SA Health

Infection Prevention and Control (IPC) for Infectious Respiratory Diseases Clinical Guideline

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Infection Prevention and Control (IPC) for Infectious Respiratory Diseases Clinical Guideline

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Infection Prevention and Control (IPC) for Infectious Respiratory Diseases Clinical Guideline

1. Name of clinical guideline

Infection Prevention and Control (IPC) for Infectious Respiratory Diseases Clinical Guideline.

2. Introduction

The mandatory National Safety and Quality Health Service (NSQHS) Standards provide a nationally consistent statement of the level of care consumers can expect from health service organisations. As per the Preventing and Controlling Infection Standard, there must be systems in place to support and promote the prevention and control of infections, such as the use of evidence-based systems to mitigate the risk of infection.

This guideline provides exemplar information and guidance to workers and employers regarding risk mitigation and recommended IPC measures, which aims to minimise the risk of the spread of respiratory illnesses spread via droplets and aerosols. Refer also to relevant worker health and safety standards - See section 8. Workforce implications.

IPC recommendations promote the adoption of a risk management approach to a respiratory protection program as per AS/NZS 1715:2009 – Selection, use and maintenance of respiratory protection equipment, including use of appropriate personal protective equipment (PPE) based on the Australian Commission on Safety and Quality in Health Care (ACSQHC) hierarchy of controls in infection prevention and control.

A risk management approach should include consideration of clinical and epidemiological risk factors as well as of the impact and vulnerability of those exposed to infectious droplet and/or airborne spread pathogens, especially those at risk from high morbidity/mortality.

The scope of this guideline is limited to IPC exemplars and recommendations regarding infectious respiratory pathogens and does not provide guidance for chemical or cytotoxic exposures, laser plumes, dental settings, use of beard wrapping techniques or the use of powered air-purifying respirators (PAPR).

For information regarding items out of scope, refer to relevant policy and guidelines, including those relating to PAPR use as per the SA Health Personal Protective Equipment (PPE) Selection Policy Guideline available on the SA Health Staff protection from infections webpage.

3. Background

As per the ACSQHC hierarchy of controls in infection prevention and control, controlling exposures and occupational hazards to people in the workplace, the use of PPE (including the appropriate level of respiratory protection) is the lowest/least control regarding health and safety protection and reliability of control measures. The hierarchy of controls places other risk mitigation strategies such as elimination, substitution, isolation, engineering controls and administrative controls at a higher level.[1]

However, in practice, the use of PPE (including surgical masks, particulate filter respirators (PFR) (P2/N95 or equivalent), eye protection, gowns and gloves) is integral to the implementation of standard and transmission-based precautions (TBP) and is an important IPC action, which aims to protect staff by interrupting the chain of transmission and the possible exposure to potentially infectious agent spread.[2]

Other risk mitigation strategies include immunisation (if available), hand hygiene, environmental measures (including sufficient ambient ventilation and patient placement) and appropriate allocation of single rooms. A risk assessment should be undertaken to determine who requires or should be prioritised for a negative pressure single room and early recognition of infectious status.[1] Refer to the SA Health Bed Management Toolkit: For infectious diseases and multi-resistance organisms.

Respiratory protection is required as per TBP (droplet or airborne precautions). Options for respiratory protection includes a single use surgical mask, a single use PFR or PAPR and protective eyewear. If performing aerosol generating procedures (AGP), a PFR is recommended.

The barrier level or rating for single use surgical masks and PFRs should be considered as part of a risk assessment. The different protective levels are outlined in the definitions section of the guideline.

Note: In SA Health healthcare facilities, staff required to wear a surgical face mask should use a fluid resistant level 3 surgical mask.[1] However, based on a risk assessment (including epidemiological risk), to provide protection against some pathogens that are or may be transmissible via the airborne route or where AGPs are undertaken, a higher level of protection will be required e.g. a PFR.

Indications for use of a correctly fitted PFR includes when:

- attending to patients with suspected or confirmed infectious diseases of which airborne spread is possible or known
- performing AGPs on patients, including those with a known or suspected respiratory infection or other disease transmitted via the airborne route or aerosolised infectious particles[2:3]
- there is a risk of exposure to a respiratory virus of unknown aetiology or cause.

If a PFR is indicated for use, it should be correctly fitted as identified by the fit-testing processes which determine the best fitting PFR. In order for a PFR to provide maximum protection, it is essential that the wearer be properly fit tested and trained in its safe use – this includes performing a fit check every time a PFR is donned.[4,11]

A risk management approach should be applied to ensure that workers working in high-risk areas or who may be at risk of exposure to respiratory pathogens, are fit tested and know how to perform a fit check. If a worker is required to implement airborne precautions as part of their work, then PFR fit testing is required, noting that a PFR fit check is to be performed each time a PFR is worn. Refer to local (LHN or healthcare facility specific) policies and procedures for the recommended IPCs, including the level of PPE required.

However, during times when there are multiple respiratory illnesses circulating at the same time and for which an immediate diagnosis cannot be determined, based on a risk assessment there may be a need for more widespread use of PFRs by workers. This can be reviewed once a diagnosis has been determined to inform which level of PPE (including the level of respiratory protection) is required. For further information on masks and other PPE selection (i.e. eye protection, gowns and gloves), refer to the SA Health Personal Protective Equipment (PPE) Selection Policy Guideline and SA Health Management of infectious diseases summary table.

Patients can be asked to wear a surgical mask as source control when presenting with respiratory illness symptoms, requiring AGPs or displaying AGBs (refer to appendix 3). In most situations, a level 1 surgical mask is sufficient for source control.

4. Definitions

Aerosol means: a mist composed of very small, lightweight particles that can remain suspended in the air for long periods of time and can travel long distances by air currents. These particles can transmit infection into the respiratory system and are generally <5 microns in diameter.[2]

Aerosol-generating procedures (AGP) means: procedures that are more likely to generate higher concentrations of infectious respiratory aerosols than coughing, sneezing or breathing. For the purpose of this guideline, refer to Appendix 4: Examples of Aerosol Generating Procedures and Aerosol Generating Behaviours and Risk Mitigation Strategies Additional to PPE and Room Management for examples of AGPs as endorsed by the South Australian Infection Reference Group.

Note: If a patient requires care under droplet precautions but an AGP is undertaken, then droplet precautions should be increased to airborne precautions for at least the duration of the procedure. The procedure should be undertaken in a treatment room, away from other patients (if the patient is cohorted with others).[2]

Aerosol-generating behaviours (AGB) means: behaviours that may increase the risk of airborne transmission (e.g. patients/clients/residents with cognitive impairment, are unable to cooperate, coughing or increased work of breathing).

Airborne transmission means: transmission of infection by very small particles (generally <5 microns in size) being generated from the respiratory tract of an infected individual during activities such as coughing, sneezing and during some procedures that are capable of forming airborne aerosols which can be inhaled by other persons.

Beard wrapping technique means: the use of a resistance band wrapped around a wearer's chin/beard and tied up on top of the head or use of a disposable balaclava to create a smoother surface over a beard or facial hair, aiming to improve the seal and fitting of a PFR.

Clinical risk means: assessment of risk and harm to people, including patients and staff.

Droplet transmission means: transmission of infection by larger particles (generally >5 microns in size) that are expelled when coughing, sneezing or talking but are not likely to remain suspended in the air and only travel short distances (approximately one metre) from the patient.[2; 6]

Epidemiological risk means: assessment of risk and prevalence of local disease.

Fit check (user seal check) PFR means: a procedure that must be performed every time a PFR is used to ensure it is properly applied and there is a seal. This includes exhaling and inhaling once a PFR is applied to check the seal. If leaks are detected, then the PFR must be readjusted, followed by exhaling and inhaling with hands placed above and below the PFR to ensure there is no air leakage. (Refer to Donning and fit checking: Flat and Cup style particulate filter respirators (PFR)).

Fit test PFR means: a validated method that determines the brand and size of PFR most suited to an individual's face.

Particulate filter respirator (i.e. P2/N95 respirator or equivalent) means: While the terms 'P2 respirator' and 'N95 respirator' are often used interchangeably in the healthcare setting, they are required to meet different standards. In Australia, the requirements for P2 respirators are stated in Standard AS/NZS 1716: 2012. Refer to the Australian Guidelines for the Prevention and Control of Infection in Healthcare, Canberra: National Health and Medical Research Council (2019) for the specific filtration and particles size.[2]

There are two types of PFRs; standard and surgical (refer to definitions below).

- **Standard PFR** means: a PFR defined as above that is not fluid resistant and therefore not resistant to high velocity blood or body fluid sprays e.g. those generated in operative, procedural settings or major trauma. Standard PFRs are suitable for most applications but should be used together with a full-face shield for any procedure where fluid resistance against direct blood or body fluid splash is required.[9]
- **Surgical PFR** means: a PFR defined as above that has been tested for fluid resistance and therefore suitable to be worn during aerosol-generating and surgical procedures that involve a risk of direct blood or body fluid splash.

  Note: As surgical respirators have been tested for fluid resistance, the addition of a full-face shield to protect the front of the PFR is not required, however eye protection must still be worn. If a non-surgical PFR is worn, and there is a risk of high velocity fluid strike to the PFR then a full-face shield must be worn.[9]

Powered air-purifying respirator (PAPR): a hood which uses a power source to drive ambient air through a high-efficiency particulate air (HEPA) filter prior to inhalation by the wearer, increasing the

filtration performance over PFRs. However, PAPR devices can be expensive, cumbersome, and noisy and require significant ongoing maintenance.

Respiratory infection means: an infectious process affecting any part of the upper or lower respiratory tract. Symptoms can include fever, runny nose, sore throat and cough, joint or muscle pain, lethargy, chest pain and difficulty breathing.

Risk assessment means: assessment, analysis and management of risks. It involves recognising which events may lead to harm in the future and minimising their likelihood and consequences.[2]

Single use surgical face mask (levels 1, 2 or 3 barrier) means: a loose-fitting, single-use, fluid resistant disposable facemask that creates a physical barrier between the mouth/nose of the wearer and potential contaminants in the immediate environment, as well as reducing the spread of respiratory droplets from the wearer as source control.[2] Within SA Health facilities, level 3 surgical masks are recommended for use by staff. A level 1 surgical mask can be used by patients for source control.

- Level 1: For use for general procedures where the wearer is not at risk of blood or body fluid splash or to protect staff and/or the patient from droplet exposure to microorganisms[2]
- Level 2: For use where there is a risk of minimal blood droplet exposure[2]
- Level 3: For use where this is a risk of blood or body fluid splash[2].

5. Principles of the standard

This clinical guideline provides information on general principles of respiratory protection for workers and is formally aligned with following legislation and standards:

5.1. Australian/New Zealand Standards:

- 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 4381:2015 - *Single-use face masks for use in health care*

5.2. Australian Guidelines for the Prevention & Control of Infection in Healthcare (2022)[2]

- Recommends that where there is a high probability of airborne transmission due to the nature of the infectious agent or procedure then a correctly fitted PFR (P2/N95) respirator should be worn.

5.3. *Work Health and Safety Act 2012* (Section 19) (the Act) and Work Health and Safety Regulations 2012 (r44, 45, 46)

- **Division 2** – Primary duty of care, states that the health and safety of other persons is not put at risk from work carried out as part of the business or undertaking and must provide and maintain so far as is reasonably practicable:
  - a safe working environment without risks to health and safety
  - information, instruction, training, instruction or supervision that is necessary to protect all persons from risks to their health and safety arising from work carried out as part of the conduct of the business or undertaking.
- **Division 4** – Duty of officers, workers and other persons, Section 28 of the Act states that an employee must:
  - Take reasonable care for his or her own health and safety

- Take reasonable care that his or her acts or omissions do not adversely affect the health and safety of other persons
- Comply with any reasonable instruction
- Cooperate with any reasonable policy or procedure.

6. General

6.1. Immunisation

All healthcare workers (HCW) should be fully immunised against common vaccine preventable diseases in line with SA Health Health care worker immunisation and screening requirements, including recording of current immune status.

6.2. Personal Protective Equipment (PPE) Competency Assessment

- All workers must be assessed for their risk of exposure to airborne infections against the risk assessment guidance provided in the "Risk assessment for PFR fit testing" section on page 8. Depending on the level of risk, workers may require fit testing (see below).
- All workers required to wear PPE must be initially trained (i.e at the commencement of employment) and assessed for competency in the use of all PPE and as part of an ongoing training program within the LHN or facility. The SA Health Training Tool for the Correct Use of Personal Protective Equipment (PPE) & Particulate Filter Respirator (PFR) Fit Testing is available on the SA Health website and will assist in worker education.

For those workers required to wear a PFR, fit testing should be undertaken:

1. prior to working in an area considered high risk for exposure to airborne pathogens
2. when there is a significant change in the wearer's facial characteristics that could alter the facial seal of the respirator (e.g. facial surgery or significant change in body weight)
3. when failing to demonstrate a proper fit check at annual competency assessment.

6.3. Fit testing

There are two types of facial fit test – qualitative and quantitative:

- A **qualitative fit test** requires the use of a test agent such as saccharin or Bitrex™ (a bitter tasting substance) that is used at a sensitivity level that demonstrates the user will be able to appropriately sense the presence of the test agent within the respirator by taste, smell or the urge to cough. This test is simple but can be influenced by the wearer. It relies on the wearer's senses to determine if there is a gap in the seal of the respirator to the wearer's face.
- A **quantitative fit test** requires the use of specialised particle counting equipment (such as a PortaCount™ Plus machine) to provide quantitative, or numerical, measurements of the amount of face seal leakage present when a given respirator is donned by a particular user.

6.4. Quantitative Fit Test Machines

All Local Health Networks (LHN) have been provided with quantitative fit test machines for use within their healthcare facilities. Some points to note are:

- it is the responsibility of the LHN to ensure that the equipment is maintained in good order and regularly serviced i.e. annually and as per the manufacturer's instructions.
- users must be adequately trained by an experienced user or fit testing machine supplier prior to operating the machine

- a designated person (trained operator) should be nominated to ensure that the machine is used and maintained correctly as per the manufacturer's instructions.

To ensure a continued adequate fit, an annual competency assessment which involves donning and doffing of the PFR and the ability to demonstrate an adequate fit check is required. The "real time" fit test function of a quantitative fit testing machine can be used for this purpose. If a worker cannot demonstrate a successful fit check, then they should be repeat fit tested for correct brand and size of PFR. For further information refer to the SA Health - Mask Fit Testing Fact Sheet for Staff Particulate Filter Respirator (PFR) Fit Testing

6.5. Selection of respirators

Initial selection of a suitable PFR for fit testing an individual should be made according to the tester's visual assessment of the facial characteristics of the wearer. Where possible one of the brands/sizes contained within the state PFR ongoing stockpile should be chosen. Refer to SA Procurement and Oracle ordering systems.

Facial hair and facial piercings must not interfere with the safe use of a respirator. Workers who have facial hair (including a 1–2 day beard growth/stubble) must be aware that an adequate seal cannot be guaranteed between the respirator and the wearer's face. Contact WHS regarding risk-based alternatives, e.g PAPR or beard wrapping techniques if staff have facial hair due to cultural and/or religious and/or medical reasons and they are unable to shave.

6.6. Optimising ventilation

The Australian Commission on Safety and Quality in Health Care (ACSQHC) Optimising ventilation for infection prevention and control in healthcare settings has developed guidance for health service organisations to explain the importance of effective ventilation systems for preventing and controlling infections and how ventilation risks can be mitigated to improve patient and workforce safety.

7. Determing risk factors

7.1. Risk assessment for PFR fit testing

Regardless of immune status a PFR must be worn by all workers when caring for patients with measles (rubeola virus), chickenpox (varicella zoster virus) or COVID-19 (SARS CoV 2). Where possible, workers who are not immune should not care for patients/residents with confirmed or suspected measles or chickenpox. There is evidence of fully immunised workers who acquired measles during a hospital outbreak.[7] A standard PFR can be used for respiratory protection when the wearer might be exposed to particulate hazards, including during AGPs, cleaning of flexible bronchoscopes or aerosol generating behaviours (AGB). If fluid resistance is required, a full-face shield is to be worn with the standard PFR or use a surgical PFR.

PFR respiratory protection must be worn by workers in the following circumstances:

- While caring for patients who have a known or suspected airborne-transmissible disease e.g. tuberculosis (TB), including extra-pulmonary draining TB lesions when performing wound irrigation (due to aerosolisation of exudate); measles; chickenpox; severe acute respiratory syndrome (SARS); COVID-19 or any pandemic novel virus that may be transmitted via the airborne route.

OR

- Attending to patients with suspected or confirmed infectious diseases of which airborne spread has been risk assessed as possible.

OR

- Where AGPs are being performed on patients, including those with a suspected or confirmed airborne or respiratory infection.

OR

- Other circumstances as directed, such as a novel respiratory infectious disease.

OR

- Manual decontamination of flexible bronchoscopes

Priority for fit testing is based on the likelihood of a worker required to be:

- Present in a room where there is a patient confirmed or suspected to have a high morbidity/mortality airborne-transmissible infection.

OR

- Present in a room where an AGP is being performed on a patient with a known or suspected high morbidity/mortality airborne-transmissible infection.

OR

Attending to patients with suspected or confirmed infectious diseases of which airborne spread is possible.

High risk areas can include:

- Emergency departments
- Intensive care units, paediatric/neonatal units
- Wards with negative pressure rooms or respiratory isolation rooms
- Bronchoscopy units
- Operating rooms where bronchoscopy or other AGPs are performed.
- Reprocessing areas where bronchoscopes are manually decontaminated
- Any other area/situation identified as high risk for worker exposure.

High risk workers can include:

- Workers such as clinicians who work in high-risk areas, e.g. nurses, doctors, physiotherapists, speech pathologists, radiographers
- Emergency and first responders e.g. SA Ambulance operational staff any other staff identified as being at high risk of exposure
- Ancillary staff, e.g. cleaners, who are required to enter a patient's room.
- Staff who manually decontaminated flexible bronchoscopes.

All other workers should be fit tested based on a risk assessment of the likelihood of caring for patients or having to enter the room of a patient with a known or suspected airborne or respiratory infection where there is a possibility of airborne spread or as directed by SA Health.

Reducing workers risk of exposure to respiratory pathogens

It is recommended that as part of worker health and safety, actions are implemented as per the hierarchy of controls in infection prevention and control and a local risk assessment.[1] This includes identifying which workers require fit testing and to consider other controls where possible e.g. limiting the number of people present during AGPs and AGBs, and maintaining workers immunisation rates and records.

8. Workforce implications

To implement a respiratory protection program, LHNs will require resources, including equipment and trained staff to fit test workers initially and then recheck annually. Refer to relevant Work Health and Safety Policies.

9. Safety, quality and risk management

Refer to the following guidelines for information on safety, quality and risk management.

- Australian Commission on Safety and Quality in Health Care (ACSQHC) hierarchy of controls in IPC
- Australian Commission on Safety and Quality in Health Care (ACSQHC) National Safety and Quality Health Service Standards (NSQHSS) Standard 3 Preventing and Controlling Infections Standards
- Australian Guidelines for the Prevention and Control of Infection in Healthcare, Canberra: National Health and Medical Research Council (2022).

10. General considerations

Although the advice in this document is an exemplar guideline, all SA health facilities must comply with relevant Work Health and Safety polices and the *South Australian Public Health Act 2011*.

11. Eligibility criteria

11.1. Inclusion

All people working or present in an area where exposure to infectious respiratory pathogens is possible, this includes areas and situations where clinical care is provided to potentially infectious patients/residents or others.

11.2. Exclusion

Nil

12. Implementation and monitoring

Implementation and monitoring strategies are suggested to ensure that workers are effectively adhering to IPC requirements for infectious respiratory diseases as per local policies and procedures.

13. Appendices

Appendix 1: Donning and fit checking: Flat style particulate filter respirator (PFR)

Appendix 2: Donning and fit checking: Cupped style particulate filter respirator (PFR)

Appendix 3: Examples of Aerosol Generating Procedures and Aerosol Generating Behaviours and Risk Mitigation Strategies Additional to PPE and Room Management

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14. Associated policies / guidelines / clinical guidelines / resources

Australian Commission on Safety and Quality in Health care (ACSQHC) hierarchy of controls in infection prevention and control

Centers for Disease Control (CDC) Personal Protective Equipment: Questions and Answers: Updated April 9, 2021

SA Health - Addressing vaccine preventable disease: Occupational assessment, screening , and vaccination.

SA Health - Personal Protective Equipment (PPE) Selection Policy Guideline

SA Health - Management of infectious diseases summary table.

SA Health - Mask Fit Testing Fact Sheet for Staff Particulate Filter Respirator (PFR) Fit Testing

The National Institute for Occupational Safety and Health (NIOSH [2015]. Hospital Respiratory Protection Program Toolkit: Resources for Respirator Program Administrators. Atlanta, GA: Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication Number 2015-117 (revised 04/2022)

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11. AS/NZS 1715:2009 – Selection, use and maintenance of respiratory protection equipment
12. Work Health and Safety Regulations 2012 - Government of South Australia

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12/07/23	V1.5	Domain Custodian, Clinical Governance, Safety and Quality	Updated terminology and risk associated with airborne spread
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5/05/20	V1.3	Communicable Disease Control Branch Director	Minor alterations, updated P2/N95 respirator table, put in the new template
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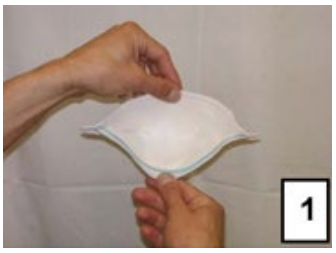
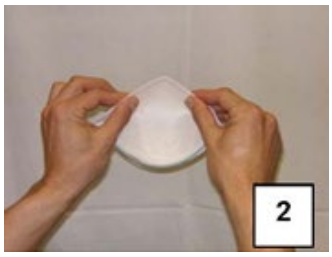
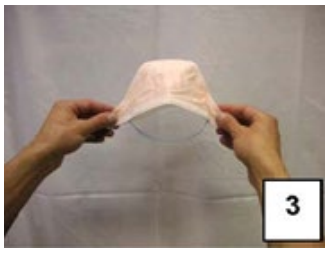
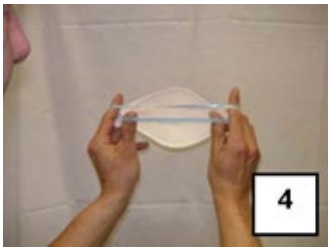
Appendix 1: Donning and fit checking: flat style particulate filter respirator (PFR)

Note this in example only. For information regarding PFRs that utilise a fit clip, refer to videos and fact sheets on the SA Health Staff Protection from Infections webpage

Note – Perform hand hygiene prior to donning mask

 Separate the edges of the PFR to fully open it	 Slightly bend the nose wire to form a gentle curve	 Hold the PFR upside down to expose the two headbands
 Using your index fingers and thumbs, separate the two headbands	Cup the PFR under your chin and pull headbands up and over your head	Place the lower headband at the base of your skull (under your ears)
Place the upper headband on the crown of your head. The band should run just above the top of the ears	Gently mould the nosepiece over the bridge of your nose by pressing down with fingers until it fits snugly	Don your eyewear and continue to adjust the PFR and edges - and **perform a fit check** until you feel you have achieved a good facial fit (see below for further information)

A fit check must be done each time a PFR is worn

Once your PFR is in place, the next step is to perform a **fit check.**

- Gently inhale. When you breathe in, the PFR should draw in slightly towards the face
- Gently exhale. The PFR should fill up with air. Position hands at the top and bottom of the PFR seal to identify any air leaks. It is important at this stage that there is NO air leakage around the edges of the PFR.
- If you cannot achieve a proper fit, repeat doning steps 2-9, then repeat the fit check.

If you have not achieved a successful fit as instructed above you MUST seek advice from Worker Health, Staff Health or infection control staff as applicable.

An incorrectly fitted PFR may not provide you with the intended level of protection.

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Appendix 2: Donning and fit checking: cupped style particulate filter respirator (PFR)

Note this in example only. For information regarding PFRs that utilise a fit clip, refer to videos and fact sheets on the SA Health Staff Protection from Infections webpage

Note – Perform hand hygiene prior to donning PFR

1

Pre-stretch entire length of each strap by pulling between two hands

2

Cup PFR in one hand, with fingertips positioned at nosepiece and straps hanging below the hand

3

Place the PFR in one hand and against your face

Position the PFR under the chin with the nosepiece across the bridge of your nose

4

Pull the top strap resting it high over the crown of your head

5

Pull the bottom strap over your head then position it around your neck and below your ears Straps must not be twisted

6

Using both hands, mould nose piece to the shape of the nose bridge by pushing inwards whilst moving your fingertips down both sides of the nosepiece

7

Perform Fit Check (see below for further information)

Cover front of the PFR with both hands taking care not to distrub its fit.

If you cannot achieve a proper fit, repeat steps 2-7

References

- **Donning a P2/N95 Cupped Respirator Poster**
  Fitting instructions for 3M cupped respirator poster
  https://multimedia.3m.com/mws/media/936143O/3m-cupped-respirator-fit-poster-pdf.pdf
- **Donning a P2/N95 Cupped Respirator Video**
  Donning a Cup or cone shaped P2/N95 Respirator
  https://www.youtube.com/watch?v=iHGFaVrq8SQ

A fit check should be done each time a PFR is worn.

Once your PFR is in place, the next step is to perform a **fit check**.

- Sharply exhale. The PFR should fill up (bulge) with air with **NO** air leakage around the edges of the PFR. Position hands at the top and bottom of the PFR seal to identify any air leaks.
- If you cannot achieve a proper fit, repeat doning steps 2-9.

If you have not achieved a successful fit as instructed above you MUST seek advice from Worker Health, Staff Health or infection control staff as applicable.

An incorrectly fitted PFR may not provide you with the intended level of protection.

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Appendix 3: Examples of aerosol generating procedures and aerosol generating behaviours and risk mitigation strategies additional to PPE and room management.

Note these are examples only and a local risk assessment is recommended as there may be additional situations or procedures that may generate aerosols.

Aerosol Generating Procedures/Behaviours	Risk mitigation strategies in addition to recommended PPE and room management actions
> PCR or rapid antigen test (RAT) collection	> Nil additional
> Tracheostomy/laryngectomy > Tracheostomy procedures (insertion/open suctioning/removal)	> Nil additional
> Intubation, extubation, mechanical ventilation (especially if a closed circuit is not maintained) and related procedures (e.g. manual ventilation/open suctioning of respiratory tract) > Non-invasive ventilation (NIV) (e.g. bi-level positive pressure ventilation and continuous positive airway pressure) > High frequency oscillatory ventilation > High flow nasal oxygen	> Appropriate use of NIV should be directed by a senior clinician > If continuous positive airway pressure (CPAP) ventilation or NIV are instituted in patients with suspected or confirmed COVID-19 a non-vented mask with close fitting seal should be applied and a viral filter applied to the expiratory limb of circuit
> Cardiopulmonary resuscitation	> Nil additional
> Surgical and complex dental procedures that involve the mouth, front of the neck, sinuses, oropharynx or lung	> Minimise high speed drilling where possible
> Bronchoscopy > Manual decontamination of flexible bronchoscopes > Bronchoalveolar lavage (BAL) - also known as bronchoalveolar washing	> **Note:** Safe Work SA requirements for any bronchoscopy require surgical PFR (P2/N95 respirator or equivalent) to be worn
> Upper gastrointestinal endoscopy where there is suctioning of the upper respiratory tract > Nasoendoscopy	> Endoscopic procedures that require additional insufflation of CO_2 or room air by additional sources should be avoided where possible. This includes many endoscopic mucosal resection and endoluminal procedures
> Induction of sputum for *Pneumocystis jirovecii* pneumonia (PJP), tuberculosis (TB) and other pathogens as per clinician decision	> Do not undertake induced sputum on confirmed COVID-19 positive cases. > Discuss need for induced sputum with infectious diseases/respiratory medical officer prior to ordering test
> Administration of medication via nebulisation	> Avoid, unless no alternative (for example nebulised adrenaline for croup)
> Aerosol generating behaviours may include singing, shouting, coughing, heavy breathing e.g. labouring	> Patient to wear a surgical mask, if tolerated