendices

Appendix A: Cardiovascular risk management guidelines for the NSW Coal Industry (2019)



Currently, increased waist measurement and obesity are known to be associated with increased cardiovascular risk. Current cardiovascular risk predictive tables/calculators do not adequately account for these risk factors. Therefore, the assessed value should be taken to be the minimum risk in those with a Body Mass Index (BMI) of 30 and over. As with the other risk factors, a value should be chosen beyond which the level of risk is deemed unacceptable.

Weight, independent of BMI, can be very important for ensuring adequately rated equipment for the use of the coal mine worker, including rescue situations. New South Wales Health and Ambulance services have a bariatric policy from 120 kg or where the dimensions of the patient exceed standard equipment. There is also equipment in underground and surface mines that may not be suitable for coal mine workers weighing 120 kg and over.

The following table indicates how the issue of obesity should be assessed by Order 43 Assessing Doctors.

Body Mass Index (BMI)	Management guidelines
30 to 39	Referral to GP for medical management, including dietary and exercise advice where appropriate. The actual BMI and the presence of comorbidities such as diabetes and/or hypertension may indicate that a referral for a sleep study and early review is recommended. Coal mine workers with a weight of 120 kg or more should be referred to their GP for weight management and certified for use of appropriately weight-rated equipment and review in not more than 12 months.
40 to 49	Referral to GP for medical management, including dietary and exercise advice. The Order 43 Assessing Doctor should also request a sleep study and may request a stress test depending on overall risk assessment. Subject to other findings, they may be certified for use of appropriately weight-rated equipment (if relevant) and review in not more than 12 months.
50+	Safety critical role: Temporarily unfit for current role but may be assessed as fit for other suitable duties. In this instance, the Order 43 Assessing Doctor should make contact with the employer to discuss the medical findings and the options for the determination. This should be discussed in consultation with the coal mine worker and their employer. Referral to GP for sleep study, stress test and medical management. Non-safety critical role: Consult with employer regarding their role. Referral to GP for sleep study, stress test and medical management.

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[Assessing fitness to drive 2022](#)

[Australian Bureau of Statistics BMI and Waist circumference data](#)

[Australian Bureau of Statistics cardiovascular data](#)

[Australian Bureau of Statistics hypertension data](#)

[Australian cardiovascular disease risk calculator](#)

[Australian Guideline for assessing and managing cardiovascular disease risk](#)

[Guideline for the diagnosis and management of hypertension in adults 2016](#)

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[National Drug Strategy Household Survey 2022–2023](#)

[National Heart Foundation of Australia: Position statement on coronary artery calcium scoring for the primary prevention of cardiovascular disease in Australia](#)

[National Standard for Assessment of Rail Safety Workers 2024](#)

[NSW Health Management of Patients with Bariatric Needs Guideline \(2024\)](#)

[NSW Work Health and Safety Regulation 2017](#)

Queensland Mines Rescue Service Guideline for the medical assessment of mines rescue personnel

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[Review of the New South Wales Health Surveillance Scheme for Coal Mine Workers February 2023](#)

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[Work Health and Safety Act 2011 \(NSW\)](#)

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