Acknowledgement

The CEC would like to thank the contribution of resources to this package from:
Hunter New England Local Health District
Illawarra Shoalhaven Local Health District
NSW Biocontainment Centre – Westmead Hospital Western Sydney Local Health District
TSI® PortaCount Respirator Fit Tester Operation/User Manual
ProSafety® and Training Pty Ltd
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Introduction
The following implementation resource package provides New South Wales (NSW) Local Health Districts (LHDs) and Speciality Health Networks (SHN) with key resources to support and implement their local Respiratory Protection Program (RPP). This should be read in conjunction with the Clinical Excellence Commission Respiratory Protection in Healthcare and Application of PPE During COVID-19 Pandemic.

The following are recommendations prior to commencement of fit testing:
- All health workers (HWs) attending fit testing should have completed all mandatory infection prevention and control training modules and videos.
- The fit testing process requires all HWs to fit check a respirator successfully before progressing to fit testing a respirator.
- External providers must be aware of all current and relevant infection prevention and control policies, guidance documents and procedures within NSW Health and the Clinical Excellence Commission.
- External providers must be aware and familiar with all respirators being used for fit testing.

Program Elements

Program Governance
LHDs are to ensure that they have clear RPP governance which includes the responsibilities for:
- Employees
- Respiratory Protection Program Coordinator
- Supervisors / line managers
- Respiratory Program Steering Committee (Facility/LHD/SHN)
- Procurement services
- General managers and service directors
- Chief Executive
  - RPP Executive Sponsor

Refer to Appendix A for examples of roles and responsibilities for the program governance structure.

Fit Tester Training
Fit test assessor training should address the following:
- Respiratory Protection in Healthcare.
- Education of HW should focus on hierarchy of controls, aerosol generating procedures, respirator types, fit checking, fit testing and the respiratory protection program including escalation if fit test fails.
- Initial then annual assessment of fit testers.
- Record keeping.
- Escalation of risks.
- Managing discussions with HW who do not achieve a fit pass outcome with available testing programs.
- Fit Testing using a quantitative method – Portacount® or AccuFit®
  - Trouble shooting
  - Steps and Governance
  - Annual update and peer review
Risk Assessment and Management

Risk management in healthcare comprises the clinical and administrative systems, processes, and reports employed to detect, monitor, assess, mitigate, and prevent risks. Deployment of healthcare risk management has traditionally focused on the important role of patient safety and health worker protection.

A risk assessment framework has five steps. These include:

- Step 1: Identify hazards, i.e. anything that may cause harm
- Step 2: Decide who may be harmed, and how
- Step 3: Assess the risks and take action
- Step 4: Make a record of the findings
- Step 5: Review the risk assessment

Identify the Hazard

The hazard is the identification of HWs who are required to wear a Particulate Filtration Respirator (PFR) as they may come into contact with recognised and unrecognised sources of airborne and aerosolised infectious agents in healthcare settings. See Appendix A

These respirators are required for HW who are:

- attending to patients with suspected, probable or confirmed respiratory infection or communicable diseases with potential for airborne transmission (e.g. pulmonary or laryngeal tuberculosis [TB], measles). This does not include people with suspected, probable or confirmed COVID-19 being provided routine care.
- performing a respiratory aerosol generating procedure (AGP) on a patient with suspected, probable or confirmed respiratory infection (e.g. COVID-19, measles, TB) or undertaking clinical work within this space.
- cleaning a room or zone after a respiratory AGP on a suspected, probable or confirmed respiratory infection or communicable diseases with potential for airborne transmission within 30 mins of the procedure.

High risk areas for prioritisation

- ICU (adult, paediatric/neonatal)
- Emergency Department (ED)
- Operating theatres where intubation/extubation, bronchoscopy or other respiratory AGPs are performed
- Wards with negative pressure rooms or respiratory isolation rooms that will provide inpatient care to patients with suspected, probable or confirmed respiratory infection or communicable diseases with potential for airborne transmission
- Designated ward zones (during an outbreak/pandemic)
- Chest clinics that perform sputum induction
- Retrieval services

Assess the risks and take action

Use local processes for identifying and prioritising HW for fit testing. This should take into account:

- HWs who work in high risk areas and who perform or assist in AGPs, further stratified by type of AGP
- Other high-risk HWs who provide direct care or enter patient rooms e.g. cleaners, wards person, HWs who perform venepuncture, medical imaging
- Proportion of HWs required to be tested initially – e.g. those in core teams who perform/assist in AGPs
Take action to reduce risk:
- Limit the number of people present during an AGP
- Identifying core teams to perform or assist in AGPs

Make a record of the findings
Develop a system for recording the:
- Results from fit testing programs
- RPP meetings minutes
- Correspondence related to the RPP

Review the risk assessment
- Perform an annual evaluation of the RPP

Types of Respiratory Protective Equipment
Refer to Clinical Excellence Commission: Application of PPE During COVID-19 Pandemic

Disposable Respiratory Protective Equipment (RPE)
Disposable respirators are the most common devices used in healthcare settings for protection against airborne pathogens or during respiratory aerosol generating procedures where a communicable respiratory infection is suspected or confirmed. Each time these items are used, they must be checked for defects e.g. elastic head pieces unevenly attached, marks on the respirators and tears. Disposable respirators found to be defective are to be discarded and replaced. If this occurs, notify the relevant supervisor/line manager who may need to advise Procurement through existing communication and escalation protocols.

LHDs/SHNs should check the NSW HealthShare notification (decision matrix for the make / model of respirators when commencing LHD fit testing program) for stock availability to ensure that there is adequate supply of P2/N95 respirators across health to fit test HWs and to prioritise the procurement and stock at each facility. Refer to Appendix B Flow Chart Respirator selection-decision making algorithm.

Reusable Respiratory Protective Equipment (RRPE)
Reusable Respiratory Protective Equipment (RRPE) refers to a variety of reusable respirators that protect the user’s respiratory system from exposure to recognised and unrecognised sources of airborne and aerosolised infectious agents in healthcare settings.

RRPE may take the form of a reusable full face or half face respirator and harness fitted with particulate P2 or P3 filters that are activated passively as the wearer breathes. Another type of RRPE are Powered Air Particulate Respirators (PAPRs). These actively supply filtered air to the wearer and deliver positive air pressure via a battery-operated blower unit.

Education of HWs who will be wearing a respirator
My Health Learning (MHL) modules for the principles of fit checking include the Donning and fit checking of P2 or N95 respirators in NSW healthcare settings (319438161).

Other training modules include:
- Infection Prevention and Control Practices (Course code: 46777047)
- Infection Prevention – Transmission Based Precautions (Course code: 253093581)
- Infection Prevention – Personal protective equipment for combined transmission-based precautions (Course code: 294450660)
Additional to the mandatory online MHL modules, provide training and assessment annually on how to perform fit checks for those HW identified for fit testing and document this in the MHL platform.

Education for HWs includes:

- Australian Standards for respirators
- When respirators are to be used and importance of fit checking
- Respiratory risks during routine and emergency situations, including AGPs
- Respirator fit, usage, maintenance, limitations, capabilities, required checks, decontamination (if reusable)
- HWs issued with PAPRs must be trained in charging, maintenance of batteries, filters, reprocessing, maintenance, storage and reporting of issues
- Risks of not achieving an adequate seal if HW has facial hair
- How to wear respirators with eye protection

It is essential that training for HWs has a specific health focus on how a respirator in combination with other PPE requirements reduces the risk in recognised and unrecognised sources of airborne and aerosolised infectious agents in healthcare settings. While much of this training is included in the training for ‘fit testers’, a summary should also be included in training for all HWs undergoing a fit test.

**Frequency of RPE training**

Training should occur:

- prior to first respirator use
- annually
- when there is a change in the type of respiratory protection used
- gaps are identified in HW knowledge and skills assessment
- significant changes to HWs face due to weight change or surgery

**Fit Checking**

Fit checking is required:

- each time a disposable P2/N95 or reusable respirator is worn
- prior to fit testing
- for assessment of mask fit in the presence of facial hair
- during annual competency or skills assessment
- when a HW has difficulties with fit, and needs to have further investigation

**Fit Testing**

- Priority HWs who cannot participate in fit testing due to medical reasons require a medical certificate to obtain an exemption. HWs who cannot be fit tested may require redeployment to another clinical area
- A consent form (see Appendix C for sample consent form) is required from a HW prior to fit testing

**What is a Fit Factor?**

A quantitative fit test generates a number that is referred to as the fit factor (FF). The fit factor is a measure of how well a facepiece seals against the wearer's face. A higher fit factor number (e.g. half face particulate filter respirator with 200+) means the facepiece achieved good contact between the face seal and the face during the test.

**Who can conduct respirator fit testing?**
RPE fit testing should be conducted by a person who has completed training. The persons administering fit testing are able to calibrate equipment and perform tests appropriately, recognise invalid tests, interpret test results and ensure that test equipment is in proper working order. The person administering the fit test ensures that equipment is kept clean and is maintained and calibrated according to the manufacturer's instructions.

To be competent the person should have adequate knowledge, and have received adequate instruction and training in the following areas:

- selection of appropriate and suitable RPE
- examination of RPE and the ability to identify poorly maintained facepieces
- ability to correctly fit a facepiece and perform pre-use fit checks
- ability to recognise a poor fitting facepiece
- the purpose and applicability of fit testing; the differences between, and the appropriate use of, quantitative and qualitative fit testing methods
- the purpose of the fit test exercises
- preparation of facepieces for fit testing
- how to carry out diagnostic checks on the facepiece and the fit test equipment
- capabilities and limitations of the fit test equipment
- how to perform a correct fit test with the chosen method
- be aware of and know how to prevent and correct problems during fit testing
- interpretation of fit test results
- an understanding of the differences between fit factor, workplace protection factor, assigned protection factor and nominal protection factors; and
- AS/NZS Standards, Regulations and the Approved Codes of Practice relating to fit testing

**Fit Testing schedule for healthcare facilities**

- New HWs who are prioritised for assessment and have not been fit tested elsewhere should be tested during onboarding to the healthcare facility
- When identified that a HW may be exposed to a respiratory pathogen or hazardous substances
- Existing HWs – HWs who have been prioritised during the risk assessment
- Existing HWs – other HWs who may have infrequent exposure to recognised and unrecognised sources of airborne and aerosolised infectious agents in the healthcare facility
- Where there has been a change in PFR availability – size, style, model or make or where a new make/model is issued. Prioritisation based on HW risk assessment
- Performed at appropriate intervals, particularly when there is a change in the wearer's facial characteristics, e.g. loss of teeth/dentures or excessive changes in weight or facial surgery

**Process**

The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (PortaCount®) protocol quantitatively fit tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A probed respirator has a special sampling device, installed on the respirator, that allows the probe to sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator (elastomeric or disposable filtering facepiece), and a minimum fit factor pass level of at least 500 is required for a full-facepiece elastomeric respirator.
The following points should be considered before fit testing:

- Quantitative fit testing is recommended, e.g. with PortaCount® or AccuFit® machine
- HW is offered a choice of familiar respirators to try first or based on HealthShare product availability. These respirators will be available in their clinical area (provided or brought by HW from their clinical area).
- PPE used with the respirator includes protective eyewear and any specific headwear to be worn to ensure that it does not interfere with the fit testing
- If HW requires addition of any protective barriers to protect their skin while wearing the respiratory, this must be used during the fit testing
- HWs are to complete training and assessment to ensure they are competent in performing fit checks
- HWs are to adjust or modify their hair, facial hair and any adornments to accommodate the fit testing requirements

**Quantitative Fit Test (QNFT) Protocols**

*For fit testing set up and equipment maintenance, refer to the manufacturer's instructions for specific fit test equipment*

**PortaCount® Fit Test Requirements**

The equipment required for performing a fit test includes:

- QNFT equipment prepared and checked daily before use (in education package)
  - Ensure the PortaCount® ‘daily checks’ are completed
  - Printer (when used) and laptop/computer is connected and working
  - The sample tubes and probes correctly positioned
  - The sampling probe and line are properly attached to the facepiece
  - The sampling tubes are not blocked or twisted
  - The alcohol wick is placed correctly with required amount of alcohol
  - Enough particles in the ambient air
- Appropriate room (no traffic, turn off air-conditioner, door closed or open depending on the particle count)
- Waiting area that enables physical distancing
- Selection of respirators
- Waste bin
- Mirror if HWs require this for fit checking
- Consent forms (Appendix C)
- Hand hygiene product
- Cleaning product and space for cleaning and disinfection of reusable equipment
- Mechanism for record keeping of results (laptop/computer) including the details of the person carrying out the fit test
- Compressed air
- Excessive moisture in the facepiece or sample tube can cause moisture droplets to be sampled by the particle counting device. This can result in a falsely low fit test result. The facepiece and sample tube should be dried out or replaced between tests where appropriate.
Procedure ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol:

- Set Up:
  - Set up for the fit testing – daily checks as per the equipment specifications
  - Scheduling of HWs
  - Respirator piercing
  - Particle generation described
  - OSHA 1910.134 modified ambient aerosol condensation nuclei counter (CNC) quantitative protocol for filtering facepiece respirators (fast protocol-2.5 minute) or alternate protocols for reusable respirators, and options for alternate brands of quantitative fit testing machines

- Preparation for HW on arrival: both HW for testing and fit tester to perform hand hygiene
  - Assess facial hair – (if present do not proceed), adjust hair adornments that may interfere with the procedure
  - Confirm that no food eaten within 15 minutes (food with strong odour/smell may interfere on fit test results) and no smoking has occurred within 30 minutes prior to fit test.
  - Completed all mandatory online learning requirements as per local facility
  - Document HW details (e.g. Name, Employee ID, Department, Respirator details)
  - Observe HW don the respirator and perform a fit check; fit tester may be required to provide education on the appropriate donning and/or fit checking if the HW cannot perform adequately to achieve a good seal.

- Check the following for the adequacy of the respirator fit:
  - Chin properly placed;
  - Adequate strap tension, not overly tight;
  - Fit across nose bridge;
  - Respirator of proper size to span distance from nose to chin;
  - Tendency of the respirator to slip;
  - Self-observation in a mirror to evaluate fit and respirator position if available.

- The HW should wear the facepiece for five minutes before the fit test is started. This ensures that the ambient particles trapped inside the facepiece, when fitted, are flushed out.

- Have the HW wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model or different model of respirator.

- Follow the manufacturer's instructions for operating the PortaCount® and proceed with the test.

- After the test, the HW should be asked by the test administrator regarding the comfort of the respirator. If it has become unacceptable, try another model of respirator.

PASS/FAIL Criteria

- The PortaCount® will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is used for the evaluation.

- The Pass or Fail message will indicate whether the test was successful. If the test was a Pass, the fit test is over.

- If the test is a Fail determine the reason for the fail (e.g. incorrect mask size, poor adjustment). Make the necessary corrections and repeat the test.

- Since the pass or fail criteria of the PortaCount® is user programmable, the test operator is to ensure that the pass or fail criteria meet the requirements for minimum respirator performance as per the OSHA 1910.134 protocol.
The overall fit factor is the most important data item. It is the overall result of the fit test and usually the only fit factor value that must be retained as part of the record keeping. The fit factors for the individual exercises are not as important. It is possible to have a passing overall fit factor even though one of the exercises resulted in a failing fit factor. The overall fit factor is a weighted average related to the amount of airborne hazard that the person might have inhaled if the HW were in the workplace. Fit Factor numeric values so close to the Pass/Fail Criteria would always be investigated and remedial training or reselection of the RPE. Should be instigated.

- A record of the test needs to be kept on file (Pass or Fail). The record must contain the test HW name; Stafflink number, overall fit factor; make, model, style, and size of respirator used; and date tested.
- If the HW fails, use Fit pro ultra-software real time fit check to identify the leak, correct the reason for the failure and repeat the test. Repeat the above process with the same respirator or use another model or size. Real time fit check should not be used as a fit test pass/fail result.

**Procedure post fit testing:**

- Doff the respirator (observed). The Fit Tester may be required to provide education on the appropriate doffing process if the HW cannot doff the respirator adequately.
- Dispose used respirator in correct waste bin
- HW to perform hand hygiene
- Fit test administrator to clean equipment and perform any required maintenance.
- Check list of PortaCount consumables
- Hand hygiene steps as appropriate

**Documentation:**

- Record the fit test outcome (pass / fail) per respirator type/size in Stafflink and on HW ID badge (where possible) or as per local facility process.
- Documentation in the education package for ‘fit testers’ to ensure consistency. Include HWs who cannot be fitted and the reason(s).
- All respirators that are fit tested are recorded for each HW regardless of pass or fail.
- Document reasons/causes for a failed fit test including face shape, claustrophobia, exacerbation of a medical condition (e.g. asthma).

**Escalation pathway when a HW fails a fit test:**

- Refer to Appendix B and page 34 of this document, for further guidance on the escalation pathway
- Risk assessment to avoid AGPs in recognised and unrecognised sources of airborne and aerosolised infectious agents in high risk settings.
- Trialling other options such as disposable particulate respirators without fluid resistance with surgical mask on top or full-face shield as the first step or reusable options such as elastomeric respirators or PAPRs.
- Discuss the alternatives with the HW’s manager and consider short- or long-term redeployment
- Document escalation pathway and outcomes.
Documentation and Record Keeping

- Consent forms (Appendix C)
- Results of fit testing entered into Stafflink
- Credentialing of ‘fit test assessors entered into MHL
- Automatically alerting HW of the next review
- Annual MHL module on fit checking

Biomedical engineering and procurement

The fit test device should be used, maintained and calibrated in accordance with the manufacturer's recommendations. Before use, the stability of the equipment should be checked as instructed by the manufacturer. Records of maintenance, calibration and pre-use checks should be retained. The manufacturer recommends that the equipment should be factory calibrated on an annual basis.

PortaCount Respirator Theory of Operation

The PortaCount® Pro Respirator Fit Tester measures the particle concentration inside and outside the respirator and calculates a fit factor, the ratio of the two measurements. Particles entering the PortaCount® Pro Respirator Fit Tester pass through a saturator tube where they are combined with alcohol vapor. They then pass into a condenser tube where alcohol condenses on them, causing each to grow into a larger droplet. The droplets then pass through a focused laser beam, producing flashes of light which are sensed by a photodetector. The particle concentration is determined by counting the light flashes.

The PortaCount Respirator Fit Tester has two internal HEPA filters that filters air samples inside the instrument before being exhausted to the ambient air (see figure 1). These HEPA filters are 99.97% efficient for the most penetrating particle size of 0.3 microns.

The twin tubes are under negative pressure or sealed during the operation of the PortaCount Respirator Fit Tester. The air inside the mask sample tube travels from the mask to the PortaCount Respirator Fit Tester or is prevented from moving at all (such as when the ambient tube is in use) with a one-way flow away from the person being tested. As per the manufacturer of the PortaCount Respirator Fit Tester there is no need to clean or disinfect the inside of the twin tubes.
Figure 1 PortaCount® PRO Respirator Fit Tester Schematic

Adapted from PORTACOUNT® is a registered trademark of TSI Incorporated
Appendix A - Roles and responsibilities for the program governance structure

The responsibilities should be clearly outlined for:

- **Employees to:**
  - Declare any medical reason that indicates that fit testing/or wearing Respiratory Protective Equipment (RPE) cannot be done.
  - Be clean shaven for fit testing.
  - Attend annual training and respirator fit testing as required in the RPP.
  - Be aware of their individual fit testing outcomes.
  - Use, maintain, and dispose of respirators properly in accordance with training and local procedures.
  - Conduct a fit check every time RPE is used.

- **Supervisors / line managers should:**
  - Ensure that all potential exposures to respiratory hazards, including exposure to chemicals and aerosol transmissible pathogens, have been identified and HWs have been provided with the correct RPE.
  - Ensure that HWs are identified that require RPE.
  - Ensure that this procedure is implemented in the work area.
  - Ensure HWs attend the required training and scheduled fit testing during work hours.
  - Ensure that records of respirator training and fit testing outcomes are documented and available.

- **General managers and service directors**
  - Apply due diligence by ensuring that this procedure is implemented within their governance areas.
  - Ensure that respiratory hazards / risks are identified in consultation with their HWs.
  - Ensure risk assessments are undertaken across their work areas to identify HWs who require respiratory protection
  - Ensure that training and resources are available to enable compliance with this procedure.
  - Ensure that HW are trained and competent to perform fit testing.
  - Ensure that a Respiratory Prevention Program Coordinator is appointed.

- **Chief Executive**
  - Ensure that a process is in place to allow the RPP to be implemented.
  - Ensure that any high-risk issues identified with the RPP are identified and the risks are mitigated.
  - Ensure that all required resources are available for the implementation and ongoing management of the RPP.

- **Respiratory Protection Program Coordinator**
  - Coordinates fit testing schedule and collaborates with the ‘fit testers’ to perform the scheduled fit testing.
  - Coordinates training for new fit testers.
  - Monitor and report on annual competency assessment for fit testers.
  - Maintains HW consent records, fit testing results and recommendation(s)
  - Coordinates annual respirator fit testing program.
  - Maintains fit testing equipment and consumables to ensure testing program is not impacted.
  - Provides reports on fit testing results to supervisors/line managers and consolidated reports to General Manager and relevant committees.

- **Respiratory Program Steering Committee (Facility/LHD/SHN)**
  - Receives, reviews and responds to status reports on fit testing.
- Identifies and prioritises fit testing requirements across the LHD/SHN.
- Collaboratively resolves issues that have been escalated regarding the RPP.
- Ensure that any high-risk issues identified with the RPP that are unable to be resolved are escalated to the Chief Executive (or delegate).

- **Procurement services**
  - Ensures there is a sustainable supply of suitable respirators that meet the requirements of employees.
  - Communicates and liaises with HealthShare to ensure testing aligns with availability of respirators.
  - Ensures respirators meet the requirements of Work, Health and Safety (WH&S) legislation.
  - Ensures respirators meets the requirements of NSW Health and Clinical Excellence Commission infection prevention and control policies and guidance documents.
Appendix B - Flow Chart Respirator selection decision making algorithm

Fit Procedure:
- Don BYD respirator
  - Fit Check
    - Fit Test
      - Real time Fit Check using FitPro Ultra software
        - Pass
          - Fit to BYD
        - Fail
          - Adjust respirator
            - Fit Check
              - Fit Test
                - Real time Fit Check using FitPro Ultra software
                  - Pass
                    - Fit to BYD
                  - Fail
                    - Re-don same respirator and repeat fit test

Fit Procedure:
- Don BSN respirator
  - Fit Procedure
    - Pass
      - Fit to BSN
    - Fail
      - Re-don same respirator and repeat fit test

Fit Procedure:
- Don 3M respirator
  - Fit Procedure
    - Pass
      - Fit to 3M
    - Fail
      - Re-don same respirator and repeat fit test

Reusable Respirator:
- Tight fitting PAPR (some models to be fit tested)
- Reuseable Elastomeric Respirator
- Loose fitting PAPR (No fit test required)

Fit test report should be generated and recorded for every respirator, pass or fail.
1. Nose strip and strap adjustment should reflect real-time adjustment which will be made in a clinical setting. Excessive adjustments in order to achieve fit not to be attempted.

2. Check the following conditions for the adequacy of the respirator fit:
   - Chin properly placed
   - Adequate strap tension
   - Respirator of proper size to span distance from nose to chin
   - Not overly tightened
   - Fit across nose bridge

   Have the HW wearing the respirator do a user seal check. If leakage is detected, determine the cause of the leak.
   ‘Real time fit check’ should not be used as a pass/fail result.

3. Medium BSN respirator should be checked in preference to small due to lower stock level of small BSN respirators (subject to change).
Respirator Fit Testing Consent

Personal Information

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Overview

Quantitative Respirator Fit Testing has been developed in accordance with AS/NZS 1715:2009, ISO 16975-3 and OSHA 1910.134 protocol.

The focus of respirator fit testing is to ensure there is a sufficient seal between the face of the worker and the chosen respirator.

Respirator fit testing is not recommended in the presence of facial hair.

The respirator fit test performed on this day under testing conditions does not determine whether the chosen respiratory PPE is appropriate for the environment/conditions under which it may be worn in the future. This test will determine if a suitable fit is obtained based on today’s circumstances. Future use will be reliant on using the same respirator as tested today and following all fit checking protocols as per your training.

Release of information

may be required to discuss any condition/s (e.g. cardiac or respiratory illness) with your line manager and appropriate medical officer if this impacts on your ability to obtain a suitable fit.

The information collected during this assessment will be sent to your line manager. You will be advised of the result from the fit testing at the time of the test.

On day of fit testing

Staff are to ensure that they are clean shaven around the mask seal area and have not eaten (food with strong odour/smell may interfere on fit test results) for 15 minutes or smoked 30 minutes prior to testing.

Consent

By signing below, I confirm:

- I have read the above information / I have had the above information explained to me.
- I understand the conditions of this testing program.
- I acknowledge that I am physically able to wear a respirator.
- I consent to participating in this testing.
- I consent for to release the information collected in this assessment to my line manager.

Staff Signature

Date
Information Sheet: Fit Testing

What is fit testing?
Fit testing is a validated method to determine whether the type of respirator being used by a person provides an adequate seal on that person’s face, thereby providing the level of protection required against airborne infectious particles.

There are 2 types of fit testing, and in <LHD/SHN> we will be conducting Quantitative Fit Testing (QNFT)

What does QNFT Measure?
Quantitative Fit testing is an objective measurement of respirator fit, undertaken using a testing unit called a PortaCount.

Fit testing works by measuring the concentration of microscopic particles in the ambient air and then measuring the concentration of those particles that leak into the respirator. The ratio of these two concentrations is called the fit factor. The testing is done while the person is wearing the respirator and attached to the testing unit, while carrying out a number of physical movements and actions.

What do the results tell us?
The results indicate the effectiveness of the seal against the face. While each physical movement done during the testing has a fit factor result, the overall fit factor from the combined scores is used to determine if the tested respirator provides the level of protection required. It is possible to have an overall pass fit factor even though one of the physical movements returned a negative fit factor result.

What is a Respirator?
A respirator (also known as a P2 or N95 mask) is used by an individual to provide respiratory protection. The term respirator refers to masks used to protect health workers from airborne infectious particles. There are three main types of respirators available and these include:

- Disposable or filtering facepiece respirators (P2/N95 mask) where the respirator is discarded when it becomes unsuitable for further use due to completion of an episode of care, excessive resistance, physical damage or contamination;
- Reusable or elastomeric respirators, where the facepiece is cleaned and reused but the filter cartridges are replaced when they become unsuitable for further use;
- Powered air purifying respirators (PAPRs), where a battery-powered blower moves the air flow through filters.

/LHD/SHN Respiratory Protection Program
Fit testing is a part of <LHD/SHN> Respiratory Protection Program, complementing fit checking and education. All staff who need to wear a respirator will undergo a fit test as indicated.

Fit testing does not replace fit checking which needs to be done every time a respirator is used.
### Appendix D - Respiratory Protection Equipment Assignments by task or location

<table>
<thead>
<tr>
<th>Task or Location</th>
<th>Potential Exposure</th>
<th>Respiratory Protection</th>
<th>Employees Included</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performing respiratory AGPs on patients with recognised and unrecognized sources of airborne and aerosolised infectious agents in healthcare settings or are present during such procedures.</td>
<td>Infectious aerosols</td>
<td>Disposable respirator or an alternative respirator (such as a PAPR half or full-face) if the disposable does not fit, or for prolonged exposure or for comfort</td>
<td></td>
</tr>
<tr>
<td>Entry into airborne infection isolation room or other area occupied by patients suspected or confirmed with a disease requiring Airborne Precautions.</td>
<td>Infectious aerosols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performing, or present during, routine patient care and support operations on a patient suspected or confirmed with a disease requiring Airborne Precautions.</td>
<td>Infectious aerosols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cleaning and disinfecting an area occupied by a patient suspected or confirmed with a disease requiring Airborne Precautions, or cleaning and disinfection such an area after a patient has left but before the space has been adequately ventilated.</td>
<td>Infectious aerosols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory operations involving aerosol transmissible disease pathogens for which the biosafety plan requires respiratory protection</td>
<td>Infectious aerosols</td>
<td>As specified in biosafety plan</td>
<td></td>
</tr>
<tr>
<td>[List any other exposures and job tasks for which your facility has determined the use of respiratory protection is required; you may go beyond OSHA requirements]</td>
<td>[Specify]</td>
<td>[Specify according to your facility’s policy]</td>
<td></td>
</tr>
</tbody>
</table>
Appendix E - Fit Testing Risk Assessment

<table>
<thead>
<tr>
<th>LHD/Hospital</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared By:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Names and Positions of HW involved in risk assessment:</th>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Medical</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nursing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Allied Health</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support Services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Admin</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Manager Signature:</th>
<th></th>
</tr>
</thead>
</table>

1. Detailed description of potential exposure to recognised and unrecognised sources of airborne and aerosolised infectious agents in your Hospital / Service to HW:
   Take into consideration:
   - Exposure time
   - Frequency of exposure
   - Likelihood of exposure
   - Availability of respirators - disposable and reusable

2. List the current control measures in place in relation to the use of respirators and/or respirators: e.g.: disposable respirators, reusable respirators, Fit Check etc
Use the below risk category (as per CEC guide to identify and prioritise HWs who require fit testing of respirators). HWs who are required to be fit tested must be trained in “fit checking” prior to the fit test. They will be required to complete a fit check prior to fit testing being completed.

<table>
<thead>
<tr>
<th>Risk category</th>
<th>HW Category</th>
<th>Clinical area</th>
<th>List in priority order which HWs are to be fit tested e.g.: all medical, senior medical, JMO, nursing, physio, admin etc. Taking into account the frequency of exposure, e.g.: Full Time vs Casual.</th>
</tr>
</thead>
</table>
| 1             | Resuscitation / Intubation teams (Respiratory AGP on patients suspected or confirmed to have COVID-19) | Anaesthetics | Emergency department  
Intensive care unit  
other clinical groups performing intubations |
| 2             | Critical care clinicians  
COVID-19 care teams | COVID-19 units | Clinicians on designated COVID-19 floors  
Hot zone teams |
| 3             | Clinicians providing direct care to patients in airborne precautions.  
(Some HW may be duplicated) | Disease requiring airborne precautions e.g. Tuberculosis, Measles, Varicella or emerging pathogens and any other diseases for which public health guidelines recommend airborne precautions |
| 4             | Other clinicians | Procedural support clinicians where airborne precautions are in place and HWs are required to provide assistance in care |
| 5             | Support HWs in other patient care areas | Any other area / situation identified as high risk for HW airborne transmissible disease exposure  
Maintenance HWs who may be exposed to inhalation of dangerous particulates and gases in the course of their work |
Appendix F – Detailed Fit Testing Procedures

The HW must provide signed consent to participate in fit testing, including confirmation that they are both physically and psychologically fit.

Fit testing must be undertaken in an appropriate environment (e.g. clean, non-cluttered room with access to power, ventilation)

Before the fit test commences, HW should demonstrate donning of a respirator, positioned on the face, how to set strap tension and fit check. A mirror should be available to assist them in evaluating the fit and positioning of the respirator. This instruction does not constitute training on respirator use.

The respirator should be donned and worn for at least five minutes prior to commencing the fit test to assess comfort.

If the HW is not familiar with using the particular respirator, they shall be directed to don the respirator several times and to adjust the straps each time to become adept at setting proper tension on the straps.

Assessment of comfort shall include a review of the following points with the HW and allowing them adequate time to determine the comfort of the respirator.

- Position of the respirator on the nose
- Room for eye protection
- Ability to talk
- Position of respirator on face and cheeks
- The following criteria shall be used to help determine the adequacy of the respirator fit:
  - Chin properly placed;
  - Adequate strap tension, not overly tightened/loosened;
  - Fit across nose bridge;
  - Respirator of proper size to span distance from nose to chin;
  - Tendency of respirator to slip;
  - Self-observation in mirror to evaluate fit and respirator position.

The HW shall conduct a fit check by using either the negative and positive pressure seal (huff and puff) checks or those recommended by the respirator manufacturer which provide equivalent protection.

Before conducting the negative and positive pressure checks, the HW shall be instructed to seal the respirator on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another respirator shall be selected and retested if the HW fails the fit check tests.

The test shall not be conducted if there is any hair growth between the skin and the respirator sealing surface, such as stubble beard growth, beard, moustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

HWs should be instructed to alter their hair style or any adornment that may interfere with respirator fit.

If the HW exhibits difficulty in breathing during the tests, they shall be referred to their manager to determine whether the HW can wear a respirator while performing their duties.

If the HW finds the fit of the respirator unacceptable, the HW shall be given the opportunity to select a different respirator (if available) and to be retested.
Exercise regimen. Prior to the commencement of the fit test, the HW shall be given a description of the fit test and the HW’s responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes prior to the start of the fit test.

The fit test shall be performed while the HW is wearing any applicable safety equipment that may be worn during actual respirator use which would interfere with respirator fit.

**Test Exercises: Modified Ambient Aerosol CNC Quantitative Fit Testing Protocol for Filtering Facepiece Respirators**

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal breathing</td>
<td>Remain still and breath normally</td>
</tr>
<tr>
<td><strong>Bending Over</strong></td>
<td>The wearer should stand and bend at the waist as if to touch their toes, 50 seconds and inhale 2 times at the bottom and then return to an upright position.</td>
</tr>
<tr>
<td><strong>Talking</strong></td>
<td>The wearer should talk out loud slowly and loud enough to be heard clearly by the fit tester. The wearer should read from a prepared text such as the Rainbow Passage or count down from 100.</td>
</tr>
<tr>
<td><strong>Head side to side</strong></td>
<td>The wearer should stand in place, slowly turning their head from side to side for 30 seconds and inhale 2 times at each extreme.</td>
</tr>
<tr>
<td><strong>Moving head up and down</strong></td>
<td>The wearer should slowly move their head up and down for 39 seconds and inhale 2 times at each extreme. The wearer should be instructed to inhale in the up position (i.e. when looking toward the ceiling).</td>
</tr>
</tbody>
</table>

The HW will be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator should be tried.

The respirator must not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

For more information on Respirator Fit tester operations refer to manufacturer’s user manual.
Appendix G - Cleaning and disinfection consideration during quantitative fit testing

After finishing the fit test

Fit test subject:

- Doff respirator correctly – if not done correctly, review correct technique
- Remove the twin tube from respirator probe
- Dispose used respirator
- Perform hand hygiene.

Fit tester:

Clean twin tube assembly after EACH USE using detergent/disinfectant wipe (dual purpose or two-step process by using detergent and alcohol wipe).

- Hold the tubing in your hand and disconnect from PortaCount®
- Wipe the length of the assembly with the wipe and discard the wipe, allow to dry
- Attach zero check filter when the tubes are connected to the machine
- Use a new wipe to clean the surfaces being touched
- Clean hands after completion of the cleaning.

Between sessions

Alternate tubes between participants to ensure tubes are dry before reuse

- Don safety glasses
  - Holding the end of the assembly with a tissue, inject compressed air into the tubing to remove condensation (if present) allowing it to air dry.

After each session

PortaCount® machine and accessories

- Follow machine prompts and recommendations based on product specifications for cleaning and disinfection
- Follow manufacturers’ recommendations on frequency of cleaning and type of disinfectants on each brand and model
- Use Therapeutic Goods Administration approved disinfectants
- Wipe down the reusable fit test equipment using a dual-purpose detergent and disinfectant or two step process by using detergent and alcohol wipe
- Wipe up any saline spills immediately
- Dispose of any disposable consumables
- Don safety glasses
  - Holding the end of the assembly with a tissue, inject compressed air into the tubing to remove condensation (if present) allowing it to air dry
- Machine and consumables to be stored clean and dry.
RESPIRATORY FIT TESTING TRAINING MANUAL USING THE PORTA COUNT 8048 MACHINE
Training structure for ‘fit testers’

Pre-requisites
In order to successfully complete this education package, the participant should have a good understanding of the use of PPE and RPE in droplet and airborne precautions and the fit checking process.

Complete: Donning and fit checking of P2/N95 respirators in NSW healthcare settings HETI My Health Learning (Course code 319438161).

Education

Complete: Facilitated PowerPoint presentation via Face-to-Face or Skype Business or another platform.

60-minute presentation on the background of fit testing with an opportunity to become familiar with fit testing equipment and process

Complete: Practical assessment of set up and use of PortaCount® machine or similar and Fit test practice – training day. The training day will incorporate real time Fit Testing to enable familiarisation with the process and machine as well as the opportunity to troubleshoot and correct problems encountered.

Learning outcomes
At the completion of this program, participants will be able to:

• Describe theory, purpose, and practice of fit testing and the methods of fit testing
• Identify the risks for transmission of airborne pathogens
• Identity the relevant Australian Regulations and Standards in relation to respiratory protection
• Describe the type of Respiratory Protective Equipment (RPE) used in a respiratory protection program
• Correctly apply a risk management approach to respirator and respirator selection
• Observe and provide feedback to HW on fit checking of a PFR
• Integrate the use of the PFR as part of donning and doffing PPE
• Identify HW who work in high risk areas or undertake high risk interventions (e.g. AGPs).
• Describe the escalation process if a respirator is unable to be fitted.
• Demonstrate troubleshooting of respirators and testing equipment during the fit testing process
• Demonstrate the application of quantitative fit testing under supervision
• Interpret the quantitative machine output to establish the result of the PFR fit test
• Report and record test outcomes in StaffLink (operational assessment)

Target Learner Group
Senior HW such as Clinical Nurse Educators with experience in training and assessing HW

Respiratory Protection in Health Care
In response to emerging global infectious diseases such as Severe Acute Respiratory Syndrome (SARS) and COVID-19 (SARS-CoV-2) there has been an emphasis on ensuring HWs are provided with protection from infective respiratory pathogens in the course of their work.

NSW Health LHD/SHNs and NSW Ambulance are required to implement a Respiratory Protection Program (Respiratory Protection in Healthcare) to provide clear direction regarding a risk
management approach towards HW exposure to droplet and airborne pathogens. This draws from The Australian Guidelines for the Prevention and Control of Infection in Healthcare and Work Health and Safety guidelines.

Existing respiratory protection controls have been implemented and are in place within NSW health successfully providing protection to our HWs against respiratory communicable diseases since the introduction of transmission-based precautions (1996). These earlier controls have successfully focused on fit checking and therefore, any RPP should continue to promote fit checking along with other controls such as fit testing as detailed in this document.

Infection Prevention and control

Transmission based precautions

- Respiratory infections can be transmitted through droplets of different sizes.
- Droplet particles >5-10μm in diameter are referred to as respiratory droplets
- Droplet particles <5μm in diameter are referred to as droplet nuclei.
- Airborne particles <5μm in diameter with the presence of microbes within droplet nuclei and can remain in the air for long periods of time and be transmitted to others over distances greater than 1 metre.

To put this into perspective, a human hair is anything from 40 to 120 microns.


Masks and Respirators

Respiratory protective equipment (RPE) and facial protection equipment are a vital element within the hierarchy of control to prevent transmission of respiratory pathogen (see figure 1). RPE are required for those organisms that are transmitted via droplet or airborne route or in situations during respiratory aerosol generating procedures (AGP) where airborne particles have been created. RPE can include respirators, face shield, safety glasses.
Surgical mask
Surgical masks provide a barrier to splashes and droplets to the face of the wearer.

Surgical masks for HW are required to be:

- Fluid repellent and disposable
- Loose fitting protection devices that create a physical barrier for the nose and mouth
- Worn for the duration for relevant exposure task or procedure
- Removed and changed if damaged or moist
- Single use only, discard following use

Types of respirators
The two main types of respirators are:

- Air-purifying respirators – protect the wearer by using a filter to purify the air being breathed in. These types of respirators can be disposable or reusable and either
  - non-powered – uses the wearer’s breathing to draw air through the filter
  - powered – uses a fan to draw air through the filter.
- Supplied-air respirators – protect the wearer by supplying clean breathing air from an independent source such as an air compressor or compressed air cylinder.

A particulate filter respirator (also known as a P2 or N95 mask) is used by an individual to provide respiratory protection. In the healthcare setting, this most commonly relates to the disposable filtering half-face mask. There are a variety of respirators available and may differ between facilities.

P2/N95 particulate filter respirator
- Disposable P2/N95 are non-powered disposable respirators. Inhaled air passing through the respirator is filtered. N95 respirators are designed to filter out 95% of all small particles.

Elastomeric Respirators:
- An elastomeric respirator is a reusable device with exchangeable cartridge filters and may be used in place of a disposable P2/N95 respirator under certain circumstances. Elastomeric respirators are non-powered devices and inhaled air passes through cartridge filters. Elastomeric masks may be half-face or full-face. Refer to Figure 1 for an example of reusable elastomeric respirator.

Powered Air-Purifying Respirators
- A PAPR is a battery-powered device that provides filtered air under positive pressure into a loose-fitting hood or helmet, or into a tight-fitting facepiece. Because the filtered air is delivered under positive pressure, the device can compensate for an imperfect seal. For this reason, a PAPR is regarded as potentially providing a higher level of protection than other RPE but is more complex to use and maintain.

Reusable respirators may have disposable components (covers) and /or reusable components. The reusable components of the respirators should be reprocessed following use, according to the manufacturers’ recommendations and comply with Australian/New Zealand Standard 4187:2014 Reprocessing of reusable medical devices in health service organizations and local facility or service processes.

The elastomeric and tight fitting PAPR devices can be fit tested utilising TSI PortaCount® Machines.
Respirators must meet AS/NZS 1716:2012 *Respiratory protective devices* and be selected in line with AS/NZS 1715:2009 *Selection, use and maintenance of respiratory protective equipment.*

**Respirators with exhalation valves**

Respirators with exhalation valves protect the wearer from respiratory pathogens such as COVID-19 but as the exhalation valves do not contain a filter, exhaled air could contain infectious particles. Therefore, when a sterile field is required, for example in the operating theatre, or to prevent other staff or patients being exposed to such particles these masks are not recommended for use in healthcare.

The exhalation valve is designed to open during exhalation to allow exhaled air to exit the respirator and then close tightly during inhalation.

Until data are available to describe how effective respirators with exhalation valves are in preventing the spread of COVID-19 from the wearer to others:

- HWs to wear a respirator without an exhalation valve.
- If only a respirator with an exhalation valve is available, cover the exhalation valve with a surgical mask that does not interfere with the respirator fit or use an expiratory filter to achieve source control.

**Figure 2 Examples of different types of respirators**

<table>
<thead>
<tr>
<th>Half-Face Disposable</th>
<th>Half-Face Reusable</th>
<th>Full-Face Reusable</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
<tr>
<td><img src="image7.png" alt="Image" /></td>
<td><img src="image8.png" alt="Image" /></td>
<td><img src="image9.png" alt="Image" /></td>
</tr>
</tbody>
</table>

**What is the difference between disposable P2/N95 masks and elastomeric respirators and PAPR?**

The most significant difference between reusable elastomeric respirators, PAPR and disposable respirators is that reusable respirators must be maintained and inspected after each use, including cleaning and disinfection of the elastomeric components such as facepiece valves, valve covers,
and straps. Refer to Table 1 for Difference between Elastomeric and PAPR Loose fitting vs Tight fitting Face Piece.

**Detailed Fit Checking Process**

Fit checking at time of use has been and continues to be the most reliable method of ensuring the HW has achieved an optimal fit and required seal in real time ([CEC Respiratory Protection in Healthcare, 2020](#)). Fit checking is a process to ensure that the PFR fits the wearer’s face snugly (i.e. creates a seal) to minimise the number of particles that bypass the filter through gaps between the wearer’s skin and the respirator seal.

HWs should complete the My Health Leaning module- [donning and doffing fit check CEC](#), receive training locally to be able to perform fit checks as well as during the fit testing process. Under WHS legislation it is always the responsibility of each HW to be familiar with and comply with these protective measures when there is an identified risk of exposure.

The respirator must be put on (donned) and taken off (doffed) correctly and worn throughout the exposure or period required.

Refer to [Principles of Fit Checking and CEC PPE donning and doffing training video](#) for more information.

**Fit checking**

Follow manufacturer’s instructions on fit checking for specific respirator

- Place the respirator on the face.
- Place the headband or ties over the head and back of neck.
- Compress the respirator to ensure a seal across face, cheeks and the bridge of nose.
- Gently conform/press the nosepiece across the bridge of nose by pressing down with fingers using both hands until the fit is snug.
- Continue to adjust the respirator along the outside until there is a good and comfortable facial fit.
- Gently place hands around the edge to feel any air escaping when the fit check is assessed.
- Maintain the integrity of the PFR without damaging or altering the structure when adjusting for seal

**Positive pressure: Breathing out**

- Check the positive pressure seal of the respirator by gently exhaling. If air escapes, the respirator needs to be adjusted

**Negative pressure: Breathing in**

- Check the negative pressure seal of the respirator by gently inhaling. If the respirator is not drawn in towards the face, or air leaks around the face seal, readjust the respirator and repeat process, or check for defects in the respirator.
- Negative-pressure check requires the wearer to completely cover the respirator with both hands before inhaling sharply

HWs should perform a fit check **each time a respirator is donned** to check that a good facial seal is achieved i.e. the respirator is sealed over the bridge of the nose and mouth and there are no gaps between the respirator and the face.

- Fit checking is a process used for all P2/N95 respirators regardless of whether fit testing is conducted.
NOTE: Australian and New Zealand standards and P2/N95 respirator manufacturers’ IFU require no facial hair for the wearer to achieve a good facial seal.

Figure 3 Principles of fit checking chart

Fit Testing
A HW working in high risk areas where they perform or in a room where there are respiratory AGP performed, may be at additional risk of exposure to airborne respiratory pathogens.

While fit checking remains a key component for respiratory infection control for these HWs, NSW LHDs/SHNs have incorporated the added control measure of fit testing of N95/P2 respirators to Respiratory Protection Program.

Whilst fit testing is recommended it is important to note that the absence of fit testing does not automatically equate to inadequate protection, in the same way that the completion of fit testing does not equate to adequate protection every time a respirator is applied.

In the absence of fit testing the existing controls and procedures are currently recognised as providing protection to HW whilst moving to a respiratory protection program that incorporates fit testing.

Fit Testing Methods
The two validated methods for fit testing of PFR are qualitative and quantitative and included in AS/NZS1715:2009. NSW Health has adopted the quantitative approaching using the PortaCount® or AccuFit® and OSHA 1910.134 protocol.
Quantitative Fit Testing

Quantitative fit testing is conducted by a trained individual who uses the PortaCount® or AccuFit® to measure leakage around the face seal to produce a numerical result called a fit factor. Fit testing identifies the PFRs capacity to seal to an individual’s face and is used for tight-fitting respirators.

Note: Fogging of glasses does not indicate a compromised seal as due to the design of disposable respirators, exhaled air will generally escape from the respirator near the nose. The respirator is designed to reseal after the expelled air exits the respirator.

Overview approach to fit testing

**Fit Testing** within LHD/SHN to be conducted according to the following principals:

- HWs are identified for fit testing through a risk assessment process
- High risk health care settings or HWs will be prioritised
- During onboarding for new employees who may fall into risk category
- A trained assessor will undertake the fit testing under optimal conditions
- To determine the most appropriate tight-fitting PFR for the individual
- To substitute the PFR when a new make or model is issued
- Following change in wearer’s facial characteristics or features which may affect the facial seal.
- HWs will be provided with information on the PFR make and model which is fitted to them.
- A record of each individual’s fit test outcome will be documented in Stafflink.

High risk areas for prioritisation

- ICU (Adult, Paediatric/Neonatal units)
- Emergency Departments
- Operating rooms where bronchoscopy or other aerosol generating procedures are performed
- Wards with negative pressure rooms or respiratory rooms or respiratory isolation rooms
- Retrieval Services
- Red and amber ward zones (during an outbreak/pandemic)

Local process for identifying and prioritising HW for fit testing:

Prioritisation of HW for fit testing should consider the following:

- HW working in high risk areas who perform or assist in respiratory AGPs. These HW can be further stratified based on the type of AGPs they perform or assist in (see appendix D).
- Other high risk HWs who provide direct care or enter the room (e.g. cleaners, wards person, radiographers).

Other considerations in prioritising:

- Seniority (more likely to perform or assist in an AGP)
- Minimum proportion of HW required to be tested initially (e.g. those in core teams who perform/assist in AGPs).

Process for respirator selection

- Undertake fit testing with available disposable PFR (P2/N95) that are in good supply and or as advised by HealthShare/procurement teams. Refer to Appendix B *Respirator selection decision making algorithm*. 
Management of HWs unable to be fit tested

- Where a HW is unable to be fitted to any available disposable PFR, a risk management approach should be implemented to establish control measures. These include:
  - Identification of high-risk procedures (e.g. AGPs) the HW is unable to perform and a suitable substitute.
  - Identification of high-risk patients the HW is unable to provide care to.
  - Redeployment to suitable duties, or clinical area if necessary.
- Where a HW is essential to the clinical area and cannot be reassigned fit testing of alternative respirators should occur. Refer to Table 1 Difference between Elastomeric, Loose Fitting PAPR and Tight Fitting PAPR and Appendix B Flowchart Respirator selection decision making algorithm.

The reusable PFR’s have cleaning and disinfection requirements and any individual who requires the use of this PFR has ownership of the filters and the hospital processes the respirators.

- Where the above steps have been taken and the individual is still unable to be fitted to an appropriate PFR the use of a Powered Air Purifying Respirator (PAPR) could be considered for fit testing. A referral will be made to the designated PAPR fit test assessor for the area.

Fit Testing using a PortaCount machine

Overview

There are three main objectives during fit testing:
1. Education – Ensure HW effectively dons the appropriate respirator.
2. Safety – Ensure the respirator being worn provides satisfactory seal and protection from harmful substances such as infectious particles.
3. Comfort and reproducibility – Ensure the respirator is appropriate to enable the HW to adequately perform routine duties, is comfortable, and able to reproduce a fit check for each episode of wear.

Measuring a satisfactory seal

There are two concepts that are used to assess protection:

- Assigned Protection Factor
- Fit Factor

Assigned Protection Factor (APF) is the level of protection that a particular type of respirator can be expected to provide 95% of the time (P2 and N95 respirators are tested to this standard).

Fit factor (FF) is an expression of the aerosol concentration outside the respirator (the ambient particle count) divided by the aerosol concentration that leaks inside the respirator during a fit test.

Fit Factor Pass score
- Over 100 for P2/N95 (PortaCount® machine aims for over 200)

The following factors will influence respirator fit:

- Face shape and size will influence the size and model of respirator appropriate for each wearer. One type and size will not suit everyone.
- Facial hair can prevent tight fitting respirators from sealing properly.
- Pre-existing medical conditions of the wearer may restrict or prevent the wearing of a respirator for example, chronic lung diseases such as asthma.
• Psychological considerations such as claustrophobia and anxiety.

It is also important to don other equipment, like glasses, HWs are likely to wear with the respirator to ensure it doesn’t impact on the respirators seal.

**When to fit test:** Fit Testing should ideally be conducted:

- New HW who are prioritised for assessment - during onboarding to the healthcare facility
- When identified that a HW may be exposed to a respiratory pathogen or hazardous substances
- Existing HW – HW who have been prioritised during the risk assessment
- Existing HW – other HW who may have infrequent exposure to recognised and unrecognised sources of airborne and aerosolised infectious agents in the healthcare facility
- Where there has been a change in PFR availability – size, style, model or make or where a new make/ model is issued. Prioritisation based on HW risk assessment
- Performed at appropriate intervals, particularly when there is a change in the wearer's facial characteristics, e.g. loss of teeth/dentures or excessive changes in weight or facial surgery

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**Considerations during fit testing**

**Facial hair**

*Beards, moustaches and stubble on the facial surface coming into contact with the respirator can affect the seal of the respirator. The AS/NZs 1715 requires employees be clean shaven when being fit tested and when wearing the respirator.*

**Smoking**

*Participants should be advised not to smoke within 30 minutes prior to attending fit testing. Particles remaining in the respiratory system post smoking may be detected inside the mask and lead to fit test failure.*

**Eating**

*Participants should also be asked not to eat 15 minutes immediately prior to fit testing (food with strong odour may interfere with fit test results).*
Fit testing Procedural steps

Always follow manufacturer’s operation and use instructions when using a Respirator Fit Tester.

Equipment Requirements for PortaCount® Respirator Fit Tester Model 8048

- Tables (depending on the number of machines)
- Chairs for HW waiting area (optional)
- TSI 8048 PortaCount® machine or AccuFit® or similar
- Laptop or computer with PortaCount software
- Printer
- TSI 8026 Particle Generator
- PortaPunch Probe Insertion Tool
- PRF P2/N95 that the HW member normally wears
- Alternative respirators both size and shape
- Alcohol based hand rub or soap and water
- Detergent/disinfectant wipes
- Compressed air
- Alcohol for internal purging of twin-tube (as required)

Room set up

The room selected for fit testing should be clean and in a low traffic area. In general, and ideal room for fit testing is one about 400ft²/20m². Particle generation will not function as efficiently in an open cubicle area or very large room.

How to set up the Particle Generator

- Equipment Requirements
- TSI particle generator
- Saline tablets
- Reservoir
- Spare reservoir lid
- Water

Cautions

- The particle generator should be situated at least 1.8m from the PortaCount® machine.
- This should be used in an enclosed area
- A room smaller than 20m²
- Should not take place in an open cubicle or large room
- Do no operate if the ambient particle count exceeds >8000 pt/cc for full face/ partial face respirator or >800 for N95 respirators.
- Always operate in an upright position
- Run for at least 15 minutes prior to commencing fit testing to allow particle count to stabilise
- The solution can be re-used however do not mix old solution with new solution.
- The solution can be stored with the cap tightly fitted. Do not leave on the machine when returning machine to the PortaCount case due to risk of leaking and damage to machines.
- If higher particle counts are needed, adjust the Output Adjustment Screw
- Always empty the reservoir prior to storing back in the case to prevent leaking.
Procedure

Fill the reservoir jar with water to the fill line.

- Drop one (1) saline tablet into the reservoir
- Place the spare cover on the reservoir and shake gently to dissolve tablet
- Once dissolved, remove spare cover and screw the reservoir onto the particle generator
- Place the particle generator in the corner of the room, preferably at least 1.8 metres from the PortaCount machine location.
- Ensure particle generator is not covered or obstructed in any way
- Turn on power to particle generator, close room door and run for at least 15 minutes before calibrating PortaCount machine.
- One reservoir full of solution will last from 8-16 hours. This can be saved and reused. Do NOT mix old and new solutions. To make up a new solution, discard old and rinse reservoir.
- To re-use the solution, detach the reservoir from the particle generator and cover with spare lid.

How to set up the PortaCount machine

- Equipment Requirements
- PortaCount machine with power cord
- Black storage cap
- Alcohol wick and fill capsule
- 99.5% reagent grade alcohol (only use the small bottles provided)
- Twin tube assembly x 2
- HEPA filters
- Respirators
- Canister of compressed air
- Tissues
• 20ml syringe
• Sample jar
• Laptop with PortaCount software. The software can be downloaded from the TSI website but will require approval from local IT services

Procedure

• Remove PortaCount® from case
• Connect the machine to power and printer (optional)
• Plug in the USB cable from the PortaCount® to the laptop
• Connect one of the twin tube assemblies to the PortaCount® to the corresponding outlets (the blue tube to the blue fitting and the clear tube to the silver fitting)
• Remove the black storage cap from the PortaCount
• Remove the alcohol cartridge from the fill capsule
• Insert alcohol cartridge into PortaCount®, twisting until it is locked in place
• Place black storage lid on fill capsule
• Remove the zero filter (HEPA) from the accessory bag and connect to the end of the clear tube of the twin tube assembly (do not connect too hard or it will be difficult to remove)
• Open FitPro software
• Run the Daily Check - following all instructions on the software
• Select the N95 companion button - following all instructions on the software

Daily checks

Prior to commencing fit testing for any session (i.e. each day), a daily check is required to be completed. If you change locations during the day – you should carry out another check as the particle count may differ. This includes:

• Particle check
• Classifier check (only for the PortaCount model 8048 with N95 enabled)
• Zero check
• Maximum Fit Factor check

This process is important for several reasons:

• Environment: that there are adequate particles in the room
• Equipment: There are no leaks in the system
• Software: the machine can pass the maximum fit factor check

Double-click FitPro + icon.

Select YES if prompt appears to run Daily Check.
If FitPro software already open and it hasn’t prompted a daily check, click on the top left three bars to find the Daily check option

Click N95 for first process - ensure PortaCount 1 is selected

Click off N95 as second check and re-select Portacount 1

What to do if the PortaCount fails the daily check?

**Problems**

- Alcohol
- Room Setup
- Nozzle cleaning

**Alcohol cartridge**

- Too much – dry out
- Too little – soak in alcohol for 10 minutes
- Installed correctly or installed at all?
- Used only Isopropyl Alcohol (i.e. 99.5% Reagent grade)
- Change alcohol wick

**Room setup**

- Particle count
  - Airconditioning off/ close doors – prevent circulating air (do not set the machine under air conditioner flow)
  - Room size
  - Turn on Particle Generator
  - Did you remember to put a salt tablet in particle generator?

**Tubing Cleaning Procedure**

- Visible condensation- Use compressed air to dry

**HW Preparation and expectations**

- It is mandatory for HW to follow: “Five moments for hand hygiene”, infection prevention and control, moving safely or safe manual handling, documentation practices
- Discuss with the HW what to expect during the procedure
- Review availability of PFR at location – do not test respirators that are not available. HW are to bring the PFR usually worn in their workplace where possible. Check latest HealthShare update on product prioritisation and stock availability.
- Check HW member has clean face, free of facial hair. If subject is not clean shaven, DO NOT TEST – seal will be inadequate, and test will fail. Ask HW to return when facial hair has been removed or ask them to discuss the issue with their Manager.
- Confirm a fit check is achieved by the HW. If the HW is unable to demonstrate and effective fit check, DO NOT TEST – seal maybe inadequate resulting in a fit fail.
- Check the HW has not smoked in last 30 minutes or not eaten (food with strong odour/smell may interfere on fit test results) in last 15 minutes – this will result in erroneous particulate counts compromising the fit test outcome.

**Probe insertion tool**

A sample port must be made in the PFR using the probe insertion tool and push nuts

- Equipment Requirements
• Insertion tool
• Sampling probes
• Push nuts

**Procedure**

Sampling port should be placed in the breathing zone of the respirator, which is usually between the persons nose and mouth (i.e. central but avoiding all seams)

For ‘duckbill’ respirators – install probe near the outer edge of the bottom panel where it cannot be blocked by persons chin

Load probe onto PortaPunch

Load a push nut onto the magnetic plate at the top of the punch (turn it on its side). Make sure the concave (curved) side of the push nut is facing up (i.e. into the hole). The flat side should face down when the punch is upright.
Place the respirator over the probe – position the respirator for optimal probe location. Slowly but firmly press the PortaPunch downwards until it clicks. DO NOT HIT THE PUNCH as it will snap. Firm even pressure is all that is required.

Release the PortaPunch lever arm, remove the respirator and inspect. You should not be able to rotate respirator.

**Fit Check**

Observe the HW don the PFR and provide education regarding best fit/ seal. Including:

- Position of the respirator on the nose
- Room for eye protection
- Ability to talk
- Position of respirator on face and cheeks
- Chin placed within the respirator
- Adequate strap tension, not overly tightened – straps to base of skull and across parietal/ dome of head
- Fit across nose bridge – appropriate processes taught for moulding respirator across the nose bridge
- Respirator of proper size to span distance from nose to chin;
- Tendency of respirator to slip –and if this affects comfort and seal

**Note:** When fit checking with probe inserted - instruct the HW to cover using their own finger.
When to Fit Check

Every time the HW dons a respirator, they should do a fit check.

1. Negative pressure Fit Check
2. Positive pressure Fit Check

Attach Respirator to PortaCount

Attach respirator sample port to the PortaCount via the clear tube of the twin tube assembly from the PortaCount®.

Fit test procedure

Check the PFR available have been entered in the software under Respirator List – If it is the first time you have downloaded the program each respirator will require manual entry, once entered will be available as a drop-down.

Important to enter respirators with consistency. Below are examples

Manufacturer: 3M/BSN/ Halyard
Model: 1970+/1860/1860/
Style: Half face disposable/ Half face reusable/ Full-face reusable/ PAPR
Pass Level Required: Fit Factor

Approval: Approval should be either NIOSH or AS/NZ – these can be found printed on the respirator. It is important to use respirators with these approvals to ensure they meet an appropriate standard (National Institute for Occupational Safety (NIOSH: US) or Australian/ New Zealand Standards).

Add new subject under People List

Ensure participants’ details are accurate (this data will be used to run reports and enter into Stafflink or equivalent database).

a. Name
b. Employee number
c. Organisation (ie LHD)
d. Workplace (ie Facility)
Achieving a seal

The Real-Time FitCheck mode is generally used for respirator training fit checking and troubleshooting. It allows the test subject/HW to experiment with strap tension and other adjustments while watching the direct effect these efforts have in real time. Use this feature to prove that the HW knows how to don the respirator properly without help. Use the real time fit check to practice and troubleshoot. It should not be used for a PASS/FAIL test result.

See troubleshooting section below for advice if count is too low.

Once count is steady, commence test.
**Conducting a Fit Test**

Instruct the HW to put on the respirator five minutes before the fit test starts to purge the particles trapped inside the respirator and permit the wearer to make certain the respirator is comfortable.

- Have the HW don the respirator without assistance from the fit test assessor. Fit test results depend on the wearer knowing how to properly don and fit check the respirator.

- Have the wearer hold the twin tube while conducting the exercises to support the disposable respirator and to maintain the fit. Have the wearer tilt their head up and down, turn side to side and bend over to see if tubing pulls the respirator away from their face, if it does, readjust the tubing and repat the fit check again.

- Guide the HW with initiating and completing each exercise.

There are two protocols (4 exercises or 8 exercises) in a Quantitative Fit Test designed to replicate normal movements that may alter the seal of the respirator:

<table>
<thead>
<tr>
<th>Eight Exercises</th>
<th>Four Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Normal breathing</td>
<td>1. Bending Over</td>
</tr>
<tr>
<td>2. Deep breathing</td>
<td>2. Talking</td>
</tr>
<tr>
<td>3. Head side to side</td>
<td>3. Head Side to Side</td>
</tr>
<tr>
<td>4. Head up and down</td>
<td>4. Head Up and Down</td>
</tr>
<tr>
<td>5. Talking</td>
<td></td>
</tr>
<tr>
<td>6. Grimace</td>
<td></td>
</tr>
<tr>
<td>7. Bending</td>
<td></td>
</tr>
<tr>
<td>8. Normal breathing</td>
<td></td>
</tr>
</tbody>
</table>

Note: During the talking exercise, the participant should be asked to talk out loud slowly and loud enough to be heard clearly by the test conductor for 30-60 seconds. HW will read from a prepared text called the Rainbow Passage or count backward from 100.

Ask the participant if they are feeling well enough to undergo the test and explain that they may cease the test process at any time if they experience any negative effects.

**Result**

**Fit factor**

A fit factor of at least 100 is required for half-face respirator and a minimum fit factor of 500 or 1000 for a full-face piece negative-pressure respirator depending on the protection factor required in use.

The overall fit factor is the most important data item. It is the overall result of the fit test and usually the only fit factor value that must be retained as part of the record keeping. The fit factors for the individual exercises are not as important. It is possible to have a passing overall fit factor even though one of the exercises resulted in a failing fit factor. The overall fit factor is a weighted average related to the amount of airborne hazard that the person might have inhaled if the HW were in the workplace. Fit Factor numeric values so close to the Pass/Fail Criteria would always be investigated and improved upon by some form of remedial training or reselection of the RPE.
Troubleshooting Fit Factor Failure

Check your machine first

- Check to ensure all tubing is attached appropriately, the alcohol cartridge is *in situ* and if the machine is intact the next step is to troubleshoot the participant.

Confirm there are no visible alerts on the machine / computer interface

- Re-seal the respirator ensuring
  - Firm moulding across the nose
  - Straps in correct place
- Repeat the fit test
- If fit test fails again try another respirator

Documentation of fit test outcomes

Follow local process for communicating fit test outcomes with individual HW and organisation requirements. At a minimum include:

- Name of Fit Test assessor
- Respirator details
- Record HW who cannot be fitted and the failed respirator
- HWs can opt to label the back of their name badge with the PFR they are fitted to

Manage Data

FitPro Ultra software allows importing and exporting data to and from CSV files (follow product user manual for more information).

Transport and Storage

When transporting or storing the PortaCount Respirator Fit Tester, it is important to remove all alcohol. Transporting or storing with the alcohol cartridge may cause flooding of the optics. When putting the PortaCount Respirator Fit Tester back into the carrying case, follow the steps outlined below:

**Escalating a “no fit”**

If you are unable to pass the participant on any of the respirators present in the facility encourage HW to discuss with their direct line manager.

Any HWs that fail all respirators are to be included in the list of those failed (if any) in the attendance/ fit report that you send to management.

The direct line manager is to discuss with Infection Prevention and Control team for possible options. This will include a risk assessment and consideration of alternative protective measures such as reusables (See Appendix B and Table 1 for more information). The assessor could also consider contacting the Fit Test Coordinator to arrange follow up assessment of the HW.

Alternatives may involve excluding the person from patient care requiring aerosol generating procedures or other care requiring airborne precautions.
• Remove the alcohol cartridge from the PortaCount Respirator Fit Tester and store in the alcohol fill capsule. The alcohol fill capsule is designed to be a safe transportation and storage container for alcohol. The alcohol cartridge can be left soaking in alcohol indefinitely.

• Cover the cartridge cavity with storage cap. Installing the storage cap into the cartridge cavity prevents dirt or debris from getting into the PortaCount Respirator Fit Tester.

• Empty the particle generator reservoir, rise with fresh water and dry before storage. Never attempt to store the particle generator in the carrying case with a full or partially filled reservoir attached, as the solution will leak out and damage the generator and carrying case.
Table 1: Difference Between Elastomeric, loose Fitting PAPR and Tight Fitting PAPR

<table>
<thead>
<tr>
<th>Criteria Description</th>
<th>Elastomeric respirators Non-powered</th>
<th>Loose fitting PAPR Powered</th>
<th>Tight fitting PAPR Powered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure</td>
<td><img src="image1" alt="Image" /> <img src="image2" alt="Image" /> <img src="image3" alt="Image" /> <img src="image4" alt="Image" /></td>
<td><img src="image5" alt="Image" /> <img src="image6" alt="Image" /> <img src="image7" alt="Image" /> <img src="image8" alt="Image" /></td>
<td><img src="image9" alt="Image" /> <img src="image10" alt="Image" /> <img src="image11" alt="Image" /> <img src="image12" alt="Image" /></td>
</tr>
<tr>
<td>Specifications</td>
<td>An elastomeric respirator is a reusable device with exchangeable cartridge filters. They are tight fitting respirators that are generally either a half facepiece or full facepiece where the facepieces are made of synthetic or natural rubber material with a removable filter.</td>
<td>Most models are a battery powered blower that pulls air through attached filters or cartridge. The blower forces the ambient air through air-purifying elements [a filter cartridge] to the inlet covering [a hood, helmet or facepiece]. The blower then pushes the filtered air into the facepiece. This process creates an air flow inside either a tight-fitting facepiece or loose-fitting hood or helmet, providing an assigned protection factor (APF) between 10-100.</td>
<td></td>
</tr>
<tr>
<td>Facepiece</td>
<td>A tight-fitting half or full facepiece</td>
<td>A loose-fitting facepiece, hood, or helmet</td>
<td>A tight-fitting half or full facepiece</td>
</tr>
<tr>
<td>Limitation</td>
<td>More commonly used in industrial and mining settings, but some models may be assessed in the context for use in healthcare. Currently there are no standardised procedures for cleaning and disinfection of these items within healthcare environments. Caution must be taken regarding the use and reuse of elastomeric respirators to decrease contamination of the inside of the respirator and thus increasing the risk of infecting health workers between use.</td>
<td>The safe levels of contaminant concentrations may have been established for industries but have not been determined for healthcare settings. Only provide protection if the correct type of filters and/or cartridge(s) is/are used for the contaminant(s) of concern. PAPR batteries must be recharged or replaced, requires significant amount of storage space between shifts, robust maintenance program for replacing or repairing components that have become damaged during use or during cleaning and disinfection. Competent HWS are required to support the PAPR maintenance program and HWS must be competent and trained on appropriate use, cleaning and disinfection of the item. PAPRs also require ongoing supply of replaceable or at least adequate supply of various parts e.g. for the Halo extra neck supports, harnesses etc.</td>
<td></td>
</tr>
<tr>
<td>Criteria Description</td>
<td>Elastomeric respirators Non-powered</td>
<td>Loose fitting PAPR Powered</td>
<td>Tight fitting PAPR Powered</td>
</tr>
<tr>
<td>----------------------</td>
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</tr>
<tr>
<td></td>
<td>The nosepiece can affect the ability to achieve satisfactory fit for safety or prescription spectacles, operating microscopes or other technical equipment.</td>
<td>The HW’s ability to hear may be reduced because of the blower noise, and noise induced by the movement of a loose head covering. In case of battery or fan failure there is a risk of build-up of carbon dioxide exhaled by the wearer, and breathlessness.</td>
<td>Performance can be markedly reduced by facial hair between the facepiece and the face and by the arms of spectacles. May cause discomfort and or heat build-up during hard work or in hot environment.</td>
</tr>
<tr>
<td><strong>Assigned protection factor (APF)</strong></td>
<td>Half face elastomeric APF = 10&lt;br&gt;Full facepiece elastomeric APF = 50</td>
<td>Loose-fitting hoods and helmets APF = 25</td>
<td>Tight-fitting half masks APF = 50&lt;br&gt;Tight fitting full facepiece APF = 1000</td>
</tr>
<tr>
<td><strong>Face to respirator seal</strong></td>
<td>Require an excellent face-to-facepiece seal</td>
<td>Do not require a close face-to-facepiece seal.</td>
<td>Require a good face-to-facepiece seal.</td>
</tr>
<tr>
<td><strong>Fit Test Required</strong></td>
<td>As the facepiece of the elastomeric respirator should form a tight seal against the user’s face, fit testing may be required</td>
<td>A fit test is not required for PAPRs with loose-fitting headgear such as hoods and helmets</td>
<td>Some models require fit testing, in the event of blower failure.</td>
</tr>
<tr>
<td><strong>Comfort to the wearer</strong></td>
<td>Some faces may achieve better seal, but some users may experience discomfort due to physiological responses, such as perceived increased temperature under the facepiece or skin irritation.</td>
<td>The use of highly efficient filters and utilisation of positive pressure, the constant airflow provides a cooling effect on the user. A PAPR may be less taxing from a physiological/breathing resistance perspective than other respirators.</td>
<td></td>
</tr>
<tr>
<td><strong>Facial Hair</strong></td>
<td>Facial hair will interfere with face and respirator seal</td>
<td>Compatibility with facial hair and various facial structures</td>
<td>Facial hair will interfere with face and respirator seal</td>
</tr>
<tr>
<td><strong>Integrated Eye Protection</strong></td>
<td>Only for full-face models</td>
<td>Yes</td>
<td>Only for full-face models</td>
</tr>
<tr>
<td><strong>Fluid Resistance</strong></td>
<td>Some models are fluid resistant</td>
<td>Fluid resistant</td>
<td>Fluid resistant</td>
</tr>
<tr>
<td><strong>Level of Protection</strong></td>
<td>Under testing conditions, the protection provided by reusable elastomeric respirators varies by filter type and model and provide less protection than PAPR or supplied-air types of respirators.</td>
<td>Over breathing of a loose fitting PAPR would result in some measurable volume of ambient air entering the breathing vicinity of the wearer. Therefore, over breathing could potentially expose the wearer to contaminant risks while wearing a loose fitting facepiece</td>
<td>Generally, very low risk of contaminated air leaking into the respirator</td>
</tr>
<tr>
<td>Criteria Description</td>
<td>Elastomeric respirators</td>
<td>Loose fitting PAPR</td>
<td>Tight fitting PAPR</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------------------------</td>
<td>--------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>Integrated PPE from the Neck Up</td>
<td>Half facepiece provides no coverage of head or neck</td>
<td>Only a hooded model provides neck and head protection</td>
<td></td>
</tr>
<tr>
<td>Visualisation</td>
<td>Line of sight may impede with some models e.g. when intubating or insertion of intravascular access devices. Full face piece will allow patients to see HWs face. May interfere with the visual field while looking downwards</td>
<td>The clear face shield will allow patients to see the HWs face.</td>
<td>Full face piece will allow patients to see HWs face. May interfere with the HW’s visual field because of the limited downward vertical field of view.</td>
</tr>
<tr>
<td>Clinical care</td>
<td>Does not interfere with the use of some medical equipment such as a stethoscope</td>
<td>The HW’s ability to use of a stethoscope may be limited. Allow other equipment to be used concurrently such as headlights, loupes, mask underneath the unit.</td>
<td>Full face piece may limit the use of a stethoscope.</td>
</tr>
<tr>
<td>Communication</td>
<td>The facepiece can affect the intelligibility of the wearer’s speech</td>
<td>Interference with hearing and mobility. The HW’s ability to hear or be heard may be reduced because of the blower noise, and noise induced by the movement of a loose head covering.</td>
<td></td>
</tr>
<tr>
<td>Exhalation valves</td>
<td>Have a separate exhale vent, but this is not filtered. Exhaled air may be contaminated. Recommend that an expiratory filter or a surgical mask is worn to cover the exhalation valve for source control</td>
<td>There is no filter on the exhalation valve. When a PAPR is being worn in the operating theatre, a surgical mask be worn under a PAPR or over a facemask respirator. This is not necessary with some hooded models.</td>
<td>There is no filter on the exhalation valve. It is recommended that a surgical mask be worn on top of exhalation valves to reduce the microbial dispersal from the wearer. Filters for expiratory ports are under development.</td>
</tr>
<tr>
<td>Cleaning and disinfection</td>
<td>Specific procedures for cleaning and disinfection (reprocessing) within healthcare environments must be established for the environment where elastomeric may be used. To ensure reliability, it is recommended that reprocessing be undertaken in a central sterilising department. The filter material itself typically cannot be cleaned.</td>
<td>Most PAPRs have components that are disposable. Reusable components must be cleaned and disinfected between use as per the manufacturer instructions. Any reprocessing will be required to be undertaken in a central sterilising department. The outside of the filter cartridge can have surface cleaning and decontamination while the rest of the unit is being serviced. Viruses and bacteria causing acute respiratory infections can survive on respirator components for variable periods of time, from hours to weeks. Consequently, contaminated respirators must be handled, cleaned, and disinfected properly to reduce the possibility of the device serving as a fomite.</td>
<td></td>
</tr>
<tr>
<td>Criteria Description</td>
<td>Elastomeric respirators Non-powered</td>
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</tr>
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<td>----------------------</td>
<td>------------------------------------</td>
<td>---------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>or disinfected for reuse. Specific safe working procedures must be in place to manage the filters. Filter components should be discarded when they become damaged, soiled, or clogged.</td>
<td>and contributing to disease transmission. Any procedure is used to clean and disinfect the PAPR and its components, it must be recommended or approved by the manufacturer. Cleaning and disinfection must be done by competent trained individuals. Centralising this activity can ensure it is properly done.</td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance</strong></td>
<td>Require maintenance and a supply of replaceable components including straps, inhalation and exhalation valves, valve covers, and filters, cartridges, or canisters</td>
<td>PAPR batteries must be recharged or replaced and ongoing maintenance required. Change cartridges as needed and inspect equipment for problems. Involve biomedical engineers in the maintenance process</td>
<td></td>
</tr>
<tr>
<td><strong>Cartridge and Filter Replacement</strong></td>
<td>Each manufacturer has instructions re cartridge and filter replacement.</td>
<td>The correct combination of filters and cartridges must be used. Cartridges and filters have a limited life and should ideally be equipped with end-of-service-life indicators (ESLI). In the absence of an ESLI, the manufacturer’s recommended change schedule must be observed</td>
<td></td>
</tr>
<tr>
<td><strong>Education and training</strong></td>
<td>Training should be provided by a competent person and it should cover donning, fit checking, fit testing, appropriate use, doffing, cleaning and disinfection, maintenance, filter change and storage.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Sample Forms**

**Fit Test Fact Sheet**

**Prior to your Fit Test**

1. Completion of My Health Learning module:
   - Donning and Fit Checking of P2/N95 Respirators in NSW Healthcare Settings.
     Course code – 319438161

2. Bring your own respirator from the workplace if you prefer a specific style or model (where possible or available). Bring PPE (e.g. eye protection, headwear etc.) you usually wear in conjunction with the respirator to the fit testing sessions.

3. You are required to have a cleanly shaved face for fit testing

4. Ensure hair is tied back

5. Do not smoke for 30 minutes and avoid eating (food with strong smell or odour) for 15 minutes prior to the fit test session

6. You will be asked to complete a consent form

7. If you have any condition that may prohibit you from conducting a fit test, please discuss it with your manager

8. If you have any questions, please contact your local respiratory protection program lead

Local contact name: ………………………………………………………………………………………………………

Contact number: ………………………………………………………………………………………………………
**Fit Test Assessor Assessment of Practice**

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th>Achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set up, perform checks and store the PortaCount machine in line with Infection Prevention and Control practices</td>
<td></td>
</tr>
<tr>
<td>Assess the HW to safely don, fit and doff a respirator</td>
<td></td>
</tr>
<tr>
<td>Instructs on airborne pathogens, fit checking and fit testing process</td>
<td></td>
</tr>
<tr>
<td>Performs a quantitative fit test using the PortaCount® or AccuFit® machine</td>
<td></td>
</tr>
<tr>
<td>Demonstrates problem solving/troubleshoot respirator fit testing process and the PortaCount machine</td>
<td></td>
</tr>
<tr>
<td>Demonstrates accuracy in documenting fit test outcome</td>
<td></td>
</tr>
</tbody>
</table>

**Feedback / Comments:**

**Fit test trainer Name:**

**Fit test trainer Stafflink Number:**

**Fit test trainer Signature:**
### Sample labels for HW record

<table>
<thead>
<tr>
<th></th>
<th>FC fail</th>
<th>FT fail</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>BYD</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>BSN</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Small</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>3M 1860</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

(FC-Fit Checking; FT Fit Testing; N/A non applicable)
## Sample - Check list for Fit Test Assessor

<table>
<thead>
<tr>
<th>Check list for Fit Test Assessor</th>
<th>(Complete one column per participant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has not eaten or smoked</td>
<td></td>
</tr>
<tr>
<td>Clean shaven</td>
<td></td>
</tr>
<tr>
<td>PPE donning, doffing and respirator fit checking mandatory online training completed</td>
<td></td>
</tr>
<tr>
<td>Physically and psychologically fit to wear a respirator</td>
<td></td>
</tr>
<tr>
<td>Consent completed and signed</td>
<td></td>
</tr>
<tr>
<td>Explanation on fit testing</td>
<td></td>
</tr>
<tr>
<td>Selection and sizing of respirator based on CEC flow chart</td>
<td></td>
</tr>
<tr>
<td>Strap tension, chin and nose placement suitable</td>
<td></td>
</tr>
<tr>
<td>Donning of respirator with ear loops</td>
<td></td>
</tr>
<tr>
<td>Respirator positioned suitably</td>
<td></td>
</tr>
<tr>
<td>Nose piece sealed over the nose bridge</td>
<td></td>
</tr>
</tbody>
</table>
### Check list for Fit Test Assessor
(Complete one column per participant)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
<th>Column 4</th>
<th>Column 5</th>
<th>Column 6</th>
<th>Column 7</th>
<th>Column 8</th>
<th>Column 9</th>
<th>Column 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top strap on the crown and bottom strap base of the neck</td>
<td></td>
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<tr>
<td>Explain ft test process and exercises</td>
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<tr>
<td>Probe and tube placement checked</td>
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<tr>
<td>PPE (e.g. eye and head wear, head) donned</td>
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<tr>
<td>User seal check after head movement</td>
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<tr>
<td>Explained ft test process and exercises</td>
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</tr>
<tr>
<td>PPE (e.g. eye and head wear, head) donned</td>
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<tr>
<td>User seal check after head movement</td>
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<tr>
<td>Performs fit check as per OSHA 1910.134 protocol</td>
<td></td>
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<tr>
<td>Fit test participant initial</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
References
Infection Prevention and Control Respiratory Protection in Healthcare, Version 1 August 2020, Clinical Excellence Commission NSW Government

Infection Prevention and Control Application of PPE during COVID-19 version 2.3 August 2020, Clinical Excellence Commission

Respiratory Protection in Healthcare version 1 August 2020, Clinical Excellence Commission

COVID-19 Infection Prevention and Control Advice for HWs, Version 3 June 2020, Clinical Excellence Commission NSW Government

Infection Prevention and Control Aerosol-generating procedures in relation to COVID-19

Infection Prevention and Control application of PPE during COVID-19 Version 2.3 August 2020

Principles of Fit Checking: How to Don and Fit Check P2 and N95 Respirators


PortaCount Respirator Fit Tester Models 8040 and 8048 User manual TSI.com

OSHA Protocol 1910.134 Fit testing procedure