Government of **Western Australia**
Department of **Health**
Public and Aboriginal Health Division

Communicable Disease Control Directorate
Guideline

Respiratory Protection Guidelines for Western Australian Healthcare Facilities

Guideline 0011 / July 2023

These guidelines have been released by the Communicable Disease Control Directorate, Public and Aboriginal Health Division, Western Australian Department of Health, to provide consistent and evidence informed advice to agencies involved in the prevention of infections and management of communicable diseases in Western Australia.

ACKNOWLEDGEMENT OF COUNTRY AND PEOPLE

The Communicable Disease Control Directorate at the Department of Health acknowledge the Aboriginal people of the many traditional lands and language groups of Western Australia. We acknowledge the wisdom of Aboriginal Elders both past and present and pay respect to Aboriginal communities of today.

1 Contents

2 Definitions

Term	Definition
Aerosol generating behaviour (AGB)	Behaviours that are likely to generate higher volumes of respiratory secretions and thus increase the risk of transmission via aerosols e.g., shouting, spitting, screaming, women in active labour who exhibit heavy breathing and panting.
Aerosol generating procedure (AGP)	Procedures that promote the generation of fine airborne particles (aerosols) that may result in the risk of airborne transmission of disease.
Airborne precautions	Practices used to prevent the transmission of pathogens spread by the airborne route via particles in the respirable size range that remain infective over time and distance. Airborne precautions require the use of a particulate filter respirator, protective eyewear and other personal protective equipment as required as per standard precautions. The patient is accommodated in a Negative Pressure Isolation Room (NPIR) when possible.
Communicable Diseases Network Australia (CDNA)	The organisation that provides national public health advice for the prevention and control of communicable diseases. The CDNA has published a Series of National Guidelines (SoNGs) to provide nationally consistent advice including Coronavirus Disease 2019 (COVID-19) CDNA national guidelines for public health units.
Confirmed case of COVID-19	CDNA case definitions need to be accessed to ensure current criteria are referenced.
Droplet precautions	Practices used to prevent transmission of pathogens that are spread by respiratory droplets i.e., large particles > 5 microns. Transmission via large droplets requires close contact as the droplets do not remain suspended in the air and generally only travel short distances. Droplet precautions include the use of a surgical mask and protective eyewear and other personal protective equipment as required as per standard precautions.
Fit check	A fit check is the minimum standard at the point of use for health care workers using a particulate filter respirator. No clinical activity shall be undertaken until a satisfactory fit check has been achieved. It involves a fit check each time a particulate filter respirator is put on to ensure the particulate filter respirator is properly applied, that a good seal is achieved over the bridge of the nose and mouth and there are no gaps between the face and respirator. Also known as a user seal check.
Fit test	A quantitative fit test is a validated method to determine whether the type of respirator being worn provides an adequate seal with a person's face. The testing is done while a person is wearing a

	particulate filter respirator attached to a testing unit while performing a number of physical movements and talking exercises.
Health care worker (HCW)	Any person whose activities involve the provision of care either direct or indirect to patients or clients in a healthcare or laboratory setting and includes those who are employed, honorary, contracted, on student placement or volunteering at the facility. The term is generally applied to all persons working in a hospital or healthcare service.
Health Service Provider (HSP)	A Health Service Provider established under section 32 of the Health Services Act 2016 and may include North Metropolitan Health Service, South Metropolitan Health Service, Child and Adolescent Health Service, WA Country Health Service, East Metropolitan Health Service, PathWest, Quadriplegic Centre and Health Support Services.
N95 respirator	N95 respirators are those that comply with the United States National Institute for Occupational Safety and Health (NIOSH) 42 CFR part 84, which is a less stringent standard.
New South Wales Clinical Excellence Commission (NSW CEC)	The lead agency supporting safety and quality improvement in the NSW Health system.
Particulate filter respirators (PFR)	PFRs used in Western Australia (WA) are the P2 or N95 respirators that filter at least 94 percent of 0.3 micron particles from the air. Both PFRs are appropriate for use with airborne precautions.
Powered air purifying respirators (PAPR)	A respirator that uses a power source to force ambient air through a high efficiency particulate air filter (HEPA) prior to inhalation. PAPRs are an alternative to P2 or N95 respirators for the care of patients requiring airborne precautions and should only be used by those trained and who are deemed competent in their use.
P2 respirator	P2 respirator are those that comply with the Australian Standard AS/NZS 1716:2012 Selection, use and maintenance of respiratory protective devices.
Respiratory Protection Program (RPP)	Program to protect healthcare workers against acquiring respiratory illnesses by minimising the risk of exposure to respiratory hazards. This risk mitigation includes education and training in the correct application of a respirator.
Respirator	Personal protective equipment that is designed to prevent the inhalation of hazardous material. In WA public hospitals and health services the most common devices are particulate filter respirators,

	powered air purifying respirators and elastomeric respirators. The term is identical to “respiratory protective equipment” (RPE) and “respiratory protective device” (RPD) used in other jurisdictions.
Standard precautions	Standard precautions are the work practices required to achieve a basic level of infection prevention and control. The use of standard precautions aims to minimise, and where possible, eliminate the risk of transmission of infection.
Transmission based precautions (TBPs)	Practices used in addition to standard precautions to prevent transmission of infection. TBPs include contact, droplet and airborne precautions and are used for patients known or suspected to be infected or colonised with epidemiologically important or highly transmissible pathogens. They are implemented based upon the mode of transmission of the pathogen.

3 Purpose

This guideline describes the components of a respiratory protection program (RPP) Health Service Providers (HSPs) should implement when respirators are used to minimise the risk of health care worker (HCW) exposure to respiratory pathogens. The RPP is based on a risk management approach according to the likelihood of exposure to respiratory pathogens. It is expected the RPP will complement other existing infection prevention and control (IPC) and Work Health and Safety (WHS) programs. This guideline focuses on protecting HCWs from transmissible respiratory pathogens and does not cover exposure to other workplace environmental contaminates i.e., smoke, chemicals etc. The guidance in this document can be adopted by private facilities.

4 Introduction / Background

The emergence of COVID-19 highlighted an enhanced need for the implementation of a RPP in Western Australia. The Australian/ New Zealand Standard *Selection use and maintenance of respiratory protective equipment* (AS/NZS 1715:2009) outlines the requirements of an RPP and the mandatory *Personal Protective Equipment in Healthcare Facilities Policy (MP 0172/22)* sets out the conditions for a RPP and the appropriate use of PPE to assist in the prevention of patient to patient or patient to HCW transmission of infectious respiratory diseases.

4.1 Responsibilities

A key component of a successful RPP is the assignment of responsibilities for the implementation and coordination of the program. Responsibilities related to the RPP include:

4.1.1 Department of Health (System Manager)

- Maintain related mandatory policy/ies, guideline/s and resources.
- Recommend the order of testing of respirators.
- The Communicable Disease Control Directorate will conduct audits of compliance in accordance with the MP 0172/22.

4.1.2 Health Service Providers

- Implement a RPP when risk assessment indicates respiratory protection is required for HCW safety (refer section 5.1 Risk assessment and management).
- Data sharing of HCW fit test results across HSPs.
- Assign leadership responsibility, personnel and resources to implement and comply with the requirements of the RPP.
- Ensure the RPP complies with the relevant WHS standards and IPC principles.
- Have in place processes and procedures to ensure:
    - appropriate selection, issue, fitting, and use of respiratory PPE
    - HCWs receive training in the use of PPE appropriate for their role and location
    - non-compliance with policies and procedures is managed appropriately

    - HCWs from external organisations (including students, contractors, agencies) comply with PPE training and fit testing requirements
    - appropriate maintenance, storage and disposal of PPE and equipment required for fit testing
    - appropriate record keeping
    - review of the risk assessment yearly at a minimum
    - annual evaluation of the RPP and timely implementation of indicated improvements.
- Identify a program administrator with suitable qualifications, training and experience to make sound decisions based on an evaluation and understanding of the workplace hazards and principles of respiratory protection. The program administrator must have the authority to implement the program. This role, and overall governance, may be incorporated into existing structures and roles within the HSP. The program may be best led in collaboration with WHS or IPC.
- Ensure requirements of related mandatory policies are met, including repeat fit test frequency.
- Maintain the quality of fit test data including accuracy, completeness, relevance, timeliness, reliability, integrity, and consistency to the business needs of the WA health system.
- Health Support Services (HSS) will maintain the WA Health N95 fit testing analysis dashboard, ensure adequate supply of the recommended PFRs, provide oversight on the recall and introduction of Therapeutic Goods Association approved PFRs.

4.1.3 Healthcare workers

- Complete relevant yearly education and training.
- Be aware of, and use, the PPE recommended for them.
- Use respiratory PPE in line with manufacturers' instructions for use and relevant policies and procedures.

5 Requirements of a Respiratory Protection Program

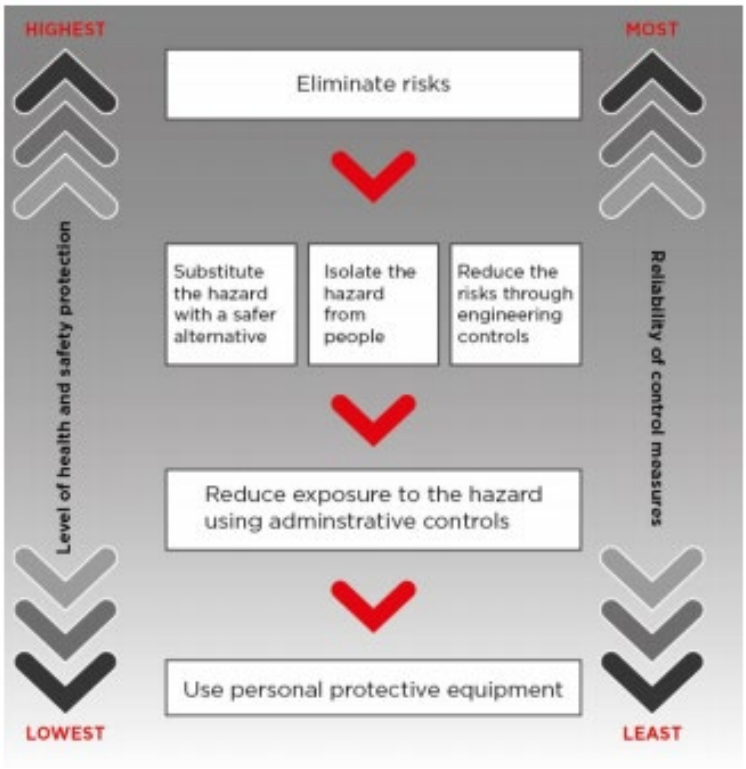
5.1 Risk Assessment and Management

Processes must be in place to recognise and manage the risk of HCW exposure to respiratory pathogens, aligning with MP 0006/16 *Risk Management Policy* and local risk management processes.

The risk management approach should include the following steps:

1. **Identify** the risk: which respiratory pathogens may be in the workplace?
2. **Assess** the risk: which HCWs are at risk of exposure, and in which situations?
3. **Treat** the risk using measures from the hierarchy of control (see Figure 1)
4. **Document** and **report** according to local processes
5. **Monitor** and **review**: does the risk of exposure change for HCWs or situations? Do the current measures mitigate the risk? Risk assessment should be reviewed annually at a minimum, and when the risk of exposure changes.

Figure 1 The hierarchy of control measures



Source: Safe Work Australia How to manage work health and safety risks Code of Practice May 2018.

5.1.1 Examples of hierarchy of control measures

Hierarchy of control measure	Examples of treatments or measures
Elimination – reduce the opportunities for the pathogen to spread	• Vaccination • HCW exclusion from workplace if unwell • Screening symptomatic persons • Reduce number of HCWs who enter isolation rooms
Substitution – find alternative ways of providing care that reduces the potential for transmission	• Physical distance • Working from home • Telehealth • Hospital in the home
Engineering controls – use physical barriers and other forms of hazard reduction	• Heating, ventilation, and air conditioning (HVAC) assessments and improved air changes • Negative pressure isolation room (NPIR) • Single rooms with ensuite • Air purifiers
Administrative controls – effective and consistent implementation of policies and procedures	• Vaccination • Hand hygiene compliance • Cleaning and disinfection • Signs, posters, and information sheets • Respiratory Protection Program
PPE – use of correct personal protective equipment	• Risk assess PPE requirements for visitors, patients and HCWs • PPE education and annual competency assessments on donning (putting on) and doffing (taking off) • Appropriate use of PPE for standard, contact, droplet, and airborne precautions • Fit test those wearing PFRs • Train HCWs to perform a fit check every time a PFR is used

Source: The hierarchy of controls for minimising the risk of COVID-19 transmission

Following the suspicion or **identification** of a transmissible respiratory pathogen the risk to HCWs must be **assessed.** The hierarchy of control (see Figure 1) should be reviewed and appropriate measures to **treat** the risk (both currently in place, and those to be implemented) should be documented and actioned where required.

The assessment should include representation from all HCW groups working within the ward/area. An example risk assessment form for a ward/work area is provided at Appendix 1. The form can also be used to prioritise the order of fit testing HCWs. The risks and measures to treat the risks should be **monitored** for change and **reviewed** annually at a minimum or when a change is identified. **Documentation** and **reporting** will be conducted according to local risk management processes.

5.1.2 Aerosol generating procedures and behaviours

Consideration should be given to aerosol generating procedures (AGPs) and aerosol generating behaviours (AGBs) when assessing the risk of exposure to respiratory pathogens.

Aerosol generating procedures promote the generation of fine airborne respiratory particles (aerosols) that may result in an increased risk of airborne transmission of disease including but not limited to:

- Insertion or removal of endotracheal tube
- Intentional or inadvertent disconnection/reconnection of closed ventilator circuit
- High frequency oscillatory ventilation (HFOV)
- Open oropharyngeal or tracheal suctioning
- Upper respiratory instrumentation or surgery e.g., bronchoscopy, tracheostomy, ear nose throat surgery
- Surgical or post-mortem procedures on respiratory tract involving high-speed devices
- Intercostal catheter insertion for relief of pneumothorax
- Thoracic surgery that involves entering the lungs
- Dental/oral procedures utilising equipment that generates aerosols e.g., ultrasonic scalers and high-speed handpieces.

Other procedures that can generate respiratory aerosols include:

- Nebulisers
- Manual or non-invasive ventilation (NIV):
    - bi-level positive airway pressure ventilation (BiPAP)
    - continuous positive airway pressure ventilation (CPAP)
- Collection of induced sputum
- High flow nasal oxygen (HFNO)
- Diagnostic instrumentation of the upper digestive tract, including transoesophageal echocardiography (TOE)
- Cardiopulmonary resuscitation (CPR).

Aerosol generating behaviours are likely to generate higher volumes of respiratory secretions and thus increase the risk of disease transmission via respiratory particles especially in enclosed, poorly ventilated spaces. Examples include persistent and or severe coughing, shouting, and screaming, singing and women in active labour who exhibit heavy breathing and panting.

5.2 Infection Prevention and Control Measures

In health care settings respirators are used by HCWs in conjunction with other PPE e.g., eye protection, gowns, and gloves to adhere to IPC requirements to limit infectious disease transmission. A RPP must be considered in collaboration with broader IPC measures within the HSP i.e., implementation of standard and transmission-based precautions.

5.2.1 Vaccination program and compliance

HCWs may be exposed to, or transmit, vaccine-preventable diseases such as influenza, measles, rubella, pertussis, and COVID-19. A vaccinated HCW population helps prevent transmission of vaccine-preventable diseases to and from HCWs and patients. HSPs must comply with the following mandatory policies in relation to HCW vaccination:

- *Health Care Worker Immunisation Policy*
- MP 0132/20 *Staff Member Influenza Vaccination Program Policy*

5.2.2 Personal protective equipment

Standard precautions are required for all patients at all times, and this includes appropriate use of PPE following a risk assessment of the patient's provisional diagnosis and any proposed procedure. Appropriate PPE is required by HCWs when providing care for any patient, irrespective of their infectious status, when there is a risk of exposure to blood or body fluids or when AGPs are being performed or when a patient is exhibiting AGBs.

PPE may include disposable non-sterile gloves, protective clothing (fluid resistant gowns or aprons), protective eyewear (safety goggles, face shields) and masks (surgical mask or PFR). Personal eyeglasses and contact lenses are not considered adequate eye protection. Some goggles fit adequately over prescription glasses, and prescription protection eyewear may be appropriate, in line with the Australian/New Zealand Standards AS/NZS 1336:2014 standard for eye and face protection guideline and AS/NZS 1337.6: *2012* standards personal eye protection.

Head coverings are not routinely recommended except in the setting of theatre attire or when a sterile procedure is performed. They can be worn to contain hair or for comfort reasons i.e., to form a barrier between hair and mask or face shield straps.

For more information on the effective use of PPE refer to the Australian Guidelines for Prevention and Control of Infection in Healthcare (2019).

5.2.3 Respirators

A respirator is used by HCWs to provide respiratory protection. There are three main types of respirators available to HSPs which include:

- **Particulate filter respirators (PFRs),** such as P2 or N95 respirators. PFRs are the preferred respirator, and the range available in HSPs is described in the PFR (N95/P2 respirator) options poster. The respirator is discarded after each use or episode of care or when it becomes unsuitable for further use i.e., damp, soiled or damaged.

    - P2 respirators are those that comply with the AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment and AS/NZS 1716:2012 Respiratory Protective Devices.

    - N95 respirators are those that are approved and certified as such by the United States National Institute for Occupational Safety and Health (NIOSH Guidelines – Procedure No. TEB-APR-STP-0059).

- **Reusable elastomeric respirators** are tightly fitted half or full facepiece respirators. The facepiece is cleaned and reused but the filter cartridges are discarded and replaced when they become unsuitable for further use.

- **Powered air purifying respirators (PAPRs),** rely on a close seal to the wearer's face, while others use a hood or helmet. Some components are disposable, and some components will require cleaning and disinfection between use.

    Powered air purifying respirators are an alternative to PFRs. They do not provide greater protection than a correctly fitted and worn PFR. They may be considered for use from a comfort perspective when a HCW is required to remain with a patient for extended time periods, or as an alternative where a person is unable to achieve an adequate fit with available PFRs. While loose-fitting PAPRs provide the expected respiratory protection when worn over facial hair, they may not be appropriate for a HCW's work, are expensive and complex to use.

    If a PAPR is to be used the following conditions must be fulfilled:
    - HSPs using PAPR must have an annual training program in place
    - PAPRs must only be used by HCWs trained in their use, including donning and doffing
    - PAPRs must be reprocessed after each use in accordance with the manufacturer's instructions and or/local guidelines
    - Close-fitting PAPRs must be fit tested.

    The Cleanspace HALO should be used in accordance with the Respiratory Protection Program Manual Clinical Excellence Commission guidelines.

Respirator considerations

Respirators which rely on a seal with the wearer's face to provide the expected respiratory protection must be fit tested (see section 5.5 Fit Test). Respirators must be approved for use as a medical device by the Therapeutic Goods Administration (TGA), conform with AS/NZS 1716:2012 Respiratory protective devices or a recognised international authority or standardisation body where a recommendation is not available from Australian/New Zealand authorities. When selecting respirators consideration will be given to the:

- task and length of time worn
- compatibility with other PPE to be worn simultaneously
- limitations, such as to vision and communication
- comfort of the wearer
- maintenance requirements
- availability of equipment and components.

Health Support Services (HSS) Clinical Protective Apparel contracts ensure PPE procured meets these requirements. Where PPE is purchased outside of HSS procurement processes this responsibility is met by the HSPs.

The Australian Guidelines for Prevention and Control of Infection in Healthcare and MP 0172/22, as well as local HSP policies relating to standard and transmission based precautions guide the selection of PPE with consideration of the pathogen, task, user and limitations. Respirators must be used in accordance with AS/NZS 1715:2009 and manufacturers' instructions for use (IFU) at all times. Respirators with exhalation valves that do not include a filter are not to be worn.

Respirators must be stored, maintained, and disposed of in accordance with manufacturers' IFU and local policies and procedures. They must be stored as close to the point of use as is practicable. If reusable respirators are issued for the exclusive use of a HCW, they must be marked with an identifier. Policies and procedures must be in place for the appropriate cleaning and disinfection of reusable respirators between users. Replaceable filters must be replaced according to a schedule determined by the manufacturer's' IFU in conjunction with an WHS professional so that an adequate safety margin is allowed. Replaceable filters must be marked with the date of issue. Out of date filters must be disposed of to prevent use.

Facial Hair

Facial hair growth, certain hairstyles and other factors such as jewellery and adornments, makeup and creams should not be worn if they prevent an adequate seal between the wearer's face and the sealing surface of the respirator. Facial hair, including beards, moustaches, sideburns, and stubble between the sealing surface of the respirator and the wearer's skin will prevent a good seal. The resulting reduction in pressure in the breathing zone during inhalation may lead to leakage of the contaminant into the facepiece. HCWs with a medical or religious exemption from removing facial hair may use an approved beard cover technique (see section 5.6 Use of Beard Cover Technique).

5.3 Education and Training

HCWs must undergo training in the correct use of PPE, including identification of the correct PPE to be used, the correct donning and doffing sequences and a practical assessment component at least annually for those staff required to wear a respirator or alternative respiratory protection e.g., powered air purifying respirator (PAPR). Risk assessment might identify the need for more frequent training without practical assessment. An example PFR Assessment Checklist is provided at Appendix 3.

Training will include the following components (see section 7 for useful resources):

- Respiratory protection e.g., the respiratory hazards to which they are potentially exposed during routine and emergency situations
- Correct donning, doffing and use of respirators
- Correct PPE donning and doffing sequence
- Mandatory fit check, training, and practical assessment for HCWs' recommended respirator/s
- The requirement to perform a fit check at point of use, every time a respirator is used.

During times of increased need such as during a novel and emerging respiratory infectious disease, alternative PFRs may need to be sourced. Relevant HCWs should be notified of the alternative brands available in their workplace and variation in donning and fit checking processes. Documentation of HCWs' fit check annual practical assessment must be maintained.

5.3.1 Learning outcomes

HCWs undertaking respiratory protection training and practical assessment should demonstrate the following learning outcomes:

- Understanding of when respiratory protection is needed
- Knowledge of their facility respiratory protection procedures and need for risk assessment fit testing and education
- Describe the potential health impact from exposure to infectious agents to self and others if respiratory protection is not used properly
- Identify internal and external resources for obtaining information on respiratory protection e.g., Manufacturers' IFU, MP 0172/22, resources listed in section 7 and local procedures and resources.
- Know what to do if a respiratory exposure occurs and whom to contact
- Describe circumstances when a respirator should be used and the impact of not wearing a respirator that fits the wearer
- Understand manufacturers' IFU, methods of care, storage and disposal procedure for their recommended respirator types
- Describe the purpose of fit checking and when it should be performed
- Demonstrate effective respiratory protection practice including correct donning, fit check and doffing procedures when included in transmission-based precautions

- Demonstrate correct waste disposal and hand hygiene procedures.

5.4 Fit Check

A fit check, also known as a user seal check, is a process to ensure that the respirator fits the wearer's face snugly i.e., creates a seal over the bridge of the nose and mouth to minimise the number of particles that bypass the filter through gaps between the wearer's skin and the respirator seal. HCWs are to perform a fit check every time a respirator is donned to check that a good facial seal is achieved. It is recommended a second person assists with the fit check (spotter, buddy or colleague) where possible.

Always refer to the manufacturer's IFU for fit checking of individual brands and types of respirators. Additional resources demonstrating the fit check for several styles of PFR are listed in section 7.

5.5 Fit Test

A fit test is a validated method that determines the respirator provides an adequate match between the wearer's facial characteristics and the seal of a close-fitting respirator. Fit testing may be conducted using one of two different methods, qualitative or quantitative result. The MP 0172/22 requires HSPs ensure a quantitative fit test is conducted. Where HCWs have had fit tests external to WA HSPs, only quantitative fit test results will be accepted.

HSPs are currently conducting fit testing using PortaCount® Respirator Fit Tester model 8048 with FitPro™ Ultra Fit Test Software. The PortaCount® Respirator Fit Tester measures the concentration of microscopic particles in the ambient air and concentration of those particles that leak into the respirator during the fit test. The ratio of these two concentrations is called the fit factor. For disposable PFRs a fit factor of 100 or greater indicates an adequate seal. The PortaCount® Respirator Fit Tester should be maintained according to manufacturer's guidance, and daily checks performed at the beginning of each period of use and when moving to a new testing environment.

The RPP program must implement a risk assessment framework that identifies HCWs providing care in high and low risk areas within the Healthcare Facility (HCF).
The HSP must ensure HCWs required to wear a respirator undergo a fit test as per the MP 0172/22.

Fit tests should be conducted as soon as possible on commencement of employment or transition to a new role where a PFR may be required, and must be repeated:

- at least once every two years
- in accordance with the HSP risk assessment framework
- when the wearer is no longer able to achieve a fit check with the recommended PFR
- when a new brand / model of PFR is required to be used due to PFR recall or no longer being available

- when there is a significant change in the wearer's facial characteristics e.g., facial surgery, substantial change in body weight, altering the facial seal of the PFR.

Priority for fit testing and repeat fit testing should be based on a risk assessment of caring for patients in an environment where respiratory protection is required. When a fit test program is first implemented, and during times of increased need such as during a novel respiratory infectious disease pandemic or significant change in respirator availability, the first HCWs to be fit tested or have a repeat fit test should be those at greatest risk of exposure to airborne or droplet infections, including their role and setting (see Appendix 1). The HSP risk assessment framework may identify HCWs who no longer require the use of a respirator and therefore fit testing would not be required to be repeated.

Fit tests must be conducted to include any equipment or product which may affect the fit of the respirator including prescription glasses, headwear, PPE, approved beard covers and products used to prevent skin injury. The PFR must then be used in the workplace with the same additional equipment as during the fit test; for example, the fit test is not guaranteed if another dressing type or beard cover technique is used. Ideally HCWs will complete training and practical assessment prior to attending a fit test.

5.5.1 Fit test process

The use of a specific fit test protocol is not required in Australia. The US (OSHA) Modified Ambient Aerosol CNC Quantitative Fit Testing Protocol for Filtering Facepiece Respirators is recommended.

After donning the respirator, a five-minute period must be observed to allow the ambient particles trapped inside the respirator to be purged, enabling accurate fit test results, and to ensure the PFR is tolerable to the wearer. After this period, the wearer completes 4 exercises: bending over, talking, turning head side to side, and moving head up and down. While each physical movement completed during the test gives a fit factor result, the overall fit factor from the combined scores is used to determine if the respirator provides the level of protection required. It is possible to have an adequate overall fit factor even if one of the physical movements returns an inadequate fit factor. The PortaCount® Respirator Fit Tester will be set to terminate the test if an adequate overall fit factor cannot be achieved.

The MP 0172/22 requires HSPs to ensure an alternative management plan is developed if the fit test is unsuccessful in identifying a suitable PFR from available supplies. Such alternatives include changes to work practices and/or location and use of PAPR or reusable elastomeric respirators.

The fit test process and how to perform a fit test is described in Western Australia Department of Health Respiratory Protection Program. Fit testers are to be trained by Fit test leads using the training material provided by WA Health. Fit test leads may modify the training material to suit the HSP.

5.5.2 Data collection

HSPs are required to keep a register of all HCWs fit tested including date, time, PFR brand, model, size, and the result for each respirator. The FitPro Ultra™ software captures this data, but global settings must be set to record all tests, including those where an adequate fit factor was not achieved. Information is made available to approved officers across HSPs via the Fit Test Analytics Dashboard to improve efficiency in monitoring compliance for the safety of the mobile workforce.

5.6 Use of Beard Cover Technique

Studies of small numbers of individuals in the United Kingdom and New South Wales have successfully demonstrated the ability to achieve adequate fit factors for individuals covering their facial hair with an elastic band and/or disposable balaclava. This technique enables an important option for respirator use for those who must maintain facial hair for medical or religious reasons and for whom the tasks or location of their work cannot be altered[1].

HCWs who are unable to remove facial hair due to a medical condition or religious observance can seek an exemption for the use of an approved beard cover technique when wearing a close-fitting respirator. These techniques cover the entire beard, chin, and cheeks with either an elastic band or a single-use balaclava see section 7 Beard cover techniques). The HCW shall undergo training in donning, doffing and fit checking, and fit testing using the beard cover technique. Consideration should be given to fit testing those using a beard cover technique more frequently to ensure consistency over time.

Elastic bands must be cleaned/disinfected and replaced when they become wet, moist, or contaminated and every time the band is doffed or changed. Hold the elastic band at one end and wipe from top to bottom using a 2-in-1 detergent/disinfectant wipe. Balaclavas are single use only and must be disposed of after removal.

5.7 Prevention of Skin Injury

Skin injury can occur from pressure, friction, shear and accumulation of moisture under the mask or respirator, face shield and goggles. Adverse skin reactions such as contact dermatitis, allergic reaction and acne as well as the exacerbation of any other pre-existing underlying skin issues can occur. Personal Protective Equipment cannot be compromised, and recommendations must be followed to prevent skin injury prior to donning, during and when doffing. The use of products to prevent skin injury is described in Appendix 2.

HCWs have an increased risk of acquiring facial pressure injuries and adverse skin reactions as a result of prolonged use of PFRs, surgical masks, face shields and goggles. To reduce the duration of pressure from PPE, where possible doff PPE every 2 hours for minimum of 15 minutes [2] at doffing stations or outside the patient room/ward.

Where a HCW experiences indications of skin injury from use of a respirator they may utilise prophylactic dressings to prevent skin injury. They must work with IPC and/or WHS to determine the most appropriate approach. They must undergo a repeat fit test to ensure the appropriate combination of prophylactic dressings and respirator.

6 Relevant Legislation and Standards

- Work Health and Safety Act 2020
- Standards Australia AS 4381:2015 - *Single-use face masks for use in healthcare*.
- Standards Australia AS/NZS 1715:2009 - *Selection, use and maintenance of respiratory protective equipment.*
- Standards Australia AS/NZS 1716:2012 - *Respiratory protective devices.*
- Standards Australia AS/NZS 1337.6.2012 – *Personal eye protection*
- Standards Australia AS/NZS 1336:2014 – *Eye and face protection*
- National Safety and Quality Health Service 2021 - Preventing and Controlling Infections Standard.
- Occupational Safety and Health Administration 1910.134 App A – Fit Testing Procedures (Mandatory).

7 Additional Resources

- Australian Guidelines for the Prevention & Control of Infection in Healthcare (2019)
- Western Australia Department of Health Respiratory Protection Program
- PortaCount® Respirator Fit Tester Models 8040 and 8048 Operation/User Manual
- Personal Protective Equipment in Healthcare Facilities Policy (MP 0172/22)
- MP0006/16 Risk Management Policy
- Health Care Worker Immunisation Policy
- MP 0132/20 Staff Member Influenza Vaccination Program Policy
- COVID-19 Infection Prevention and Control in Western Australian Healthcare Facilities.

Correct donning and doffing sequence

- Donning and doffing PPE poster

Donning, doffing and fit checking PFRs

- Wearing a cup style respirator
- Wearing a flat style respirator
- Donning and Fit Checking of Respirator in NSW Healthcare Setting: Cupped respirator
- Donning and Fit Checking of Respirator in NSW Healthcare Setting: Flat fold respirator
- Donning and Fit Checking of Respirator in NSW Healthcare Setting: Duckbill style P2 or N95

Beard cover techniques

- Beard cover technique – Background
- Beard cover technique – Elastic Band
- Beard cover technique - Balaclava

Fit tests

- PortaCount fit testing of P2 or N95 disposable respirator – Video 2A
- Beard Cover Technique – Fit testing with a balaclava and elastic band

8 Guideline Contact

Enquiries relating to this Guideline may be directed to:

Infection Prevention, Policy and Surveillance Unit
Directorate: Communicable Disease Control Directorate
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9 Document Control

Guideline number	Version	Published	Review Date	Amendments
0011	1.0	08/07/2022	12/12/2022	Original version
0011	1.2	04/08/2023	04/08/2026	Amendments as listed below

- Removal of fit testing processes from the appendix section
- Updated the examples of risk assessment frameworks in the appendix section
- The Cleanspace HALO reference updated from Guidelines on the use of the HALO CS3000 powered air purifying power unit to the Respiratory Protection Program Manual Clinical Excellence Commission guidelines.
- Updated the definitions section
- Removal of the mandatory line manager requirements for beard covering and medical screening for PFRs
- Removed the eye wear and surgical mask section and condensed the information into the PPE section
- Requirement for a risk assessment framework as part of the respiratory protection program and annual repeat fit test updated to risk assessment but cannot exceed two years at 5.5
- Removal of WA Health COVID-19 Framework for System Alert and Response and other references from the additional resources section.
- Included a statement that the guideline does not cover workplace environmental contaminates
- Updated the additional resource section and bibliography
- Inclusion of HSS as a HSP proving oversight on TGA approved PFRs and recalls as well as maintaining the dashboard

10 Approval

Approved by	Jelena Maticevic Acting Director Communicable Disease Control Directorate
Approval date	21/07/2023

11 Bibliography

1. Singh, R., Safri, H.S., Singh, S., Ubhi, B.S., Singh, G., Alg, G.S., Randhawa, G. & Gill, S. Under-mask beard cover (Singh Thattha technique) for donning respirator masks in COVID-19 patient care. Journal of Hospital Infection. 2020 Dec; 106(4): 782-785. Accessed at https://pubmed.ncbi.nlm.nih.gov/33022336/

2. Padula WV, Cuddigan J, Ruotsi L, Black JM, Brienza D, Capasso V, et al. Best-Practices for Preventing Skin Injury Beneath Personal Protective Equipment During the COVID-19 Pandemic: A Position Paper from the National Pressure Injury Advisory Panel (NPIAP). Journal of Clinical Nursing. 2021 Feb 3. Accessed at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8013459/#jocn15682-bib-0011

This document is produced with acknowledgement to the New South Wales Clinical Excellence Commission Respiratory Protection Program Manual (2022).

12 Appendices

Appendix 1: Examples of risk assessment for wards and/or work areas

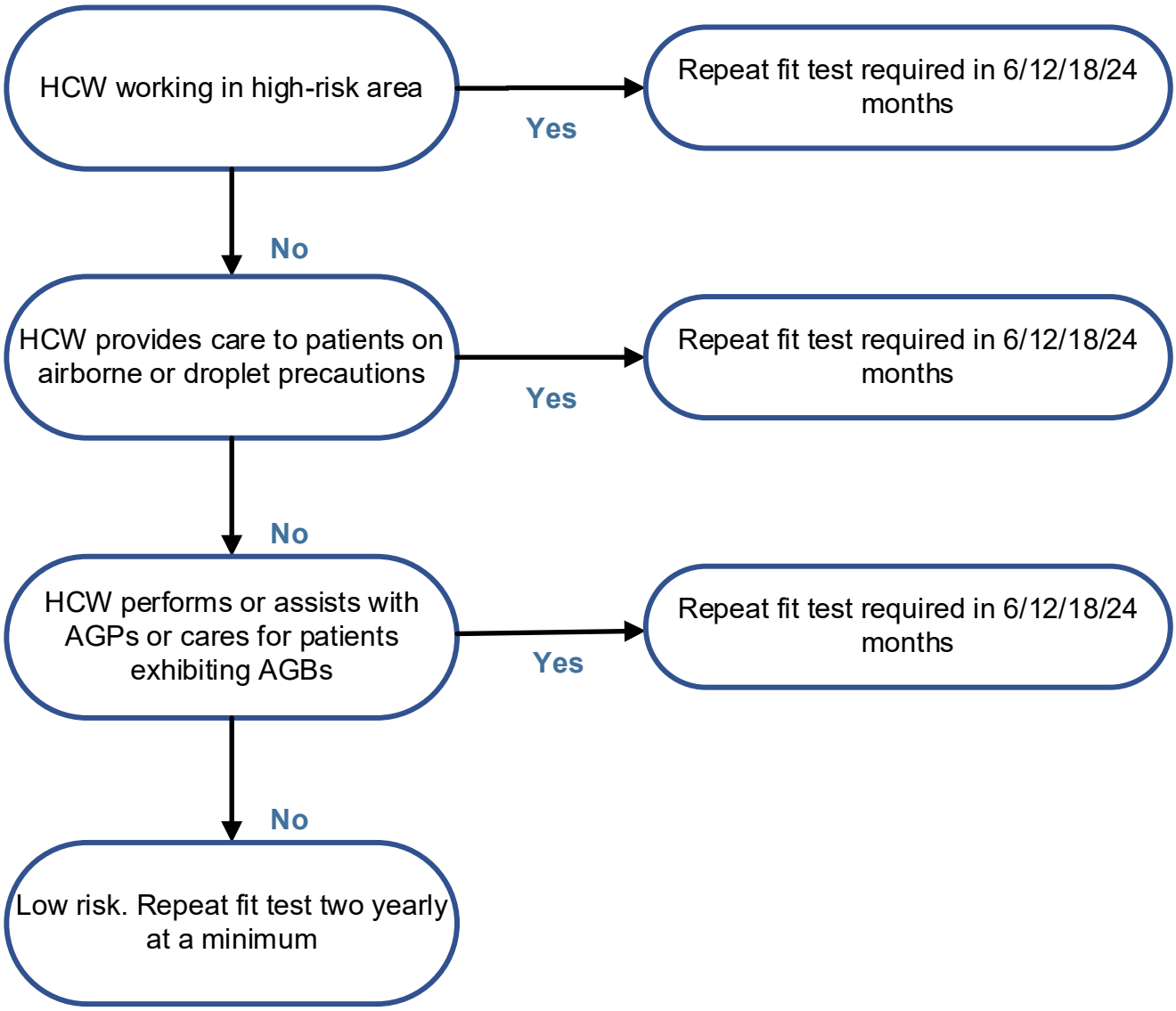
Example 1

Name		**Signature**	
Title			
Ward/work area:	**Number of HCWs**		
Medical			
Nursing			
Allied Health			
Support Services			
Administration			
Other			
Description of risk assessment			
Describe the potential exposure to recognised and unrecognised sources of airborne and aerosolised infectious agents in your area: Take into consideration: • Exposure time • Frequency of exposure • Likelihood of exposure • Situation/activity risking exposure • Availability of respirators – disposable and reusable • Management of patients requiring airborne precautions • Management of patients requiring droplet precautions			
Other:			
List the current control measures in place, and those to be implemented, including: • Vaccination compliance • Appropriate education and training in IPC procedures, including PPE • Adequate supply of PFRs • Adequate range of PFRs • Supply and control of alternative respirators, e.g., PAPRs • Relevant HCWs compliant with fit test requirements • Access to fit testing • Fit checking embedded into education and practice • Other (refer to Figure 1: Hierarchy of control measures)			

Example 2

Category	Priority Areas	Risk assessment (High or low risk)
HCWs providing direct care to patients in airborne/droplet precautions or are required to assist in care, including AGPs or AGB Disease requiring airborne/droplet precautions e.g., Tuberculosis, Measles, Varicella, COVID-19 or emerging pathogens and any other diseases for which public health guidelines recommend airborne precautions	• Anaesthetics • Resuscitation / Intubation teams • Critical care • Infectious diseases • Respiratory • Other areas as identified by local risk assessment	High risk
Other patient care areas HCWs who may be exposed to inhalation of infectious pathogens	• Oncology haematology • Any other area / situation identified as high risk for airborne or droplet transmissible disease	High risk
HCWs in non-clinical areas	• Any other/ situation identified as low risk of exposure to pathogens transmitted via the airborne or droplet route	Low risk

Example 3



NB: The above risk assessment frameworks can be used as a guide to assist HCFs to develop and implement a local framework based on the cohort of patients and transmissibility of infectious respiratory pathogens within their local facility.

Appendix 2: Prevention of skin injury

Care of facial skin to prevent and reduce adverse skin reactions

- Use a pH neutral skin cleanser, a mild skin cleanser, soap substitute or micellar water at the beginning and end of the day to wash face or water skin cleansing wipes
- Avoid soaps and use. Standard soap is alkaline and has been shown to change skin pH and can damage the skin barrier function
- Moisturise with a light lotion regularly (e.g., QV lotion). Progress to a cream (e.g., QV cream) if tolerated and apply before going to bed
- If prone to acne avoid greasy creams
- Regular ongoing facial shaving is recommended and above skin care steps
- Ensure regular hydration for general skin health.

Prior to donning respiratory PPE, implementation of preventative interventions to prevent skin injury and adverse skin conditions

- Ensure facial skin is washed 1-2 hrs prior to commencing work and apply a light moisturiser allowing it to be absorbed and dry
- Wearing makeup is not advised if skin sensitivities/issues have been previously identified
- Take time to fit the mask and ensure correct positioning over the nose and chin, adjust the straps to ensure they are in the correct position on the head and not over-tightened
- Check in a mirror and adjust PPE as required to ensure it is comfortable
- Perform a fit check for respirators.
- Ensure goggles/ face shield are in the correct position and comfortable
- Monitor the time PPE is worn and, where possible, allow for regular skin breaks for at least 15 minutes every four hours
- Monitor skin appearance, identify and report any concerns to your relevant manager
- Report any issues to your WHS Team.

Preventative interventions if friction, pressure and moisture or skin injuries develop when wearing a mask

- Assess your facial skin prior to wearing PPE and regularly following removal of PPE. Ensure hand hygiene is conducted prior to assessing skin for areas of potential injury (e.g., bony prominence over nose or early signs of changes in the appearance of skin integrity)
- If areas of pain, burning, indentation, discolouration, erythema are noted then these areas require protection and cushioning using a low-profile dressing or tape
- Anything placed between the skin and the mask or PFR should not interfere with the function of respiratory PPE. Advice and early application of prophylactic low-profile silicon dressing e.g., Mepilex lite or Mepitac silicon tape is recommended

- If a wound care dressing or tape is required for skin protection, then a repeat fit test should be conducted with the dressing applied. Refer to (figures 2a and 2b) guides below to ensure appropriate fit prior to use.

Application of dressings guide

- Prior to applying dressings, skin should be cleansed gently with a wet wipe and allowed to dry. A liquid skin barrier should then be applied (e.g., Cavilon wipe) to forehead, nose, cheeks and ears. Allow to fully dry for at least 30 seconds
- Thin prophylactic dressings can be cut into strips for the areas in contact with PPE (e.g., nasal bridge, cheek bones and behind ears for masks and respirators or straps, and forehead for a facial shield)
- A dressing on the bridge of the nose may be sufficient
- Comfy Ears may be used to protect skin from PFR straps. They are made from a high-tech moisture wicking material that is soft and silky for reduced friction while staying secure. They keep the skin dry and protect against pressure sores. Refer to figure 2c below for the use of comfy ears.
- Do not stack multiple dressings
- It is the responsibility of the wearer in the clinical setting to ensure their own personal safety through fit checks when the dressings are in situ during wear time throughout the shift.
- On removal of dressings use an adhesive remover wipe carefully avoiding eye area and assume dressings are contaminated and exercise caution with removal. It is recommended the eyes are closed and the breath held in exhalation during dressing removal to avoid aerosolised pathogens
- Regular ongoing skin cleansing of the face with a natural pH skin cleanser or wet wipe is advised. Patting skin dry and application of regular light moisturising lotion or moisturising cream. Do not use products like Vaseline.

Figure 2a Use of dressing Silicone tape / interface between skin and PPE

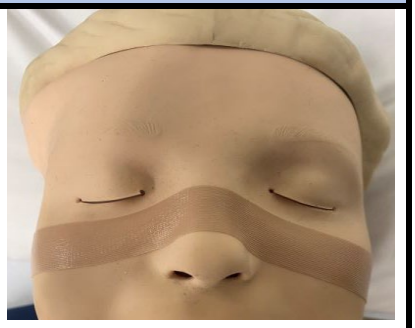
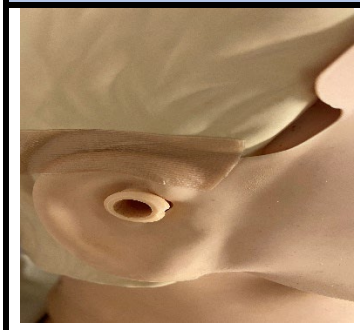
Step 1	Step 2	Step 3
		
Perform hand hygiene and apply a no sting barrier to the face in the areas that the dressing will be applied	With clean hands, cut off a section of Mepitac fixation tape. Length required will vary depending on the size of face.	Apply the tape to the checks and under the eyes where the face mask will be sitting and above the ears to prevent trauma from the straps of the mask.
Step 4	**Step 5**	
		
Tape should be only fixed to the ear and firmly moulded to the skin.	Position your mask and goggles/face shield on over the tape and perform a fit check.	

Figure 2b Application of dressing to cushion

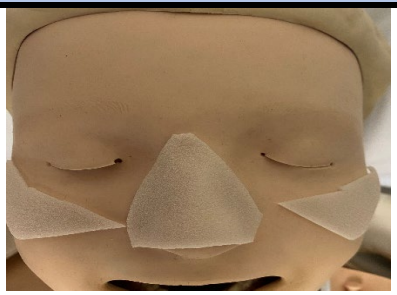
Step1	Step 2	Step 3
 Perform hand hygiene and apply a no sting barrier to the face in the areas that the dressing will be applied.	 Using a Mepilex lite 10cm x 10cm dressing, draw a triangle using half of the dressing.	 Draw in two lines for triangles and cut along these lines.
Step 4	**Step 5**	**Step 6**
 Cut the dressing and ensure the size is correct for your face shape and covers all pressure points from the mask and goggles.	 Apply the dressing to your face and ensure that the dressing is adhered to your skin	 Apply your mask and ensure that it is fitting firmly over the dressing and the bridge of your nose.
Step 7		
 Apply your googles/face shield and perform a fit check.		

Figure 2c Use of Comfy Ears

Step 1	Step 2	Step 3
		
Perform hand hygiene and remove Comfy Ears from packaging.	With clean hands, wrap Comfy Ears around the PFR strap/s.	Apply PFR straps as per manufacturer's instructions for use and fit test. Apply additional PPE and equipment in appropriate order.

Acknowledgement to Sir Charles Gardiner Hospital, Wound Management

Appendix 3 PFR Practical Assessment Example

Name:	**Title:**
Workplace location and ward/area:	
Assessor name:	**Title:**
PFR used (make, model, size):	**Fit tested: Y / N**
Date of assessment:	**Competent / Not Competent**

Action	Performed correctly? Y / N	Comment
Theoretical knowledge		
Describes when and why to wear a PFR		
Describes when to replace a PFR		
Describes what to do and who to contact if a respiratory exposure occurs		
Describes the purpose of the fit check and when it should be performed		
Describes when to repeat a fit test		
Donning		
Performs hand hygiene and demonstrates appropriate infection prevention practices		
Inspects PFR for defects or damage		
Dons all PPE and additional equipment or products in correct order		
Dons respirator according to manufacturer's instructions for use		
Performs a fit check according to the manufacturer's instructions for use		
Makes appropriate adjustments required for fit check to indicate appropriate user seal		
Doffing		
Performs hand hygiene and demonstrates appropriate infection prevention practices		
Doffs all PPE and additional equipment or products in correct order		
Doffs PFR correctly		
Disposes of PFR and other PPE and additional equipment correctly		
Cleans and stores other PPE, additional equipment and unused PFRs correctly		

This document can be made available in alternative formats on request for a person with disability.

Respiratory Protection Program for Western Australian Healthcare Facilities